

## Remarks, January 2005

This is my Ph.D. dissertation, written in 1991 and 1992. Because it was in an old word processing format, I could not convert it directly to PDF format. I retained the content of the dissertation, and have not revised even obvious typographical errors. The layout is close to that of the original. Each page of text has the same contents as the corresponding page in the original, which is why many pages end in mid-line only to be continued on the next page.

Although I think the dissertation has stood the test of time well, there are a few points on which it is incorrect or incomplete. They are:

1. I would not now classify Singapore as even a highly modified currency board system. Rather, it is a central banking system that, unusually, combines a floating exchange rate (heavily managed) with foreign reserves that are usually 100 percent or more of the monetary base.

2. The East Caribbean dollar was not devalued in 1983. Rather, the anchor currency was switched from the pound sterling to the U.S. dollar at the prevailing cross rate.

3. The table of currency board episodes at the end of the dissertation contains some minor typographical and other errors. I corrected those of which I was aware when the table was reprinted in Steve H. Hanke, Lars Jonung, and Kurt Schuler, *Russian Currency and Finance: A Currency Board Approach to Reform* (London: Routledge, 1993), Appendix C.

4. A few other historical cases of currency boards remain to be cataloged. In particular, Brazil's *Caixa de Conversão* of around 1900 may be worth a second look, and Costa Rica had a *Caja de Conversión* around the same time. There's a book on the Costa Rican case I have been unable to examine, but sounds worthwhile. It is Tomás Soley Güell, *Evolución monetaria: artículos de divulgación sobre la Caja de conversión* (San José, Costa Rica: Imprenta Nacional, 1924). I am working on what will eventually be a comprehensive list of monetary systems; the results so far are available on my personal Web site, <<http://www.dollarization.org>>.

5. Finally, a small mistake: the J. Mars of pages 112-14 was Jane Mars, not John or Joseph, as I originally thought.

CURRENCY BOARDS

by

Kurt Alvin Schuler  
A Dissertation  
Submitted to the  
Faculty of the Graduate School  
of  
George Mason University  
in Partial Fulfillment of  
the Requirements for the Degree  
of  
Doctor of Philosophy  
Economics

Committee:

[Tyler Cowen] \_\_\_\_\_ Director

[Philip R. Wiest] \_\_\_\_\_

[Leonard P. Liggio] \_\_\_\_\_

[Steve H. Hanke] \_\_\_\_\_

[Richard E. Wagner] \_\_\_\_\_ Department Chairman

[Kingsley E. Haynes] \_\_\_\_\_ Dean of the Graduate School

Date: [7/15/92] \_\_\_\_\_

Spring 1992  
George Mason University  
Fairfax, Virginia

Currency Boards

A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in Economics  
at George Mason University.

By

Kurt A. Schuler  
Bachelor of Arts  
St. John's College, Annapolis, Maryland, 1981

Director: Tyler Cowen  
Associate Professor, Department of Economics

Spring 1992  
George Mason University  
Fairfax, Virginia

Copyright (c) 1992 by Kurt Schuler

## TABLE OF CONTENTS

	<u>Page</u>
Chapter 1. Introduction.....	1
Chapter 2. Intellectual origins of the currency board system.....	19
Chapter 3. Early British colonial currency boards.....	35
Chapter 4. Later British colonial currency boards.....	52
Chapter 5. Early non-British currency boards .....	72
Chapter 6. Later non-British currency boards .....	84
Chapter 7. Decline of the currency board system .....	104
Chapter 8. Currency boards today .....	133
Chapter 9. Performance of the currency board system.....	183
Chapter 10. Conclusion.....	213
Bibliography.....	221
Appendix. Currency board episodes .....	261
Vita.....	272

## LIST OF TABLES

	<u>Page</u>
Table 1. Inflation in Hong Kong and the United States.....	153
Table 2. Money supply growth and merchandise trade balance in Hong Kong.....	159
Table 3. GDP growth in Hong Kong .....	161
Table 4. Inflation in Singapore, Malaysia, and the United States.....	176
Table 5. Money supply growth and balance of payments in Singapore.....	178
Table 6. GDP growth per person and government budget balance in Singapore and Malaysia .....	179
Table 7. Exchange rates versus sterling, 1950 and 1992.....	200
Table 8. Inflation and real GDP growth per person under currency boards and central banking .....	202
Table 9. Balance of payments versus money supply growth in currency board systems, except Hong Kong and Singapore.....	204

## LIST OF FIGURES

	<u>Page</u>
Figure 1. Exchange rate of Hong Kong dollar, 1974 to 1983.....	145
Figure 2. Exchange rate of Hong Kong dollar, 1984 to 1990.....	146
Figure 3. Exchange rate of Singapore dollar and Malaysian dollar/ringgitt, 1967 to 1990 .....	175

## Abstract

### CURRENCY BOARDS

Kurt Schuler, Ph.D.

George Mason University, 1992

Director: Dr. Tyler Cowen

A currency board is an institution that issues notes and coins convertible on demand at a fixed rate into an external reserve asset, such as a foreign currency. External reserves equal 100 percent of the currency board's notes and coins in circulation.

Currency boards have existed in approximately seventy territories. Today few currency boards exist; the most notable is that of Hong Kong. I explain how currency boards arose, how the currency board system spread, and why central banks have replaced most currency boards.

The first currency board was that of the British Indian Ocean colony of Mauritius, established in 1849. Many British colonies established currency boards to replace competitive issue of notes by banks. Many currency boards were founded after the West African Currency Board opened in 1913 for British colonies in the region. Currency boards also existed

in some independent nations, including Argentina, Ireland, and Libya.

Soon after the currency board system reached its greatest extent, in the mid 1950s, it ebbed for several reasons. Nationalist sentiment called for an independent national currency to accompany other trappings of independence. Economic theory of the time accused the currency board system of needlessly tying up resources in 100 external reserves, and touted the virtues of discretionary monetary policy as an engine of economic growth. Sterling, the principal reserve currency for currency boards, was unreliable.

The performance of most central banks has been worse than the performance of the currency boards they replaced. I compare the record of the currency board system with that of central banking by examining indicators such as exchange rates, economic growth rates, and inflation.

## CHAPTER 1. INTRODUCTION

The currency board monetary system has existed in approximately seventy countries. At its peak in the 1950s, fifty or so countries had currency boards. Today the currency board system exists only in Hong Kong, Singapore, and several other small territories. Few economists even know what a currency board is.

The currency board system has recently received fresh attention as a possibly appropriate monetary system for Eastern Europe and the Third World (Friedman 1991, Gressel 1989, Hanke and Schuler 1991a, Hetzel 1990, Meltzer 1991, Walters 1991). The simplicity, transparency, and rule-bound character of the currency board system are appealing. Furthermore, from cursory observation of the history of currency board systems, it appears that currency board systems have enjoyed impressive stability and generally good macroeconomic performance. Hong Kong and Singapore are frequently cited as models of economic development worthy of emulation.

What is the record of the currency board system? It is essential to find out if we are to pass an informed judgement on proposals to extend the currency board system to Eastern Europe and elsewhere. Since no previous comprehensive assessment of the currency board system has been made, that

is the task I shall undertake here. I shall explain the origins, spread, decline, and performance of the currency board system.

What is a currency board?

A currency board is an institution that issues notes and coins convertible on demand and at a fixed rate into a foreign currency or other external "reserve" asset. Ordinarily, a currency board does not accept deposits, though in certain cases it may accept those backed 100 percent by external reserves. As reserves, it holds high-quality, interest-bearing securities denominated in the reserve asset. Its reserve ratio is fixed at 100 percent or slightly more of its notes and coins in circulation, as set by law. The currency board makes profits from the difference between the interest on the securities that it holds and the expense of maintaining its note and coin circulation. It remits to the government all profits beyond what it needs to pay expenses and maintain its reserve ratio. The currency board has no discretion in monetary policy; market forces alone determine the quantity of notes and coins in circulation.

The main characteristics of a currency board are as follows.

Convertibility: The currency board system is a system of fixed exchange rates. A currency board exchanges its notes

and coins for an external reserve asset and vice versa at a fixed rate. Most past currency boards have used securities denominated in a single foreign currency as their reserve asset, so I shall usually refer to the reserve asset as the reserve currency. (For instance, the U.S. dollar is the reserve currency of Hong Kong's currency board, the Exchange Fund.) A few currency boards have also held gold or baskets of foreign-currency securities as reserve assets.

A currency board may charge a small fee to cover the costs of exchange transactions, but it need not, because its interest earnings should far exceed its expenses. The currency board system allows complete convertibility of currency board notes and coins into the reserve currency. Because bank deposits are convertible into currency board notes and coins at a fixed rate (\$1 of bank deposits = \$1 of notes and coins), bank deposits are also convertible into the reserve currency. However, the currency board bears no responsibility for converting bank deposits into currency board notes and coins. Banks must keep on hand adequate reserves of currency board notes and coins to satisfy customers' demands to liquidate deposits. Unlike a central bank, a currency board does not act as a lender of last resort to banks.

The currency board is typically not the only holder of reserve currency in a currency board system. Banks also hold

reserve currency. Persons who wish to convert deposits of domestic currency into foreign currency can do so directly, by exchanging domestic currency deposits for foreign currency with their bank, or indirectly, by cashing in the deposits for currency board notes and exchanging the notes for foreign currency at the board.

Reserves: A currency board holds external assets equal to at least 100 percent<sup>1</sup> of the board's notes and coins in circulation. The assets may be commodities (which are external in the sense that the financial system does not make them), actual foreign currency, or, far more commonly, securities issued abroad and denominated in the reserve currency.

External assets of 100 percent ensure that even if all holders of notes and coins want to convert into the reserve currency, the currency board will be able to do so. (Chapters 2 and 3 discuss the origins of the requirement for 100 percent external assets.) A currency board holds a portion of its reserves in extremely liquid form, such as bank deposits in the reserve-currency country, top-grade short-term securities, and perhaps even some reserve-currency notes. If conditions

---

<sup>1</sup> In theory, any fixed, binding reserve ratio will have proportional effects similar to those of the 100 percent reserve requirement. In practice, political pressure often tends to make a fixed ratio of less than 100 percent degenerate to near-zero reserves, leading to devaluation of the currency.

permit, it may also hold some reserves in less liquid but higher-yielding forms, such as long-term securities. In addition to their 100 percent reserve against notes and coins in circulation, past currency boards have usually accumulated from profits an additional reserve of 5 to 10 percent to provide for a margin of protection should their less liquid investments lose value. Chapter 9 assesses the success of currency boards in maintaining sufficient liquidity to meet all demands for convertibility.

Seigniorage: Unlike securities or most bank deposits, notes and coins do not pay interest; hence they yield seigniorage to the issuer. Seigniorage can be considered as a stock or as a flow. To understand it as a stock, consider the notes and coins that people hold. The issuer has made a profit equal to the value of the notes and coins, because it has spent that amount into circulation without losing reserves, acquiring goods from others while sacrificing nothing itself. The flow revenue from seigniorage, on the other hand, equals the nominal interest rate. (For the sake of clarity, I have assumed that the expense of putting the notes and coins into circulation is zero.) When discounted appropriately, flow revenue from seigniorage has a present-value equivalent in stock revenue. Chapters 7 and 9 discuss seigniorage in more detail.

Having a currency board instead of using foreign currency

retains the profits of note and coin issue at home instead of exporting them to a foreign country. However, the fixed exchange rate that a currency board maintains with the reserve currency means that in other respects, people are using a currency that is as sound (or possibly as unsound) as the reserve currency. The net income a currency board receives depends on the interest it receives on its assets and on its expenses. Historically, nominal interest rates have ranged from 3 percent to as much as 15 percent a year, depending on the inflation rate of the reserve currency. Currency boards have generally had expenses of 1/2 to 1 percent of assets a year.

The currency board system also has the advantage over direct use of a foreign currency (dollarization) that it satisfies nationalistic sentiment for a locally issued currency.

Inflation and interest rates: Given the fixed exchange rate between the currency board currency and the reserve currency, if trade barriers are low, changes in the prices of tradable goods should be close to those occurring in the reserve currency country. However, consumer price indexes need not move in parallel, because they include nontradable goods, whose prices may diverge in the two countries. (Chapter 8 discusses the experience of Hong Kong in this regard.) Interest rates should be roughly the same in the two

countries, in the absence of political risk and barriers to movement of funds between them.

Monetary policy: By design, a currency board has no discretionary power. Its monetary policy is completely automatic, consisting only in exchanging its notes and coins for the reserve currency at a fixed rate. Since a currency board's role is strictly circumscribed, it can be more insulated from politics than a central bank is. Not all currency boards have been completely insulated, though.

\* \* \* \*

The foregoing characteristics apply to what one might call modern orthodox currency boards. There have also been a number of unorthodox currency boards, which have had somewhat different characteristics. The features of the modern orthodox currency board did not become well established until 1913, 64 years after the first currency board was established. Currency boards established before then differed from later orthodox boards most notably in the type of external assets they held. Chapters 3 and 5 explain the practices of the early currency boards. Several modern currency boards have also deviated from orthodox practice, mainly because their governments have wished to give them limited power to engage in discretionary monetary policy. The currency board system of Singapore at present is of the unorthodox type; Chapter 8 examines its history and workings.

Money supply in a currency board system works similarly to money supply under a gold standard or a gold-exchange standard in which the central bank does not sterilize reserves. If that seems a vague formulation, it is intentionally so. Not until the late 1940s and the 1950s did economists inquire into the workings of money supply in a currency board system; by then, currency boards had existed for a century. The theory of currency boards lagged well behind the practice. Chapter 7 discusses the debates of the 1940s and 1950s, but in the meantime it may be helpful to give examples of ways that the money supply can increase or decrease under a currency board system. Suppose that a British manufacturer has a factory in Gibraltar (a currency board territory), and that the manufacturer pays factory wages in cash. To do so, it deposits sterling notes with a bank in Britain. The bank deposits the sterling with the Gibraltar currency board. The currency board gives the bank Gibraltar £1 for every £1 sterling, because that is the fixed rate at which it exchanges Gibraltar notes and coins for the reserve currency, sterling. The factory in Gibraltar then pays wages by withdrawing Gibraltar pounds from the Gibraltar branch of the bank. Gibraltar's money supply increases by the amount of the wage payments.

The process can also work in reverse. Suppose a resident of Gibraltar wishes to make a cash downpayment on a house in

Britain. He takes Gibraltar pound notes from under his mattress and visits a local bank. The bank exchanges the notes at the Gibraltar currency board for an equivalent number of sterling notes. The resident of Gibraltar uses the sterling notes to make the downpayment on the house. Gibraltar's money supply falls by the amount of the downpayment on the house.

The examples just given were the simplest case: exchanges of notes for notes. If the Gibraltar factory workers wish to deposit with local banks some of the notes the workers have been paid, the banks' reserves increase. Currency board notes count as reserves for banks in a currency board system just as central bank notes do in a central banking system. The banks' increased reserves may become the basis for a multiple expansion of bank credit of the type familiar from elementary textbooks in money and banking. On the other hand, if the resident of Gibraltar makes the downpayment on the house in Britain not by exchanging notes he has kept under his mattress, but by converting a Gibraltar pound deposit to a sterling deposit, the Gibraltar banking system loses reserves and a multiple contraction of bank credit may occur. Changes of the Gibraltar public's desired holdings of notes relative to coins can also affect bank reserves, causing multiple expansions or contractions of banks credit, even if no foreign-exchange transactions occur. Chapter 9 discusses

whether such shifts have been troublesome for currency boards.

What a currency board is not

A currency board resembles but is not the same as some other types of monetary systems with fixed exchange rates, and it is important to understand the differences.

The currency board system as usually practiced has been a type of gold-exchange or foreign-exchange standard. Under a gold standard a banking system holds all reserves in gold. Under a gold-exchange standard a banking system holds gold securities and bank deposits payable in foreign gold-standard countries as substitutes for gold itself. Gold-exchange assets earn interest, whereas gold itself does not. A foreign-exchange standard is similar to a gold-exchange standard except that the reserve currency need have no fixed exchange rate with gold or another commodity.

Some countries have achieved a gold-exchange or foreign-exchange standard by means of currency boards. Other countries have achieved it by means of central banks or competitive note-issuing banks, which unlike currency boards have not been required to hold 100 percent reserves in external assets against both note circulation and deposits. Hence it is important to distinguish carefully among ways of achieving a gold-exchange or foreign-exchange standard.

A currency board is not a central bank. The essential

difference between the two is that a currency board maintains a fixed proportion of reserves in foreign assets, whereas a central bank does not. The power to vary the ratio of external assets to domestic liabilities enables a central bank to engage in discretionary sterilization of the reserves of commercial banks. This is the antithesis of a currency board's monetary policy. Many central banks have been required to hold a certain minimum ratio of gold or external assets to their note issue or to total assets. For instance, the central banks that issue the CFA franc are required to hold French franc assets equal to at least 20 percent of their total liabilities (Neurrisse 1987, p. 150). Unlike currency boards, however, these central banks have no upper bound on their reserve ratio, or at least have a wide band where they may vary the reserve ratio at their pleasure. They may hold 25 percent, 50 percent, 100 percent, or even 200 percent reserves in external assets.<sup>2</sup>

A so-called currency board and a so-called central bank may exist alongside one another, as they did for a time in Malaysia (see Chapter 8), but either the central bank will have no effective powers or the currency board will be an

---

<sup>2</sup> The government of a currency board system may affect bank reserves by setting reserve requirements. In currency board systems that have had reserve requirements, the ministry of finance rather than the currency board itself has usually been responsible for setting them (see Chapters 7 and 8).

adjunct of the central bank's policy. One must pay attention to the characteristics of the monetary institutions rather than to what they are called.

An orthodox currency board system is a regime of fixed exchange rates, not pegged rates. The exchange rate with the reserve currency is fixed permanently, at least if the reserve currency does not become terribly unstable. The formal or informal constitution of the currency board enables it to make a binding commitment to a fixed exchange rate.

For reasons that I have already explained, an orthodox currency board is not a lender of last resort to commercial banks, unlike a central bank. The government may provide lender of last resort facilities through deposit insurance, but most currency board countries have not done so. Instead, banks in currency board systems developed other methods to remain liquid during financial crises, as Chapter 9 explains.

Few currency board countries have imposed legal reserve requirements against commercial bank deposits. The currency board system therefore is not like the "Chicago Plan" of the 1930s, which would have required banks to hold 100 percent reserves in government bonds (advocated by Henry Simons [1934] and Irving Fisher [1935]), nor is it like proposals for 100 percent gold reserve banking (advocated by Murray Rothbard [1962]).

Finally, a currency board is not a gold or silver

certificate system such as existed in the United States, Mexico and elsewhere earlier in this century. Under many gold or silver certificate systems, governments have held 100 percent reserves in gold or silver against certificates in circulation. Under other such systems, governments have held variable minimum reserves of less than 100 percent in gold or silver and invested the remainder in domestic assets, typically government bonds. Neither type of system is an orthodox currency board. An orthodox currency board holds its reserves in external, interest-earning assets. A certificate system holding 100 percent gold or silver earns no interest. A certificate system that varies its holdings of domestic assets, on the other hand, can sterilize the reserves of the banking system as a whole by varying its holdings of domestic assets, whereas an orthodox currency board cannot because it holds no domestic assets.

#### The currency board system

The currency board is only a part of the monetary system in any country that has banks and other financial institutions. The currency board is an important part; it "determines" what the monetary standard shall be, by way of the forced tender that governments have usually given to currency board notes and the one-to-one convertibility of bank deposits into currency board notes. However, we must not

neglect the other monetary institutions that comprise the currency board system.

It has been characteristic of currency board systems to allow freedom of entry by foreign banks. Because most currency board systems have lacked lenders of last resort, the diversification of risk that branch networks make possible has been the main source of stability in the banking system. The most prominent banks in currency board systems have been international banks with extensive branch networks, including branches in the reserve-currency country to enable them to tap its money markets readily. Other aspects of the banking business have also generally been little regulated in currency board systems. Usury laws, where they have existed, have often been evaded by means of compensating balances and other tricks.

Another characteristic of currency board systems has been freedom of capital movements. A currency board stands ready to convert all its own currency into reserve currency on demand at the fixed exchange rate. It also stands ready to accept unlimited amounts of reserve currency for conversion into its currency. The currency board system is thus incompatible with capital controls on exchanges with the reserve currency. Capital controls may however exist for the reserve currency, imposed by the government of the reserve-currency country. Britain imposed capital controls from 1939

to 1979. In currency board systems tied to sterling, capital movements with countries outside the "sterling area" were not as free as they would have been had the reserve currency been the U.S. dollar. But a currency board does not concern itself with convertibility into third currencies, only with convertibility into the reserve currency.

Government budgets in currency board systems have historically been balanced or slightly in surplus, on average. In theory, a government can run persistent budget deficits under the currency board system if it can keep borrowing to finance deficits. In practice, lenders are unwilling to allow government budget deficits to persist forever. The currency board system enforces a hard budget constraint on the domestic government just as the use of a foreign currency would. A currency board cannot be an independent source of inflationary finance, although it may transmit inflationary or deflationary pressures from the reserve-currency country.

#### Relation of this dissertation to existing literature

Until the recent flurry of interest in the currency board system as a possible monetary system for Eastern Europe and the Third World, little on the currency board system had been published since the early 1960s. The chief published writings on currency boards between the early 1960s and 1990 are a 1987 article in the New Palgrave Dictionary of Economics by Alan

Walters and series of articles written since 1977 by John Greenwood, a former student of Walters, in the Asian Monetary Monitor, a Hong Kong business publication (see Bibliography). Greenwood discusses both the theory of the currency board system and how the system has worked in Hong Kong. Chiefly because of Greenwood's advocacy of the currency board system, Hong Kong returned to the currency board system in 1983 after having abandoned it for nearly a decade. Chapter 8 discusses the Hong Kong currency board system further.

A number of articles on theoretical aspects of the currency board system appeared in the 1950s, mainly in the Economic Journal. Some articles also appeared in the Malayan Economic Review and were later reprinted in Drake (1966). Three books on the history and workings of currency boards also appeared in the 1950s: Ida Greaves's (1953a) survey of British colonial currency boards, which concentrated on those in Africa and the Caribbean; Walter Newlyn and David Rowan's (1954) study of British African currency boards; and Frank King's (1957) study of the Malayan and Hong Kong currency boards. Gerard Clauson (1944), Sydney Caine (1948-9), and H. A. Shannon (1951, 1952) surveyed the history of the British colonial currency boards then existing.

A few dissertations on the currency board system have been written in recent years. The best are those by William Evan Nelson (1984) and Chwee-Huay Ow (1985). Nelson studied

the currency board system in Singapore circa 1900. He also found much interesting evidence on how the currency board system had originated a half-century before. Ow investigated how the currency board system has worked recently in Singapore and Hong Kong. She also developed a quite elaborate mathematical model of the currency board system, which I discuss in Chapter 7. Wadan Lal Narsey's (1986) dissertation used the dependency theory of colonialism to analyze the currency board system of Fiji. Narsey relied on a variant of Marxist analysis that now has scant appeal.

Despite the historical importance of the currency board system, there has been little scholarly investigation of its general historical features. If we want to be able to judge its performance comprehensively, it is essential that we know where and when currency boards existed and how they performed. As yet there is not even a list of the places and dates that currency boards have existed. The survey articles that I mentioned above discuss most but not all of the British colonial currency boards, and there has never been a survey of non-British currency boards. Among the places outside the British Empire that had currency boards were Argentina, the Philippines, and Russia. The Appendix gives the first comprehensive list ever of currency board episodes.

Before examining the history of currency boards, it is natural to ask what the guiding ideas behind the currency

board system were. In particular, the term "currency board" suggests a possible connection with the British Currency School. A connection does exist, though it is more tenuous than one might have suspected.

## CHAPTER 2. INTELLECTUAL ORIGINS OF THE CURRENCY BOARD SYSTEM

In the early days of the currency board system, the alternative to a currency board was not a central bank, but competitive issue of notes by commercial banks (free banking). Early currency boards came into existence out of concern for the safety of note issue. The justification for monopolizing note issue in a currency board came from the practice of Britain, which enshrined the principle of monopoly issue in the Bank Charter Act of 1844.

The British Currency School

Like many other nations (Schuler 1992), Britain had free banking in the eighteenth and early nineteenth centuries. Banks competed with each other in issuing bank notes as they now do in issuing traveller's checks. They also competed for deposits as they do now. British law severely restricted some forms of banking competition, though. In return for making loans to the government, the privately owned Bank of England was from 1708 to 1826 the only note-issuing bank in England and Wales allowed to have more than six stockholders, and until 1858 the only bank in England and Wales allowed limited shareholder liability. The Bank of Ireland had similar privileges in Ireland. The two banks' privileges and their roles as the custodians of government deposits enabled them

to dominate their respective banking systems. In Scotland, on the other hand, no such restrictions existed after the Bank of Scotland lost its monopoly in 1716, and many branch banks with hundreds of stockholders competed with each other. (Scottish, Irish, and English/Welsh banks could not establish note-issuing branches in one another's regions.) (White 1984, pp. 58-60.)

British economists vigorously debated the desirability of banking regulation almost continuously from 1797 to 1844. British banks suspended convertibility of their notes and deposits into gold during war with France in 1797, and did not resume convertibility at the old exchange rate until 1821. Debate arose whether the Bank of England or its smaller rivals (the "country banks") were to blame for the suspension. This debate was mixed with another, concerning whether note issue should be competitive, a monopoly of the Bank of England and the Bank of Ireland, or a government monopoly.

David Ricardo advocated that note issue be a government monopoly rather than a monopoly of the Bank of England, or, if note issue was competitive, that it should be strictly regulated. The idea that note issues should be backed by securities may be glimpsed in Ricardo's 1816 pamphlet Proposals for an Economical and Secure Currency. He wrote that "Against this inconvenience [of failure] the public should be protected by requiring of every country bank to

deposit with government, or with commissioners appointed for that purpose, funded property or other government security, in some proportion to the amount of their issues" (Ricardo 1951, v. 4, p. 73). Ricardo also suggested that in 1833, when the Bank of England's charter was to be renewed, the Bank of England and the country banks should lose the right to issue notes. He claimed that "seignorage in all countries belongs to the state" (p. 114). He briefly reiterated the idea of government monopoly note issue the following year, in Principles of Political Economy (Ricardo 1951, v. 1, pp. 361-3).

Ricardo's Plan for a National Bank, posthumously published in 1824, was his most detailed exposition of a scheme for monopoly note issue by the government. The scheme resembled a currency board in some respects. Ricardo proposed that the National Bank be governed by five commissioners appointed by the government, but not removable from office except by Parliament. Part of the National Bank's reserves were to consist of gold. The National Bank would be required to redeem its notes for gold on demand. Unlike an orthodox currency board, the National Bank would have been allowed to hold the non-gold portion of its reserves in a domestic asset, British government securities. Also, the National Bank would have taken government deposits, against which Ricardo would have required no fixed ratio of external assets. Ricardo

stated that currency issue and deposit taking "have no necessary connection with each other" and that "they might be carried on by two separate bodies, without the slightest loss of advantage" (Ricardo 1951, v. 4, p. 276).

The English banking system suffered financial crises in 1825-6, 1836-7, and 1839, prompting controversy on the proper principles for determining currency issue. One important group of thinkers advocated the "currency principle," from which it came to be called the Currency School. Thomas Joplin enunciated a form of the currency principle in Outlines of a System of Political Economy ([1823] 1970), a work that received little attention at the time (Hayek 1991, p. 220). James Pennington, a London businessman, made a greater impression with memoranda on currency regulation that he circulated among influential people in April 1826 and August 1827. According to Pennington, it was necessary to prevent banks from expanding or contracting their gold-convertible note issues in an economically damaging manner. To make government supervision easier he proposed that note issue be monopolized, but suggested that the Bank of England rather than a board of currency commissioners should enjoy the monopoly. The Bank of England was already the largest note issuer, with well over half of total British note issue. Pennington suggested that above a certain minimum, the Bank of England be required to back additional note issues 100

percent with gold. The minimum corresponded to his estimate of the amount of notes that would never return to the Bank for redemption because they were indispensable to trade (Pennington 1963, pp. 87-9). Later writers on currency boards termed this the "hard core" of circulation. The Bank would be allowed a "fiduciary issue," backed by British government securities rather than gold,<sup>3</sup> equal to the hard core of circulation.

Shortly after Pennington wrote his memoranda, the Bank of England was devising its own canon of note issue, apparently independently. John Horsley Palmer, the Governor of the Bank, first explained it to a Parliamentary committee in 1832, whence it came to be called the Palmer rule. According to Palmer, the Bank had determined that in equilibrium, just before exchange rates began to drain its gold and silver reserves, reserves should be about one-third of note circulation plus deposits. After exchange rates turned, the Bank should generally make sure that subsequent changes in note circulation plus deposits equalled changes in its gold reserves. The Palmer rule differed from Pennington's proposed rule by subjecting both notes and deposits, rather

---

<sup>3</sup> I have simplified the account in this chapter by referring only to gold. Actually, the Bank of England was also permitted to hold silver equal to a maximum of 25 percent of its gold reserves, both before and after the Bank Charter Act of 1844.

than notes alone, to a 100 percent reserve requirement beyond the hard core of circulation (Fetter 1965, pp. 130-3).

To return to the Currency School, its doctrine had two main propositions. One was that note issue did not respond quickly to gold flows. Hence banks would continue for a time to expand credit after a deficit occurred in the balance of trade (current account), worsening the inevitable credit crunch. The Currency School considered a monetary system that had only gold coins and deposits, and no notes, as ideally responsive to gold flows. However, it was willing to allow notes because, being cheaper to make than gold coins, notes freed resources for productive use elsewhere. The Currency School was willing to forego reserve requirements against the hard core of circulation to avoid needlessly accumulating gold that would never be used. For circulation beyond the hard core the Currency School wanted the note issue to behave as a pure gold-coin system would; therefore it proposed a 100 gold reserve requirement for all notes issued beyond the hard core.

The other main proposition of Currency School doctrine was that regulating note issue was more important than regulating deposits. Accordingly, Currency School writers proposed that the note issuing and deposit taking activities of the Bank of England be separated. Some members of the Currency School, including Pennington, recognized that for an

unregulated bank, notes and deposits were interchangeable as liabilities and were claims against a common reserve. These persons seem to have believed, however, that note holders and depositors would behave differently in a panic, and that the difference justified special regulations for note issue. (Other Currency School writers thought that notes and deposits were different in kind, and that deposits therefore were not an important part of the overall money supply.) (See Robbins 1958, pp. 92-3, 101-4; Fetter 1965, p. 132; White 1984, pp. 81-2; and Mints 1943, pp. 78-80).

Writers of the so-called Banking School and Free Banking School criticized the Currency School's doctrines and opposed its prescriptions for banking policy. They held that competitive note issue was self-regulating. The Banking School thought that monopolizing note issue in the Bank of England would reduce losses to note holders from bank failures, but that it would make no difference to the banking system's responsiveness to gold flows, which according to it was rapid under any arrangement. The Free Banking School disagreed; it held that the privileges enjoyed by the Bank of England were responsible for many of the defects of the English banking system, and that giving the Bank a monopoly of note issue would make matters worse. According to it, country banks were ideally responsive to gold flows, but a privileged note issuer such as the Bank of England was not.

(The Free Banking School had a different interpretation than the Currency School of what constituted ideal responsiveness.) The Free Banking School favored unrestricted competitive note issue. It claimed that competition would regulate note issue better than monopoly would, though George Poulett Scrope and Henry Parnell, two of its prominent members, were willing to require banks to deposit government bonds or other security against note issues. As evidence of the virtues of competition, the Free Banking School cited the excellent performance of the little-regulated Scottish banking system.

The Banking School and the Free Banking School both stressed the similarity of notes and deposits as bank liabilities and as components of the overall money supply. According to them, it was inconsistent to regulate notes but not deposits. Both deposits and notes were evidences of credit and means of payment. If, as the Currency School agreed, deposits should be unregulated, then so should notes (White 1984, pp. 81-4, 87-103; Schwartz 1987).

#### Note issue monopoly and the British Bank Acts of 1844-5

The Currency School's desire to make note issue a regulated monopoly fit neatly with the Bank of England's desire to reduce competition from new rivals. Large note-issuing branch banks arose in England after an 1826 reform allowed them to have more than six stockholders, although the

reform also granted the Bank of England a legal monopoly of note issue in the London region, perpetuating its longstanding informal monopoly. The new banks challenged the Bank of England's predominance by reducing its share of note circulation outside London.

The prime minister, Sir Robert Peel, was a supporter of Currency School doctrine, and his government passed it into law with the Bank Charter Act of 1844 (7 & 8 Vict., c. 32<sup>4</sup>). The Governor and Deputy Governor of the Bank of England drafted the Act (Clapham 1945, v. 2, pp. 178-9; Gash 1986, pp. 433-8). The Act forbade new English and Welsh country banks from issuing notes, and forbade existing banks from increasing their note circulation beyond their recent average circulation. Banks that amalgamated to form companies with more than six stockholders, or that established branches in the London region, had to relinquish the right of note issue to the Bank of England. By 1921, no English or Welsh note-issuing banks remained. The Act also split the Bank of England into a note-issuing Issue Department and a deposit-taking Banking Department. The Issue Department was allowed a fiduciary issue (against which no legal reserve requirement

---

<sup>4</sup> This is a common style of reference to laws passed in the British Empire. For example, "7 & 8 Vict., c. 32" indicates that the law was the thirty-second to be passed in the session of Parliament that sat during the seventh and eighth years of the reign of Queen Victoria.

existed) of £14 million. Beyond that hard core of circulation, the Issue Department was required to hold 100 percent gold reserves. Should any country bank cease issuing notes, the hard core of circulation for the Bank of England was to increase by two-thirds of the maximum issue previously permitted to the country bank. The Banking Department was to handle all other business of the Bank of England; it faced no restrictions on its activities except that it could not issue notes. (See Horsefield [(1944) 1953] on the origins of the various clauses of the Bank Charter Act. The fiduciary issue permitted to the Bank of England was approximately two-thirds of its total note circulation, thus conforming to the Palmer Rule.)

The Bank Notes (Scotland) Act of 1845 (8 & 9 Vict., c. 38) forbade new Scottish banks from issuing notes, and forbade existing Scottish banks from issuing notes in excess of their recent average circulation unless they backed the excess 100 percent with gold. The Bankers (Ireland) Act of 1845 (8 & 9 Vict., c. 37) imposed note issue requirements on the Bank of Ireland similar to those on the Bank of England, but also abolished the Bank of Ireland's monopoly of note issue in the Dublin region. The act imposed restrictions on other Irish banks like those imposed on Scottish banks. (Scottish and Irish banks were later allowed to hold Bank of England notes and deposits as well as gold as backing for their excess note

issues.) Today three Scottish and several Northern Irish banks still issue notes, but their total fiduciary issue is merely £4.3 million of their total note issue of over £1.5 billion; furthermore, they are forbidden from issuing notes over £5, so they do not really compete against the Bank of England in note issue.

The Bank Charter Act of 1844 did not institute a currency board system, despite its requirement that the Issue Department of the Bank of England hold 100 percent gold and silver reserves against note issues in excess of the hard core of circulation. The Banking Department faced no legal reserve requirement, so the Bank as a whole could sterilize inflows and outflows of gold into the banking system. It could alter the Issue Department's fiduciary issue between zero and £14 million (which was rarely done) or alter the Banking Department's ratio of reserves<sup>5</sup> to deposits. The note issue monopoly of the Bank of England caused the gold reserves of the whole banking system to become concentrated in the Bank of England. From the standpoint of other British banks and of the Bank of England itself, the notes of the Issue Department and deposits at the Banking Department were equivalent.

---

<sup>5</sup> The Banking Department usually held 20 to 25 percent of its assets in the form of notes issued by the Issue Department, and a few percent in gold and silver.

The Bank of England would have been a currency board if the Banking Department had been required to obey a reserve requirement like that imposed on the Issue Department, and if it had in addition always kept the fiduciary issue at the legal maximum. Alternatively, the Bank would have been a currency board if Banking Department had been an entirely separate entity that could have gone bankrupt independently of the Issue Department; in that case, deposits with the Banking Department would not have been fully equivalent to notes of the Issue Department as liabilities of the Bank. As matters stood, the Banking Department was subject to no reserve requirement and was not really independent of the Issue Department. Hence the Bank of England after 1844 was not a currency board, but a central bank with restrictions on note issue. The same is true of central banks established in Germany and other nations that later imitated the Bank Charter Act.

The new system gave the Bank of England a new relation to other British banks of which it at first was only dimly aware. In financial crises of 1847, 1857, and 1866, the Bank of England avoided suspending gold convertibility only because the government temporarily waived the 100 percent marginal reserve requirement imposed on the Issue Department by the Bank Charter Act. (During the crises people demanded gold not so much for export as for converting country bank deposits

into gold and silver coins. Neither the Bank of England nor other banks, except those of Scotland, were permitted to issue notes for less than £5, which could have served as substitutes for coins.) It became obvious that the Currency School's focus on bank note issue to the exclusion of deposits had been wrong. By the late 1850s, economists and the general public came to recognize that notes and deposits issued by the same bank were equivalent liabilities, as the Banking and Free Banking Schools had claimed (Smith [1936] 1990, ch. 7, p. 89; Mints 1945, p. 179). Notes and deposits differed merely in the type of payments for which it was convenient to use them.

Despite this repudiation of a key point in Currency School doctrine, there was little thought of repealing the Bank Charter Act. Instead, Walter Bagehot proposed that the Bank of England should act as a lender of last resort to commercial banks. The Bank accepted the doctrine of the lender of last resort by 1890, when the Baring Brothers crisis occurred. As Bagehot ([1873] 1912, ch. 2, pp. 66-74) admitted, competitive note issue and its implication of "a natural or many-reserve system of banking" would have prevented the crises of 1847, 1857, and 1866. But Bagehot claimed that competitive note issue was politically impossible. Because Britain was the nation where economic theory and the economy itself were most developed at the time, British practice had great influence on other independent

nations, many of which established their own central banks in imitation of the Bank of England (Smith [1936] 1990, ch. 4-11).

After monopoly of note issue became entrenched in Britain, people gave little thought to what rationale existed for it now that important elements of the doctrine of the Currency School had been discredited. In the 1920s the idea became widespread that a central bank could smooth business cycles by means of countercyclical credit policy, and that a monopoly of note issue was an important tool to help it do so. Until then, the only serious economic argument for monopoly issue was that it was less likely than competitive issue to inflict losses on note holders. There was also a legal argument that seigniorage from note issue belonged to the state. By the 1870s, most prominent economists seem to have believed that note issue was properly a government-regulated monopoly. For instance, William Stanley Jevons contended that "it is no function of a banker to issue promissory notes, and a great many banks exist in England without any power of issue....[T]here will occur periods when a pressure for payment of notes will be made. Experience abundantly shows that a certain number of individuals will calculate too confidently on their good fortune, and fail to carry out their promises and intentions when the critical time arrives" (Jevons [1875] 1889, ch. 18, pp. 230-1; see also ch. 24, pp.

311-24; Mill [1871] 1909, ch. 24 pp. 674-9; Smith [1936] 1990, ch. 8-10, pp. 113, 128-31, 132-44). Jevons (ch. 26, pp. 341-2) also declared that "each kingdom should have one uniform paper circulation, issued from a single state department, more resembling a mint than a bank....the paper circulation should be made to increase and diminish with the amount of gold deposited in exchange for it. At the same time, no thought need be given about the amount so issued. The purpose...is not to govern the amount, but to leave that amount to vary according to the natural laws of supply and demand."

The direct effect of the doctrines of the Currency School on early British colonial currency boards was weak. Only in New Zealand was a currency board established with explicit reference to the doctrines of the Currency School. However, the Currency School had an important indirect effect on colonial monetary systems by establishing a predisposition against competitive note issue, which remained after many of its other prescriptions were ignored. The predisposition against competitive note issue combined with other motives, which I shall discuss in the next two chapters, to lead many British colonies to establish currency boards.

The currency board system might never have become widespread had the Free Banking School won the British monetary debates of the early nineteenth century. Had competitive issue of notes been allowed to continue, it might

not be any more controversial today than competitive issue of traveler's checks. But the principle of monopoly note issue triumphed, and all but a few currency boards have operated as monopolies. Monopoly issue and the one-to-one convertibility of bank deposits into currency board notes made currency boards in effect the arbiters of the monetary standard in places that established boards.

## CHAPTER 3. EARLY BRITISH COLONIAL CURRENCY BOARDS

The currency board system originated in and was most widespread in British colonies. (For a list of currency boards, see the Appendix.) New Zealand passed currency board legislation in 1847, but did not establish a currency board until 1850. The first currency board to open was that of the Indian Ocean island of Mauritius. Later in the nineteenth century and in the early twentieth century the currency board system spread to a number of other colonies. The British colonial currency board system gained its classic expression in the West African Currency Board, which opened in 1913. Later British colonial boards were patterned on the West African board, and older British colonial boards were remade in its image. British colonial currency boards established before the West African board were more diverse in their operating procedures than those established afterwards. This chapter discusses the early boards; Chapter 4 discusses the later boards.

Colonial note issue before currency boards

Issue of legal tender notes by British colonial governments predated currency boards: in the eighteenth and early nineteenth centuries a number of colonies issued legal tender notes, including Sierra Leone, Jamaica, Ceylon, and the

Falkland Islands (Cox-George 1964, p. 97; Chalmers 1893, pp. 114, 148). Note issues by colonial governments often began as expedients to meet temporary deficits in government budgets. Initially they were often convertible at fixed rates into gold, silver, or sterling. Frequently, though, they became depreciated forced tender, financing persistent budget deficits by inflationary means. That led the British government to suppress most note issues by colonial governments.

In the middle and late nineteenth century, most British colonies except those in East and West Africa had note issue by competing privately owned banks, with little or no government regulation of the banking system (Schuler 1992). Self-governing colonies such as Canada and Australia had the power to charter local banks and pass currency legislation subject only to perfunctory review by the imperial government. Most self-governing colonies granted charters liberally. Charters granted the right to limited stockholder liability, usually liability for twice the par value of the stock. Some colonies for a time also had unincorporated banks with unlimited stockholder liability. The British government also granted imperial charters for banks that wanted to operate in more than one colony, or in nonself-governing colonies. In the 1860s, general incorporation statutes replaced legislatively granted charters as the means by which banks

secured limited liability, but in substance little changed.

British capitalists established many "imperial" banks with headquarters in London and branches in the colonies; by 1865 there were 25 imperial banks (Baster 1929, pp. 126, 266-9). Imperial banks maintain offices in Britain so long as they did not compete for purely domestic British business. They could also issue notes in the colonies in competition with each other and with locally chartered banks, subject to local licensing requirements that did not discriminate against imperial banks in favor of local banks. Neither imperial banks nor local banks were usually allowed to issue notes for less than £1 or \$5, because of the imperial government's opposition to small-denomination notes, which was consistent with British domestic banking regulations. Imperial and colonial charters granted after 1846 limited banks' maximum note issues to the amount of their paid-in capital (Chalmers 1893, p. 433). Banks with multiple note-issuing branches often allocated capital to each branch, so each branch had a maximum permitted note issue far below the limit for the bank as a whole.

Limits on bank note issues created artificial note shortages in some colonies (cases of which I discuss later in the chapter and in Chapter 8). The imperial government could have removed the limits, but economic theory and government policy of the time regarded them as necessary. Unrestricted

issue of notes by the government, on the other hand, carried the danger of inflation. Within those intellectual confines, restricted government issue of notes by means of currency boards was the solution.

Central banks did not exist in British colonies until the twentieth century. In self-governing colonies, note-issuing banks were a strong lobby that successfully resisted attempts to impose monopoly issue of notes by the government, though in some colonies legal tender government notes circulated alongside bank notes that were not legal tender. A currency board of the type I have termed unorthodox was proposed for the Province of Canada (present-day Ontario and Quebec) in 1841. The Provincial Bank of Issue, as the board was to have been called, would have monopolized note issue and would have had the power to issue up to \$4 million in notes, backed up to 75 percent by securities issued by the provincial government and the rest in gold or silver. It would have done no banking business. The governor of the province, who proposed the scheme, was a follower of the Currency School. Note-issuing banks in the province joined forces to defeat the proposal (Shortt 1986, pp. 401-13).

In nonself-governing colonies the imperial government actually opposed monopoly note issue for many years after the Bank Charter Act of 1844 had imposed it in Britain. James Wilson was responsible for the anomaly. Wilson, a Banking

School theorist and founder of the Economist newspaper, became financial secretary to the British Treasury in 1852. Among his duties was to review proposed colonial legislation on banking and currency. He vigorously opposed note issue by colonial governments, and influenced the imperial government in 1855 to forbid Ceylon from continuing its government note issue (Shenoy 1941, p. 88).

#### The Mauritius currency board, 1849

Mauritius opened the first currency board well before Wilson took office. The Mauritius board sprang from practical concerns about the adequacy of assets backing note issues. Mauritius apparently paid no attention to British monetary theory controversies of preceding years.

The British financial crisis of 1847 caused a fall in the price of sugar, a main export crop for Mauritius. The Mauritius Bank, a locally chartered note-issuing bank that had raised most of its capital in Britain, failed on August 27, 1848. It tried to raise further capital from its stockholders but could not, and went into liquidation on February 25, 1848. The other bank on the island, the locally chartered Mauritius Commercial Bank, saw its notes trade at a discount to silver coin like those of the Mauritius Bank. However, it did not suspend convertibility and did not fail. In response to the failure of the Mauritius Bank, the government of the colony

considered establishing its own commercial bank, but decided instead to monopolize note issue and open a savings bank. In a letter of March 22, 1848, the Mauritius Commercial Bank indicated that it was willing to relinquish its right of note issue (Mauritius Commercial Bank Limited 1963, p. 10). The government compensated the bank by lending it money cheaply; later the government did the same for other banks with branches in Mauritius that were allowed to issue notes elsewhere (Nelson 1984, p. 146).

Under Ordinance No. 9 of 1849, the government appointed three commissioners to operate a Government Currency Board. The board issued legal tender 5- and 10-rupee notes redeemable on demand in Indian silver rupee coins. (The Indian rupee was in widespread use in territories bordering the Indian Ocean, and it remained the dominant currency in some Arabian Peninsula states as late as the 1960s.) The currency board was required to hold at least one-third, and ideally one-half, of its reserves in coin. It could hold the rest in securities. When the coin reserve was between one-third and one-half of the note circulation, the currency board could let the reserve run down; when the coin reserve fell to one-third of the note circulation, the board had to sell securities to increase the reserve ratio to one-half. At first the board held local securities only, but it soon began investing in British securities, which were more stable than local

securities during economic slumps. The total reserve of coin and securities was required to be equal to the board's note circulation. The board used as its agent the Mauritius Commercial Bank in Port Louis, the capital.

The imperially chartered Oriental Bank Corporation asked to issue notes in Mauritius. In 1858 its request prompted an imperial inquiry into the Mauritius currency board. James Wilson wrote a memorandum arguing that there was no place for note issue by a colonial government, but he hurt his case by claiming that the Mauritius currency board was suffering losses. In fact, the board was profitable: its income from securities of £3,000 to £4,000 a year was more than enough to finance its expenses. The Colonial Office rejected Wilson's advice, the Oriental Bank Corporation was not allowed to issue notes in Mauritius, and the currency board remained intact. The only change the Mauritius government made in response to the imperial inquiry was to limit the board's maximum holdings of local securities to one-half of its total holdings of securities, by Ordinance No. 10 of 1864. Ordinance No. 19 of 1865 provided that the board should set aside from profits 1 percent of circulation each year to build up a Depreciation Fund until the fund reached an adequate amount (perhaps 10 percent of note circulation). The Depreciation Fund was to be a safeguard against a drop in the value of the securities that the board held (Chalmers 1893, p. 367, 369; Nelson 1984,

pp. 141-51). By 1865 the Mauritius currency board had all the features that came to characterize most boards founded before the West African Currency Board (which opened in 1913).

Like other silver-standard territories in the late nineteenth century, Mauritius had trouble deciding whether to switch to the gold standard. Most other territories around the Indian Ocean were on the silver standard, but Britain, Mauritius's single largest trading partner, was on the gold standard. The dilemma had been present from the beginning in the redemption arrangements of the currency board. Technically, the board was supposed to pay out not Indian silver rupees, but British silver coins. Furthermore, imperial coinage regulations stated that British silver was legal tender in the British Empire only for amounts up to £2, so the board should have paid gold coin for amounts over £2. However, rupees were more useful in trade, so at first nobody minded being paid rupees. A local law fixed the value of the rupee at 1s. 10d. sterling, whereas its market value was 2s. British silver shillings, whose legal value was closer to their value as metal, began to drive rupees out of circulation. In 1860 the currency commission began issuing shilling notes to replace rupee notes. In 1867 some persons redeemed notes for gold because they wished to export the gold to India, where it commanded a higher price than in Mauritius. The ambiguity of the monetary standard exposed the currency

board to risks from fluctuations in the exchange rate of gold against silver. The bulk of the circulation consisted of 5s., 10s., and £1 notes, which the currency board was permitted to redeem in silver alone if it wished. Banks held £5 notes as reserves but refrained from redeeming them for gold for fear of causing a financial panic.

After 1870, silver began to depreciate against gold. Mauritius decided to declare that it would unambiguously adhere to the rupee standard (Ordinance No. 28 of 1876). An Order in Council of August 12, 1876, which took effect on January 1, 1877, provided for a local fiduciary coinage to replace the full-bodied British and Indian coins that had hitherto circulated on the island.<sup>6</sup> During and after World War I, the gold price of silver rose sharply, and the government forbade the export of silver coins. It appointed commissions in 1920 and 1925 to consider whether Mauritius should adopt the sterling standard. Fluctuations in the gold price of silver continued to be large. By an ordinance of March 29, 1934 Mauritius switched to the sterling exchange standard, fixing the value of the Mauritius rupee at 15 rupees per £1 sterling. Instead of paying silver coin for its notes,

---

<sup>6</sup> A fiduciary coin contains metal worth somewhat less than the face value of the coin. A full-bodied coin contains metal equal to its face value. A token coin contains a negligible value of metal compared to its face value. India was on a sterling-exchange standard from 1899 to 1914.

the currency board now paid sterling in London, charging a commission of up to 1-3/4 percent (later reduced to 1/2 percent). The Crown Agents for the Colonies, an imperial financial advisory bureau, acted as the London agent for the board. The board held all of its reserves in sterling securities, and none any longer in local securities (Chalmers 1893, pp. 367-9; Mauritius Commercial Bank, pp. 12-15, 20-1).

#### The New Zealand currency board, 1850-1856

New Zealand passed a currency board ordinance on November 25, 1847 (11 Vict., c. 16), before Mauritius. In contrast to the situation in Mauritius, the imperial government was intimately involved with establishing the New Zealand currency board. The imperial government thought that New Zealand would be a perfect colonial test case for the theories of the Currency School. At the time, New Zealand had only one large-scale issuer of notes, the Union Bank of Australia, although some private persons issued notes also. Furthermore, New Zealand was a nonself-governing colony, in which the governor could implement laws without broad popular support. The New Zealand currency board therefore was able to avoid the combined political opposition of many note-issuing banks that had defeated the proposed Canadian currency board.

The imperial government approved the New Zealand currency board ordinance with the understanding that the New Zealand

government would make certain changes to the ordinance, including a prohibition on holding New Zealand securities. Unlike the Mauritius currency board, the New Zealand board held 100 percent external assets from the start. The ordinance was proclaimed on April 12, 1850, and on June 3 the currency board, called the Colonial Bank of Issue, opened offices in Auckland and Wellington. An ordinance of July 31, 1851 made the changes the imperial government had suggested and ordered the Union Bank of Australia to cease issuing notes by October 1, 1852. By June 1854 the currency board had £40,323 of notes in circulation. Up to that time it had lost £625 from start-up expenses for note printing and office equipment. The currency board held reserves equal to its note circulation. At least one-fourth of the reserves had to be gold and silver coin; the rest had to be British securities.

New Zealanders distrusted the currency board because they had bad memories of an earlier, inflationary issue of government notes. In 1854 the New Zealand Parliament appointed a committee to inquire whether it was desirable to retain the board; the committee recommended abolishing the board. In June 1856, by which time New Zealand had achieved self-government, the Parliament passed the Paper Currency Act, which abolished the currency board and permitted local and imperial banks to issue notes in New Zealand. The Union Bank of Australia, acting as the government's agent, began

withdrawing notes of the currency board from circulation in September. New Zealand soon had competitive note issue by banks, which persisted until it established a central bank in 1934 (Chalmers 1893, pp. 288-90; Hargreaves [1972], pp. 54-62).

#### Currency boards of the late nineteenth century

James Wilson's 1858 memorandum deprecating note issue by colonial governments influenced attitudes at the British Treasury into the 1880s (Nelson 1984, p. 174). Curiously, though, in a memorandum of 1859 Wilson recommended that India deprive banks of their right to issue notes and establish a government monopoly of note issue (Great Britain, Parliament, 1860). Wilson by then had been appointed India's finance minister. His earlier writings suggest that his opposition to monopoly issue of notes by government was not always as strong as it had been in the case of Mauritius. In his 1847 work Capital, Currency, and Banking, he had remarked that next to allowing competitive issue of notes by banks, the best scheme of currency regulation would be a board of currency commissioners like the Issue Department of the Bank of England, though one not connected in any way with deposit banking. (He saw the system imposed by British Bank Charter Acts as a third-best solution [Wilson 1847, pp. 285-91; 1859, pp. 197-200]). India adopted a modified version of Wilson's

scheme in 1861, shortly after he had died (Act No. 19 of 1861). It seems that Wilson's desire to raise revenue for the Indian government overcame the reservations he had earlier expressed against government note issue. The Indian government note issue replaced competitive note issue by local and imperial banks.

The Indian note issue was loosely modelled on the Issue Department of the Bank of England, with a holding of Indian government securities corresponding to the estimated hard core of circulation. However, it was not a currency board. For one thing, it was never clear whether the reserve asset was silver, gold, or sterling; the Indian government sometimes equivocated among the three standards. For another thing, the fiduciary issue was not fixed according to predictable rules; the Indian government raised it from time to time as the hard core of note circulation appeared to grow. From 1899 to 1914, however, the Indian note issue can be said to have been a quasi currency board. In 1893 the Indian government in effect switched the rupee from a silver basis to a more or less fixed exchange rate with sterling, which was then a gold-standard currency. From January 1904 to August 1914 the government usually bought and sold exchange on London at fixed rates in amounts such as the market demanded, though it was not required to do so (Keynes [1913a] 1971, pp. 4-10). India's experience was influential in other nations that switched from

the silver standard to the gold standard. Among the currency board systems influenced by India's experience were the Straits Settlements, the Philippines, Panama, and East Africa. The quasi currency board system ended at the outbreak of World War I, when Britain went off the gold standard, India went off the sterling exchange standard, and the rupee rose against sterling.

Ceylon established a currency board in consequence of the failure of the Oriental Bank Corporation on May 3, 1884. The Oriental Bank was an imperial bank with a special concentration in Ceylon, where it issued 3.42 million of the island's 4.37 million rupees of notes. It had lent heavily to the depressed coffee industry. The bank's announcement of severe losses in April 1884 caused a run on some of its branches, forcing it to close. In Ceylon its notes quickly fell to 50 percent of their face value. Ceylon's other note-issuing bank, the imperial Chartered Mercantile Bank, could legally increase its note issues sufficiently to fill only about two-thirds of the Oriental Bank Corporation's note issue. Since checks were not widely used, a shortage of the medium of exchange threatened to disrupt trade. To prevent that, on May 5 the governor of Ceylon guaranteed the Oriental Bank's notes for their face value. Confidence returned, and Oriental Bank notes circulated at only a slight discount.

At the urging of the non-note-issuing Madras Bank and

other businesses, the governor proposed a government note issue so that the government might recoup its losses and prevent future problems. The imperial government conceded reluctantly, shaking off the lingering influence of James Wilson's ideas. Ceylon's Paper Currency Ordinance (No. 32 of 1884), passed on December 10, 1884, established a currency board modelled on the Mauritius board. Three commissioners--the colony's secretary, treasurer, and auditor--supervised the board. Starting January 1, 1885, the board issued notes of 5 to 1,000 rupees redeemable in Indian silver rupees at its Colombo office. Its coin and security reserve requirements were like those of the Mauritius board, except that it could hold only Indian, British, and non-Ceylonese colonial securities.

During World War I, the board moved to a partial sterling exchange standard. It continued to hold some coin, but it offered redemption in sterling when agreeable to note holders. Ordinance No. 1 of 1917, which amended the Paper Currency Ordinance, permitted the board to accept sterling in London for conversion into its notes. For the reverse transaction, an exchange of its notes into sterling, the board charged a commission that varied according to market conditions. It held securities with the Crown Agents for the Colonies and a small sterling cash deposit with a London bank.

Ordinance No. 2 of 1861 had prohibited banks from issuing

notes in Ceylon without a government license. The license of the Chartered Mercantile Bank lapsed when the bank's imperial charter expired in 1888, and it continued as a bank of deposit only in Ceylon. The government issued no new licenses, so by 1888 the currency board had a monopoly of note issue (Chalmers 1893, p. 358; Shenoy 1941, pp. 90-4, 173-7; Gunasekera 1954, pp. 59-79, 148-54; Nelson 1984, pp. 184-90).

The failure of the Oriental Bank reversed the imperial government's attitude towards colonial note issue. In contrast to its previous attitude of caveat emptor, the imperial government began to treat an imperial bank charter as in some measure a seal of approval, entailing more extensive supervision than had previously been exercised. The imperial government was concerned that note issue should be absolutely secure. (At the time, the class of persons who used notes was far broader and poorer in most colonies than the class of persons who had bank deposits.) Instead of continuing James Wilson's advocacy of free banking in the colonies, it now supported monopoly note issue, which was more consistent with British domestic policy. Both the Bank of England and currency boards were note-issuing monopolies intended to be independent of direct political control.

Several British colonies established currency boards around the turn of the century. The most important was the board in the Straits Settlements (Singapore, Penang, and

Malacca). The Straits board, founded in 1899, was the ancestor of present-day currency boards in Singapore and Brunei. The Falkland Islands currency board, which also still exists today, was likewise established in 1899. Chapter 8 discusses both boards in more detail.

All British colonial currency boards founded before 1913 at first redeemed their notes in gold or silver coin rather than in sterling. Many kept their British securities in London in the custody of the Crown Agents for the Colonies, but apparently at first exchanged currency locally only, not in London. The first board to redeem only in sterling was the West African Currency Board, which became the prototype for later currency boards in British colonies and elsewhere. Boards in British colonies on the silver standard went through twists and turns like those of the Mauritius board until all finally had adopted the sterling exchange standard by the 1930s.

## CHAPTER 4. LATER BRITISH COLONIAL CURRENCY BOARDS

The West African Currency Board, 1913

The currency board system achieved classic expression in the West African Currency Board. The West African board was the first modern orthodox currency board as I defined the term in Chapter 1.

The motive behind the West African currency board was not a bank failure, as in Mauritius or Ceylon, or adherence to the doctrines of the Currency School, as in New Zealand; it was a desire to use currency issue as a source of seigniorage while avoiding the dangers of depreciation against sterling. (One such danger was an increase in the real burden of sterling debt.) By the first years of the twentieth century, the use of British silver coins was widespread in Britain's West African colonies (Gambia; the Gold Coast [now Ghana]; Sierra Leone; and Nigeria [originally three separate colonies]). The British gold sovereign (£1 piece) had too high a value to be useful to most Africans in trade. The same was true of £1 bank notes, which in addition were perishable because of insects and humidity. The Bank of Nigeria issued notes briefly around the turn of the century but ceased after demand proved insufficient (R. Fry 1976, p. 74). Demand for silver coins in British West Africa was high, exceeding demand within Britain itself by 1910. The imperial government

refused to share seigniorage from the coins with West African governments. At the same time, the imperial government was worried about the possibility of a sudden, massive West African demand to redeem the silver coins in gold (which was in fact quite improbable). Silver coins were legal tender only up to £2 in Britain, and the Royal Mint was not required to exchange more than £2 of silver per person for gold. No danger existed that British holders of silver coins could exhaust the Mint's gold stock. In British West Africa, though, silver coins were unlimited legal tender, and the colonies were legally entitled to redeem them in gold at the Royal Mint without limit (Hopkins 1970, pp. 104-7).

At the prompting of the governor of Lagos, one of the three Nigerian colonies, the British Colonial Secretary in 1898 proposed to the British Treasury that there be a separate West African currency or that the Royal Mint share seigniorage with West African governments. The Treasury rejected the idea of sharing seigniorage, so the Colonial Office appointed a committee to investigate the possibility of a West African currency issue. The chairman of the committee was Sir David Barbour, who had also been a member of the Indian currency reform committee of 1893 and was later to head the Straits Settlements currency reform committee of 1902. The Barbour Committee submitted its report in 1900 (Great Britain, Parliament 1900). The committee proposed retaining British

silver coins but giving half the seigniorage to West African governments and using the other half to build up a gold reserve. The Treasury rejected the committee's proposal. The economics of coinage were such that the colonies decided not to issue coins. Northern and Southern Nigeria issued some penny and 1/10 penny coins in 1908, but did so more to promote the use of money among Africans than to gain seigniorage (Newlyn and Rowan 1954, pp. 25-32; Hopkins 1970, pp. 121-2).

The price of silver was falling during the early years of the twentieth century, increasing the seigniorage from silver coins. By 1912, the gross seigniorage of British silver coins (that is, excluding minting and shipping costs) was 165 percent of the value of their silver content. The monetization of the West African economy was increasing, and there was talk of the advantages of a local note issue. In 1907 the governor of Southern Nigeria suggested that the colony had become sufficiently developed to need a local note issue by the government or banks. The Crown Agents for the Colonies in 1908 recommended a government note issue for Nigeria, preferably by Southern Nigeria, the most important colony. The Colonial Secretary scuttled the plan at the behest of the Bank of British West Africa, which saw the plan as a threat to the profits from its monopoly of importing British coins. After a new Colonial Secretary came into office, he appointed a committee to examine again the

possibility of a West African currency. The committee, chaired by Lord Emmott, Under-Secretary of State for the Colonies, met from December 1911 to February 1912; it interviewed many witnesses and presented its report to the British Parliament in October 1912 (Hopkins 1970, pp. 116-20, 127; Newlyn and Rowan 1954, p. 33; Great Britain, Parliament 1912).

The Emmott Committee recommended that the British government establish a currency board to issue silver coins and notes in British West Africa. West African governments should pay the start-up costs of the board and also back it with their full credit should its own resources ever prove insufficient. The board should keep reserves in gold and securities in London. At first, gold should be at least 75 percent of total reserves, but the proportion might be reduced as notes became generally used. The committee recommended that a low proportion of reserves be held as securities because it thought that the hard core of circulation was small. The board would exchange West African pounds (W£) for sterling, or the reverse, at a rate of one to one. It should have offices in each West African colony and headquarters in London. For exchanging West African pounds in London, it should at first charge a commission of 3/4 percent, which later should be raised to a slightly higher rate equivalent to the cost of shipping coin.

The report of the Emmott Committee was unclear on vital points. It did not say whether the currency board should be allowed to hold reserves in domestic assets. For most of the life of the West African Currency Board, however, officials interpreted the report to mean that all reserves should be held in external assets. Furthermore, the report left unclear whether the West African pound was always to be equal to the pound sterling. The committee seemingly assumed that sterling would remain convertible into gold at a constant rate, so that there would be no difference between the currency board's gold reserves and its securities except that the gold would not pay interest (Newlyn and Rowan 1954, pp. 40-3). When Britain suspended convertibility of sterling into gold at the outbreak of World War I, though, sterling fell against gold. The West African pound remained fixed to sterling rather than to the former gold parity of sterling. The West African board moved quickly towards a pure sterling-exchange standard.

As a result of the Emmott Committee report, the Secretary of State for the Colonies established the West African Currency Board. The four-member board of directors first met on November 21, and the Secretary of State for the Colonies promulgated its first constitution on December 6. The board first issued coins in West Africa towards the end of 1913. It did not open offices itself, but used the Bank of British West Africa as its agent in the colonies. Its London agent

was the London Joint Stock Bank (later merged with the Midland Bank). In 1914 the board raised its commission from 3/4 percent to 1-1/2 percent to compensate for the increase in shipping costs that World War I brought. It lowered the commission to 1/2 percent for issues in 1919 and 1/2 percent for redemptions in 1924, and never changed the commission again (Loynes 1962, pp. 16-18, 20). Initially the minimum amount that the board accepted for exchange was £100. In practice the board dealt only with banks, not the public, and it came to restrict dealings to increasingly large amounts. In 1949 it set a minimum of £10,000 (Greaves 1953a, p. 13).

Late in 1915 the price of cocoa, one of West Africa's leading exports, rose rapidly, increasing local wealth and the demand for coins. The West African Currency Board hurriedly imported British coins and notes to meet the demand. (Its own coins were also minted in Britain.) The board's constitution was amended to allow it to issue notes, and thus the board came to resemble the Emmott Committee's recommendations in all important points. The board first issued notes of WA10s. and WA£1 in June 1916; later, it also issued notes of WA1s. to WA£5. The demand for coins exhausted the board's supply, so early in 1919 the West African governments made notes legal tender (which had not previously been the case) and the Nigerian government allowed the board to defer cashing notes into coin for up to three months. Note circulation reached

WA£5.85 million in June 1920, the highest level until 1944. There were WA£6 million of West African coins in circulation at the time (Loynes 1962, pp. 17, 21-3). Small-denomination notes were unpopular with Africans, who preferred the greater durability of coins. Africans redeemed the small notes as coins became available (Newlyn and Rowan 1954, p. 55). A similar shortage of coins occurred in 1936-7, coinciding with a hitch over supplies of paper for printing notes. The board again imported British notes, and issued £1.87 million of them. It never again encountered such problems, though in 1949 it had to ship some of its own notes and coins hurriedly by plane to prevent shortages. It should be remarked that coins constituted the bulk of money in circulation in West Africa for many years, so the effects of shortages of coins were more severe than they would be today.

A sharp rise in the price of silver prompted Britain to reduce the silver content of British coins in 1920. The West African Currency Board went further, making the West African coinage a pure token coinage made of nickel brass, whose value as metal was negligible (Loynes 1962, pp. 23, 27). The board made a handsome profit by selling as bullion the silver coins that came into its possession. Currency boards had not issued pure token coins before, apparently because of fears that token coins would be easier than fiduciary coins to counterfeit.

In its early years the West African board's reserves were close to but not quite 100 percent. It gained its initial sterling reserves by exchanging its own silver coins for British silver coins and redeeming the British coins by special agreement with the Royal Mint. By 1922, British coins had almost disappeared from circulation in West Africa (Clauson 1944, p. 7). The board's reserves first exceeded 100 percent in 1926. Against silver coins, the board held as reserves only the difference between the face value of the coins and their value as metal. The board began distributing seigniorage to West African governments in January 1920. Over its lifetime it distributed more than WA£37 million (Loynes 1962, pp. 24, 38). To guard against losses in its portfolio of securities, the board accumulated a 10 percent reserve in addition to its existing 100 percent reserves. The board held securities issued or guaranteed by the British government, securities of British municipalities, and securities of non-West African colonial governments. Its administrative expenses for most of its life were around WA£4,000 per year, plus a fee to pay interest on the storerooms that Bank of British West Africa constructed for it at several branches (R. Fry 1976, pp. 70-1, 188).

The West African Currency Board extended its operations to Togoland and western Cameroon after Britain and France took them from Germany during World War I. Liberia, which had no

currency of its own, used the West African pound until 1944, when the U.S. dollar became the official currency (Mládek 1964, p. 81).

The note and coin circulation of the board waxed and waned according to the prosperity of the West African colonies. For instance, it was WA£13.59 million on June 30, 1920, and WA£7.27 million during a depression two years later. It steadily ascended from WA£11.71 million in 1939 to a peak of over WA£125 million in early 1957, reflecting West Africa's economic growth and the spread of financial institutions. Thereafter circulation of the board's notes and coins declined as the colonies achieved independence and established central banks to take over the board's functions (Loynes 1962, p. 39; WACB 1973, p. 6).

The West African Currency Board and other sterling exchange boards conducted exchanges by a process similar to that described in Chapter 1. A bank in West Africa that wanted to exchange West African pounds for sterling could deposit West African Currency Board notes and coins at one of the branches of the Bank of British West Africa that handled the board's business. The Bank of British West Africa would notify the currency board that it had received the notes and coins. The board would then instruct the London Joint Stock Bank in London to pay the bank that had deposited West African pounds an equivalent sum of pounds sterling, minus the board's

commission fee. If the board's bank balance was insufficient to pay the required amount, the board would instruct the London Joint Stock Bank to sell some of the board's securities for cash. Exchanges of sterling for West African pounds worked in the opposite way. The currency board apparently accepted securities as well as deposit transfers from banks exchanging sterling for West African pounds.

Many exchanges of West African pounds for sterling did not take place through the currency board. Banks tried to match ("marry") exchanges as far as possible to avoid undesired net changes in their holdings of sterling and West African pounds, because it saved them from paying the board's commission fee. The commission fee set a limit to the exchange fees that banks could charge their customers, because large transactions could be conducted through the currency board if necessary. For small transactions, banks charged the public slightly higher commissions than the board charged them so that they could cover their costs; for large transactions the commissions were sometimes less than the commissions charged by the board.

#### The East African Currency Board, 1919

The West African Currency Board became a model for other British colonial currency boards. In the 1930s the British Colonial Office drew up a model currency board statute based

on the West African statute (Shannon 1951, p. 349). Because almost all British colonial boards founded after the West African worked alike, I shall review them only briefly, concentrating on the major boards.

Britain established the East African Currency Board in December 1919 for Kenya and Uganda. Since 1897 the Kenya government had issued a small amount of coins denominated in Indian silver rupees (Krause and Mishler 1990, p. 498), the main currency then in use. Against the rupee coins, the Kenyan government held a reserve of sterling securities (presumably equivalent to the difference between the face value of the coins and their value as metal). Fluctuations in the value of the rupee relative to sterling after World War I led Britain to establish the East African Currency Board to bring Kenya and Uganda into the sterling monetary area. The board's constitution was published on May 22, 1920. The East African board, like the West African Currency Board, had its headquarters in London and was in other respects modelled on the West African board. The two boards even shared directors. For instance, in 1948 they shared a chairman (a Crown Agent for the Colonies); a Bank of England official; and a Colonial Office official. The only difference in the directors was that the fourth member of the East African Currency Board was the head of the East African Department of the Colonial Office, whereas the fourth member of the West African Currency

Board was the head of the West African Department (Caine 1948-9, part III, p. 172).

In 1920, Tanganyika (today the mainland of Tanzania), formerly a German colony, joined the board after becoming a League of Nations mandate under British supervision (Newlyn and Rowan 1954, p. 57). Also that year, in March, the board introduced a new East African currency, the shilling, worth one British shilling; the East African pound (EAF), like sterling, was composed of 20 shillings. The board exchanged shillings for rupees at 2s. per rupee, which was approximately the value of the rupee as metal. The board stopped accepting rupees in 1921. In 1923 it exchanged shillings for German silver currency circulating in Tanganyika. The price of silver fell before the board could sell all the rupees and German silver coins for sterling securities, inflicting a loss on the board of over EAF1.5 million. In 1925, reserves were only 43.6 percent of the board's EAF5.61 million note and coin circulation. Reserves fell to a low of 9.9 percent in the depression year of 1932; circulation was then only EAF3.57 million. East African member governments extended a guarantee of EAF1.5 million to the board to borrow sterling. The board never used the guarantee because its reserves soon began to increase. To stem the drain on its reserves, the board in July 1931 increased its commission for exchanges into sterling from 1 percent to the legal maximum of 1-1/2 percent. Unlike

the West African Currency Board, the East African Currency Board frequently changed its commission rate. Its reserves did not reach 100 percent until 1950, and it did not pay seigniorage to East African governments until then (Newlyn and Rowan 1954, pp. 58-60, 63-4).

The territory of the East African Currency Board expanded and contracted in the 1930s and 1940s. Zanzibar ceased using Indian rupees as currency and joined the board in 1936. During World War II the board expanded its operations to Italian Somaliland (now part of Somalia), Eritrea, and Ethiopia as the British army took territory from the Italians, and to British Somaliland (now part of Somalia) and Aden (now part of Yemen), where its notes and coins circulated alongside rupees (Rennell Rodd 1948, pp. 364-81; Newlyn and Rowan 1954, p. 61). Notes first exceeded coins in circulation in 1941 under the impetus of the war; the board issued notes for as little as 1s. to avoid difficulties in securing supplies of coins minted in Britain. The territory in which the board operated began to contract in 1945, when Ethiopia established a central bank. Somalia established its own currency board when it returned to Italian administration in 1950 (see Chapter 6). In 1960 British Somaliland united with Italian-administered Somalia as the new nation of Somalia, which had already established a nascent central bank. Aden joined the East African board in 1951 and left it to establish its own

South Arabian Currency Board on October 13, 1964. On April 1, 1965, the South Arabian Currency Board issued a new currency, the dinar, equal to the pound sterling (Loynes 1963; Edo 1975b, p. 518).

#### Middle Eastern currency boards

The Middle East had several other British colonial currency boards besides the South Arabian Currency Board. During World War I the British army captured Palestine, Transjordan, and Mesopotamia (present-day Israel, Jordan, and Iraq, respectively) from the Ottoman Empire. Britain retained those territories after the war as mandates of the League of Nations. Palestine and Transjordan initially used as their currency the Egyptian pound, issued by the National Bank of Egypt according to regulations patterned on the 1844 British Bank Charter Act. British gold sovereigns also circulated as an important part of the coinage. The Palestine government wanted to capture the seigniorage from local note currency use that was accruing to the National Bank of Egypt, so it established the Palestine Currency Board by a law of February 11, 1927. The board opened on November 1. It accumulated initial reserves of about 190,000 Palestine pounds (£P) by exchanging Egyptian pounds for the new Palestine pound and redeeming Egyptian pounds for sterling. Egyptian currency and British sovereigns ceased to be legal tender after March 31,

1928. The Palestine pound was equal to the pound sterling. (The Egyptian pound, in contrast, was worth £1 6d. sterling.) One tidbit about the operations of the Palestine Currency Board is that from 1929 to 1937 it kept an average of 84 percent of its assets in the "investment portion" of its reserves, which corresponded to the hard core of circulation. During that period Palestine experienced a steady influx of capital from Jewish settlers, so the Palestine board could count on a larger hard core of circulation than could other British colonial currency boards. The Palestine board invested in British imperial and local government securities, and in government securities of Australia, New Zealand, India, and British African colonies. It charged a commission of 1/8 percent (Hakim and El-Hussayni 1938, pp. 445-57; Konikoff 1946, pp. 86-7; Ottensooser 1955, pp. 450-1).

The Palestine Currency Board remained Jordan's monetary authority after Jordan became independent in 1946. Israel, in contrast, granted central banking functions to a commercial bank, the Anglo-Palestine Bank (today Bank Leumi le-Israel), at independence in 1948, and later established the Bank of Israel. In the Gaza Strip, Palestine Currency Board currency continued to circulate until 1951, when Egyptian currency replaced it. The Palestine Currency Board changed its name to the Jordan Currency Board and continued to operate in Jordan. A law of February 1959 provided for replacing the

currency board with the Central Bank of Jordan, but the central bank did not open until October 1, 1964 (Kattan 1976, pp. 31-6, 53-60; Palestine Currency Board 1952, p. 2).

After a number of attempts stymied by pro-independence Iraqi political sentiment, Britain established the Iraq Currency Board in 1931. The board was a temporary measure until Iraq could establish a central bank, which was thought to be more appropriate for an independent nation. The board issued the Iraqi dinar, equal to the pound sterling. As in East Africa, Indian rupee coins had previously been the dominant currency in use locally. As directors the Iraq Currency Board had two Iraqi government officials, two representatives of commercial banks (which at the time were all British-owned), and a British chairman chosen by the Bank of England. Its headquarters was in London. A 1947 law established the National Bank of Iraq, which opened in mid-1949 to replace the currency board (Iversen 1954, pp. 5-6; Al-Bustany 1984, pp. 17-19).

Several British colonies and protectorates in the Arabian Peninsula established currency boards shortly before becoming independent. Until the 1960s, most inhabitants of the Arabian Peninsula used gold and silver coins rather than notes. The chief note currency was the Indian rupee. As notes became more widely used, the colonies wished to capture seigniorage for themselves. They established currency boards as follows:

Kuwait, 1961; Aden, 1965; Bahrain, 1965; Qatar/Dubai, 1966; and Oman, 1970. The Yemen Arab Republic, an independent nation never under British domination, established a currency board in 1964. The United Arab Emirates Currency Board established in 1973, after the Emirates became independent, is despite its name a central bank. Some Middle Eastern currency boards held diversified portfolios of gold, U.S. dollar securities, and sterling securities rather than sterling securities only (Edo 1975b, pp. 517-19).

#### Other currency boards

Hong Kong established a currency board in 1935 after China suddenly switched from the silver standard to a fiat standard. Chapter 8 discusses the Hong Kong currency board more fully.

Southern Rhodesia (now Zimbabwe), which became a self-governing territory in 1923, established the Southern Rhodesia Currency Board in 1938. The board's operations also extended to Northern Rhodesia and Nyasaland (now Zambia and Malawi). Previously, all three colonies had had free banking; the Standard Bank of South Africa and Barclays Bank had issued notes there. Before 1933, when the Southern Rhodesian government started issuing coins, the colonies used British coins. The currency board opened in 1939, using the Standard Bank as its agent (Newlyn and Rowan 1954, pp. 65; Clauson

1944, p. 14). It changed its name to the Central African Currency Board in 1953, when the three colonies formed the Central African Federation of Rhodesia. A central bank replaced the board in 1956.

Burma established the Burma Currency Board by the Currency and Coinage Act of 1946. Previously, Burma had used Indian rupee notes and coins issued by the Indian central bank, which in 1935 had replaced the scheme of note issue devised by James Wilson. The Burma board had its headquarters in London. It issued the Burmese rupee at a fixed rate of 15 rupees per £1 sterling. The Governor of the Bank of England nominated one of the board's six directors. Beyond a fiduciary issue of 100 million Burmese rupees, the board was required to hold 100 percent reserves in sterling or sterling securities against its notes in circulation. The fiduciary issue represented the amount of rupees that had been issued unbacked by the Japanese army and the British military administration during and after World War II. When the currency board opened on April 1, 1947, about a year before independence from Britain, 667 million rupees of notes were in circulation. The Union Bank of Burma, a central bank, replaced the currency board on July 1, 1952 (Tun Wai 1953, pp. 154-9, 166-7, Appendix). The Burma board maintained the fixed exchange rate with sterling despite a civil war between the central government and Chinese warlords in the north of the

country.

These are the major British colonial currency boards. There were many minor boards, mainly in island territories. The currency boards of British Guiana (now Guyana), Barbados, and Trinidad united in 1951 to form the cumbersomely named Board of Commissioners of Currency, British Caribbean Territories (Eastern Group). The board's notes replaced the free-bank notes of the Royal Bank of Canada, Barclays Bank, and the Canadian Bank of Commerce, which had previously circulated alongside the notes issued by individual island currency boards (Sayers 1952, pp. 428, 437). Among the minor currency boards, those of Tonga and British Honduras (now Belize) deserve mention because they did not use sterling as their reserve currency. The Tonga board used the Australian pound (later the Australian dollar), and the British Honduras board used the U.S. dollar from its beginning in 1894 until 1949, when it switched to sterling.

The currency board system reached its greatest extent in the mid 1950s. Besides existing in almost all British colonies then, it also existed in a number of other countries, whose experience the next two chapters describe. However, except for the Philippines, which was an American possession, no colony outside of the British Empire adopted the currency board system. The reason seems to have been that other European colonial powers and Japan granted banking monopolies

in their colonies. The monopoly bank in each colony issued notes and was the only bank permitted to establish branches within the colony. (Foreign banks often had branches in port cities, but their business was limited to foreign trade dealings and they were unable to become full-fledged competitors to the monopoly bank.) Portugal established a single bank for all its colonies, the Banco Nacional Ultramarino. France established separate banks for many colonies, although the Banque de l'Indochine et de Suez spanned a number of Far Eastern colonies. British colonies typically had branches of multiple imperial or local banks. To favor one bank by giving it a monopoly of note issue would have drawn howls of protest from other banks. Government note issue by means of a currency board was the only way to monopolize note issue without favoring one bank over its rivals.

## CHAPTER 5. EARLY NON-BRITISH CURRENCY BOARDS

Most currency boards have existed in British colonies or former British colonies that retained currency boards after independence. Currency boards have also existed elsewhere, though. Unlike British colonial currency boards, they had no common legal framework or common banking institutions such as the imperial banks. Their experience therefore can test whether the performance of British currency boards was the result of the currency board system itself or of features specific to British colonial administration. Included among the currency boards that this chapter and the next survey are those not established in former British colonies until after they became independent.

Argentina

The Argentine banking law of 1887 (Law 2.216) required banks that wished to issue notes to hold government bonds equal to the amount of the notes issued. Following a poor harvest, a banking crisis, and a coup in 1890, the Argentine government defaulted on its foreign debt. (The Argentine default brought down the London banking firm of Baring Brothers.) The default led the government to re-examine whether note issue should be linked to government debt. The government decided to replace the existing system with

monopoly issue, and established a Caja de Conversión (Conversion Office) by Law 2.471 of October 7, 1890. The Caja was governed by a five-member board of directors nominated by Argentina's president and approved by the Senate. The members served for five years.

The purpose of the Caja was to restore convertibility of the Argentine peso into gold, but through the 1890s it merely served as a conduit for issues of fiat money. Law 3.871 of November 4, 1899 set an exchange rate of 0.6387084 grams fine gold per "paper" peso, a devaluation of 56 percent from the previous gold parity, last effective in 1885. The law forbade the Caja from increasing its note issue unless the increase was backed 100 percent by gold. Former fiat issues of about 293 million paper pesos became the hard core of the Caja's circulation. Unlike the hard core of almost all other currency boards,<sup>7</sup> the hard core of the Caja's circulation had no corresponding interest-bearing assets. Nevertheless, it seems proper to classify the Caja de Conversión as a type of currency board rather than as some other system.

The Caja had almost no gold reserves until 1902, when Argentina's increasing prosperity brought an increase in the demand for notes. Gold reserves increased from 0.11 percent

---

<sup>7</sup> The Burma currency board, the Hong Kong currency board from 1945 to 1953, and the East African Currency Board before 1950 are likewise exceptions.

of circulation in 1902 to almost 73 percent of circulation in 1913 (Argentine Republic, Caja de Conversión 1933, p. 86).

Argentina suspended the gold standard on August 3, 1914, forbidding the export of gold with the outbreak of World War I (Laws 9.477, 9.479, 9.481, 9.483 and 9.506; Quintero Ramos 1965, pp. 147-52). The currency board system also ceased then. At the time of suspension the Caja de Conversión had gold reserves of 60 percent, banks had Caja notes and gold reserves of 33 percent of deposits, and the monetary system as a whole had gold reserves of 31 percent of notes held by the public plus deposits (Argentine Republic, Caja de Conversión 1914, p. 49; Universidad de Buenos Aires 1937, pp. 6, 57, 62, 100). The reason for the suspension of convertibility seems to have been that Argentina did not want to risk deflation. During the war the peso remained near its prewar parity against the U.S. dollar and sterling. The worldwide postwar depression of 1920-1 depressed the value of Argentine agricultural exports, causing the peso to fall nearly 50 percent against the U.S. dollar. In the mid 1920s economic conditions improved, and the peso appreciated steadily and drew closer and closer to its prewar gold parity. Argentina permitted the export of gold again in 1925 and resumed the gold standard on August 25, 1927 (Olarra Jiménez 1968, pp. 70-1, 183; Boletín Oficial de la República Argentina, Sept. 15, 1927, p. 2).

Argentina's return to gold convertibility and to the currency board system was brief. Rising interest rates in the United States drew investment capital out of Argentina. From July 1928 to the end of 1929, Argentina suffered a gold outflow of 426 million pesos, which was roughly 40 percent of the combined reserves of the Caja and the banks. On December 16, 1929, the president used the power granted by Law 9.506 of 1914 to suspend the gold standard by executive decree. At the time of suspension the Caja de Conversión had gold reserves of 82 percent, banks had Caja notes and gold reserves of 12 percent of deposits, and the monetary system as a whole had gold reserves of 23 percent of notes held by the public plus deposits (Olarra Jiménez 1968, p. 72; Boletín Oficial de la República Argentina, Mar. 26, 1930, p. 1; Universidad de Buenos Aires 1937, pp. 6, 57, 62, 100; Argentine Republic, Caja de Conversión 1933, p. 88). As in 1914, the reason for the suspension of convertibility seems to have been that Argentina did not wish to risk deflation. The Caja de Conversión had enough reserves to withstand a massive outflow of gold convertibility, but perhaps many banks could not have survived the resultant deflation. Argentina established a central bank in 1935 to replace the Caja de Conversión. During its 45-year life (1890 to 1935), the Caja operated as a currency board for only 14 years (1902 to 1914 and 1927 to 1929).

A number of other Latin American nations have also had note issuing authorities called caja de conversión, junta monetaria, and so on. None appear to have been true currency boards. They typically had fixed minimum reserve requirements for gold or foreign-exchange holdings, but no maximum requirement. Therefore they were able to engage in reserve sterilization if they wished. On the other hand, the Brazilian Caixa de Conversão that issued notes convertible into gold from 1906 to 1915, and the Caixa da Estabilização that did likewise from 1927 to 1929, were gold certificate systems (Vieira [1947] 1981, pp. 238-9).

#### The Philippines

When the United States took possession of the Philippines from Spain after the 1898 Spanish-American War, the Philippines were on the silver standard, as was most of East Asia. The United States, which suddenly became the Philippines' largest source of foreign trade and investment, was on the gold standard. The silver standard exposed the Philippines to sometimes severe fluctuations in export prices and hence in demand for export goods, and also in the silver value of dollar-denominated debt. As a remedy, the Philippine government in 1900 suggested to the American government that Philippine coins become fiduciary, redeemable for their face value in gold or a gold-standard foreign currency. The

American government commissioned the American economist Charles A. Conant to investigate Philippine currency reform, and he reached similar conclusions in a report of November 25, 1901 (Conant 1901, pp. 6-7). Conant had observed with keen interest the sterling-exchange standard of India, which provided for convertibility into gold through the fixed exchange rate of sterling with gold. A gold-exchange standard was attractive because it would save the Philippines the expense of minting and using full-bodied gold coins. After wrangling between gold-standard and free-silver advocates, the U.S. Congress in February 1903 passed the Philippine Coinage Act, which removed obstacles to the proposed reform (Kemmerer 1916, pp. 308-13). The act provided that as a unit of account, the Philippine peso should have a gold value which at the time was equivalent to US\$0.50. The actual peso coin was to be of silver, with a value as metal of about \$0.3777 at the market rate then prevailing. Hence the price of silver would have to rise more than 32 percent for the value as metal to exceed the face value. The Philippine government could issue silver certificates against which it had to hold an equal amount of silver pesos as reserves. The law also made American gold coins legal tender. To ensure that the peso was convertible into gold, the Philippine government was to establish a gold reserve fund separate from the silver certificate reserve.

The Philippine complement to the American law was the Gold Standard Act of October 10, 1903. The American "money doctor" Edwin W. Kemmerer served as an expert advisor to the Philippine government during the drafting of the act and as the head official of the new system during its first two years. The act established a Gold Standard Fund. The Philippine government kept most of the fund as a U.S. dollar deposit at a New York City bank, and the rest as U.S. gold coins and Philippine silver coins in the Philippine Treasury in Manila. The fund was required to equal at least 15 percent of the face value of all Philippine coins in circulation. (There was no maximum ratio, but in practice the ratio was nearly fixed at the difference between the peso's face value and its value of metal.) To obtain the initial reserves of the Gold Standard Fund, the Philippine government borrowed \$6 million in the United States. By law, on demand the fund's Manila office had to exchange silver Philippine peso coins for checks on its U.S. dollar bank account in New York at the rate of 2 pesos per \$1. On demand, the New York office had to sell checks for silver pesos redeemable at the Manila office. Both offices could charge commission fees of up to 3/4 percent for checks and 1-1/16 percent for telegraphic transfers. Telegraphic transfers carried higher commissions because unlike checks they deprived the fund of a float. The commission fees were comparable to the cost of shipping gold

bars (Kemmerer 1916, pp. 314-323).

The Philippine system was not quite an orthodox currency board. Depending on the market value of silver, the Gold Standard Fund plus the silver in coins could be far more or far less than 100 percent of the face value of coins and silver certificates in circulation. The original intent behind the system was to provide nearly 100 percent reserves, though, and peso-dollar exchange worked just as sterling exchange worked for British colonial currency boards.

The Gold Standard Fund began operating by December 1903. A rise in the price of silver starting in 1905 threatened to make the peso's value as metal greater than its face value. Hoarding of pesos and a shortage of coins ensued. The Philippine government introduced new peso coins with less silver in 1907, generating seigniorage profits that boosted the Gold Standard Fund to 43 percent of the face value of silver coins and certificates in circulation. Act No. 2083 of December 8, 1911 set the Gold Standard Fund at 35 percent of the face value of the stock of coins, which seemed an ample margin. However, the act departed from the original intent behind the Gold Standard Fund by allowing the Philippine Treasury to invest up to half of the fund in local government and railroad loans. The Treasury promptly took advantage of the provision. In 1908 it had already begun holding part of the Manila portion of the Gold Standard Fund as deposits at

local banks instead of as coin (Kemmerer 1916, pp. 366-74).

A further step away from the original intent of the system occurred in 1916, when the Philippine Treasury took advantage of a big rise in the price of silver by selling as bullion 15 million pesos from the Silver Certificate Reserve. Act No. 2776 of March 1918 took further steps in response to the rise in the price of silver. It authorized the government to reduce the silver content of peso coins again, merged the Gold Exchange Fund and the Silver Certificate Reserve into a single Currency Reserve Fund, reduced the minimum gold reserve to 15 percent of the face value of the stock of coins, and allowed the Currency Reserve Fund to redeem silver certificates in gold or silver at its option (Luthringer 1934, pp. 48-58). Act No. 2939 further reduced the reserve requirement to a minimum of 60 percent and a maximum of 75 percent of silver certificates in circulation, in effect ending the currency board system for the time being (see Luthringer 1934, pp. 80-1).

The New York branch of the Philippine National Bank was the main depository of the Currency Reserve Fund. By gross mismanagement the branch lost in loan defaults almost \$39 million of the \$46 million in the fund. An exchange crisis occurred in the spring of 1919. Commission rates of the Currency Reserve Fund reached 4-1/4 percent for checks and 5 percent for telegraphic transfers. (These were punitively

high rates intended to discourage conversion of pesos into dollars.) To restore the value of the peso in relation to the dollar a deflation was necessary; despite the government's attempts to prevent deflation, it came. By 1922 the exchange crisis was over. Chastened, the government passed Act No. 3058 in June 1922; the act took effect January 2, 1923. The Philippines returned to the plan of the Gold Standard Act of 1903, with 100 percent reserves in peso coins and U.S. dollars against silver certificates, and a separate gold reserve of 15 to 25 percent of the value of the stock of coins. The government borrowed \$23.5 million to reconstitute the gold standard fund (Luthringer 1934, pp. 129-34, 199-207). The Philippine government devalued the peso following the U.S. dollar's devaluation against gold in February 1934, maintaining the exchange rate of 2 pesos per dollar. That proved that the Philippines were not on a gold-exchange standard, but a dollar-exchange standard. The system continued until the Japanese occupation of the Philippines during World War II. The Japanese issued fiat money. After the war, the old system was briefly revived. Then a joint Philippine-American committee of 1947 recommended establishing a central bank. It contended that the 100 percent reserve requirement was "unnecessary and uneconomical" and that a central bank could strengthen the banking system by acting as a lender of last resort (United States 1947, pp. 46-8). The

Philippine Central Bank opened on January 1, 1949. The central bank had a monopoly of note issue, ending the note issues of two banks, which had competed with government silver certificates (Central Bank of the Philippines 1949, p. 65).

### Panama

As in the Philippines, in Panama the United States wished to assimilate the local silver standard monetary system to its own gold standard. America's military power and the economic importance of the Panama Canal to Panama enabled the United States to dictate a new monetary system after Panama gained independence from Colombia. Charles Conant was a member of the American-Panamanian currency commission, which accounts for the similarity between the Philippine and Panamanian currency reforms.

On June 20, 1904, Panama and the United States agreed that Panama would issue the balboa, whose gold value was to be equal the gold value of the dollar at the time. Both currencies were to be legal tender in the Canal Zone and the rest of Panama. Coins of one balboa and up were to contain gold worth their face value, but Panama did not actually issue any gold coins until 1931. Coins for less than one balboa were to be silver fiduciary coins, convertible at face value into gold. To assure convertibility, Panama established a gold standard fund with part of the money that the United

States paid for the Canal Zone. The fund, which was kept at a New York City bank, was to equal at least 15 percent of the face value of Panamanian silver coins in circulation (United States 1904, pp. 331-2). The Panamanian gold standard fund worked like the Philippine fund, and Panama too devalued its currency against gold with the U.S. dollar in February 1934.

Unlike the Philippines, Panama did not issue silver certificates. Panamanians used U.S. dollar notes, which readily migrated outside of the Canal Zone. There was strong sentiment for locally issued notes. Laws of 1911 and 1913 permitted the government to establish a note-issuing Banco de Panama, which would have kept a (fractional) reserve with a New York bank as backing for the note issue. The project came to naught, though. Another attempt to found a central bank in 1941 ended later that year after it had issued just 150,000 balboas in notes (Diez Morales 1974, pp. 193-8). There is still no local note issue in Panama today; Panamanians use U.S. dollars as their note currency.

I have not been able to determine when the Panamanian currency board system ended. A former president of Panama has said in personal conversation that he believes it ended in 1931, but from another source it appears that the system still existed as late as 1945 (Diez Morales 1974, p. 83). It certainly ended by the time the Bretton Woods system collapsed in 1973.

## CHAPTER 6. LATER NON-BRITISH CURRENCY BOARDS

Like early British colonial currency boards, early currency boards in other countries held some assets in gold or silver coin or domestic securities as well as in foreign securities. As with British colonial boards there was a tendency for later boards to be pure foreign-exchange boards.

North Russia

In consequence of a series of accidents and blunders, the World War I Allies became entangled in the Russian civil war, supporting a White (anti-Bolshevik) provisional government whose headquarters was in Archangel. Allied troops in North Russia made a force of about 10,000 troops. One of the force's pressing needs was a means to pay for local services it needed. Currency in the region was heterogeneous: czarist, Kerensky, Bolshevik, and local White government notes all circulated (F.O. 3295, p. 102). The Russian State Bank branch at Archangel had declared itself independent of the Petrograd head office after a local White coup and was issuing its own notes as the State Bank of Northern Russia. Even though none of the currencies had a reliable value--they were inflated or often forged--the Allies sometimes lacked adequate supplies of notes to pay dock and railway workers. The Allies were forced to acquire notes by selling imported goods locally.

On occasion the Allies were so desperate for notes that they dumped goods on the market for less than they had paid.

In the summer of 1918 the British War Office sent to North Russia Dominick Spring-Rice, a financial advisor. Spring-Rice suggested that "the task of providing currency for local needs should, if possible, fall on the local authority," perhaps in combination with a loan to the North Russian government in sterling (F.O. 3344, pp. 249-50). On July 9, the British general at Murmansk asked the British government to print notes for British military use at Murmansk (Spring-Rice 1919, p. 282).

John Maynard Keynes, who at the time was a British Treasury official responsible for war finance, became involved in establishing a North Russian currency in August. Both Spring-Rice (1919, p. 284) and British Foreign Office records (F.O. 3970, p. 22) credit Keynes with thinking up the details of the currency issue scheme. Foreign Office archives contain two notes on the subject by Keynes (F.O. 3295, pp. 52, 62-4). On September 11, the British commissioner in Archangel received a telegram outlining Keynes's scheme (Spring-Rice 1919, p. 284). Keynes seems to have been influenced by the example of the West African Currency Board, with which he was familiar (Keynes 1913b).

The essential elements of the currency issue scheme were set forth on October 9 in a resolution of the Financial and

Economic Council of the North Russian government. The following points were officially published November 11 (Spring-Rice, 1919, p. 286):

The government established an agency called the National Emission Caisse (North Russia). ("Emission Caisse" is a Frenchified term for "note issue office.") The Caisse was to be an organ of any successor government to the Northern provisional government. The president of the Caisse for the first six months was to be a British banker, Ernest M. Harvey.

The Caisse was to issue notes for 1 to 500 rubles and small-denomination coins or notes. It was to exchange its rubles for sterling at a fixed rate of 40 rubles per £1 by issuing checks on banks abroad (mainly in London). The Caisse was also to accept U.S. dollars and French francs in exchange at their rates against sterling. Anyone wishing to buy the notes of the Caisse had to do so with foreign currency. The provisional government guaranteed the notes with its whole property. More important, the note circulation of the Caisse was backed with a sterling reserve equal to at least 75 percent of the issue. This reserve was on deposit in sterling at the Bank of England. The deposit was the inviolable property of the Caisse, and hence could not become a Bolshevik possession should the North Russian government fall from power. The Caisse was also allowed to buy bonds of the North Russian government equal to 25 percent of its note

circulation.

The Caisse and the North Russian government were to share profits 50-50 until the Caisse accumulated a further reserve of 10 percent of its note issue. Any profits beyond that were to go entirely to the government (F.O. 3295, pp. 343-7, 529-31).

Britain bought 100 million rubles of notes from the Emission Caisse to provide for the Caisse's sterling reserve. The notes were printed in Britain. They entered circulation at Archangel (where the Caisse had its headquarters) and at Murmansk through payments to the local populace by the British military for goods and services. The Caisse's board of directors met for the first time on November 27, 1918, and the official gazette announced that the Caisse would open for business the next day (F.O. 3295, p. 527).

As of mid-October 1918, an estimated 600 million rubles of all types circulated in North Russia (F.O. 3295, p. 89), which had a population of about 600,000. When the new Emission Caisse rubles were introduced, British military authorities, who still needed old rubles for some purposes, fixed the exchange rate at 48 old rubles for 40 Caisse rubles (= £1), as the Caisse directors and British government officials had proposed. (The prewar exchange parity had been 9.45 rubles per £1). Curiously, the North Russian government and the State Bank of Northern Russia tried to prop up the

exchange rate at 45 old rubles to 40 Caisse rubles, perhaps because they had issued some of the old ruble notes in circulation. They were waging a losing battle, however, because the supply of old rubles was growing rapidly as the Bolsheviks and White governments elsewhere inflated rapidly to finance their civil war spending. At the time there were over 2,000 separate issuers of old fiat rubles, and all rubles issued by them exchanged at the same rate. The rate that the British military offered for 40 Caisse rubles stayed at 48 old rubles until April 1919, when it fell to 56 old rubles. By the beginning of May it was 64, by mid-May, 72, and by the second half of June, 80 (F.O. 3969, p. 455, and 3970, pp. 48, 80, 149). The depreciation of old rubles overcame the initial reluctance of many people to use the unfamiliar Caisse ruble, which was maintaining its purchasing power (F.O. 3970, p. 23). Indeed, by mid-April 1919, the estimated circulation of old rubles in North Russia was only 300 million, half the estimated amount that had been in circulation when the Caisse opened (F.O. 3969, p. 478).

The Allied intervention in Northern Russia became increasingly unpopular in Allied countries after World War I ended in November 1918. The British government decided in March 1919 to withdraw its troops from North Russia. The other Allies took similar action. By September 27, the last Allied troops had left North Russia (Rhodes 1988, p. 121).

The Caisse announced that it would close in Archangel and redeem all notes presented to it. The British military command still held about 55 million of unused ruble notes. To prevent them from falling into Bolshevik hands, the British attempted to burn the notes, which were too damp to burn well. The notes were dumped at sea (Ironside 1953, p. 81), and the British military received a book-entry credit for the destroyed notes.

The Caisse officially closed to the public in Archangel on October 4, 1919, despite a protest by the North Russian government. The Caisse continued to redeem notes collected by the government and the State Bank of Northern Russia until October 15 (F.O. 3970, pp. 492, 498). The Caisse then moved to London, where its main business was to redeem the 55 million rubles that the British government held. About 13.5 million rubles remained in the hands of the public. British troops returning from Northern Russia held a small amount of rubles, but most rubles held by the public were still in Russia (F.O. 3970, pp. 507-21).

The existence of the North Russian government was precarious without the support of Allied troops. The government clung to existence for several months because the Bolsheviks were concentrating their forces elsewhere. When the Red Army mounted a campaign in North Russia early in 1920, the North Russian army disintegrated. The North Russian

government fled on a ship to England on February 19; two days later the Bolsheviks entered Archangel. The Emission Caisse remained open in London until April 30, 1920 (F.O. 3720, p. 597). After that date, note redemption ceased. There seem to be no records of the Caisse's final disposition in Foreign Office archives, but judging from correspondence from the last few months of its existence, most of the 13.5 million rubles in the hands of the public never were redeemed, inflicting a loss on their holders. The British government, therefore, ended up losing about 15.5 million rubles (£378,500), the difference between the now worthless North Russian government bonds that the Caisse held and the notes never redeemed by the public.

### Danzig

Another East European currency board linked to sterling operated in Danzig (now the Polish city of Gdansk). After World War I, Danzig, which had been part of Germany, became an independent city-state under the supervision of the League of Nations. Reflecting Danzig's continuing economic ties with Germany, the German mark continued to be used locally. However, the great postwar German hyperinflation made the mark an unreliable currency. Danzig in November 1922 tried to remedy matters by issuing an emergency currency guaranteed by government property. The emergency currency was soon

depreciating along with the mark, leaving the situation no better than before. By a law of October 23, 1923, Danzig established a new currency, the gulden, with a fixed exchange rate of 25 gulden per £1 sterling. The banks of Danzig banded together to form a privately owned currency board, the Danziger Zentralkasse A.G. The board held 100 percent sterling reserves on deposit at the Bank of England, and redeemed gulden by writing checks on the deposit. The board issued both coins and notes, and its minimum size for exchange was apparently 1,000 gulden.

The Danzig currency board was short-lived. A law of November 30, 1923 authorized a central bank, the Bank of Danzig. The Bank of Danzig opened on March 17, 1924, taking over the currency board's note circulation of 14 million gulden. The motive for replacing the currency board seems to have been the recommendations of League of Nations monetary conferences in Brussels in 1920 and Genoa in 1922, which had called for nations that did not yet have central banks to establish them (Carboneri 1937, pp. 289-91; Conant [1927] 1969, p. 768; Bank von Danzig 1925, pp. 7-9).

### Ireland

When the Irish Free State became independent of Britain in 1922, its monetary system was as the British Parliamentary act of 1845 had left it (see chapter 3), with some

modifications introduced during World War I. There were six note-issuing banks, including the specially privileged Bank of Ireland, and four deposit-only banks. At independence, questions arose about the desirability of note issue by the Irish government, and also about the legal status of Bank of England notes, notes issued by the British Treasury during World War I, and Irish notes issued by banks whose headquarters were in Northern Ireland or London. To gain expert advice on those matters the government in 1926 appointed a commission of inquiry. The chairman of the commission was Henry Parker Willis, a Columbia University professor known as an expert on banking and especially central banking.

The Willis commission rejected a central bank on the grounds that Ireland already had a sound banking system with easy access to the London money market, and that existing banks were handling government accounts satisfactorily. The commission also pointed to the absence of a local money market, which it regarded as a precondition for a central bank (otherwise, it thought, the central bank could not pursue an independent monetary policy) (Irish Free State 1926, pp. 15-16).

The Currency Act (No. 32 of 1927) followed the Willis commission's recommendations. The act established a gold Irish pound (£) with a value that at the time was equivalent

to the pound sterling. The act also established a Currency Commission to take over all note issue. (Note-issuing banks with branches in Northern Ireland remained able to issue notes there.) The Currency Commission allocated notes to each bank according to a formula that took into account the value of the right of note issue for note-issuing banks. The act limited the Currency Commission's fiduciary note issue to I£6 million, compared to I£6,354,494 for all of Ireland, North and South, under the 1845 British act. Total note circulation in 1927 for all of Ireland was I£14.67 million. Note circulation for the Irish Free State alone was I£13.15 million by 1932; coin circulation was I£783 million. As reserves, the Currency Commission held gold, British securities, and sterling bank deposits. It acquired reserves by requiring note-issuing banks to deposit with it government securities to cover their issues. (Banks still received the interest from the securities.)

The Currency Commission had an office in London, where it exchanged Irish pounds for sterling, and another in Dublin, where it exchanged sterling for Irish pounds. The Currency Commission charged no exchange fee. It began issuing notes on September 10, 1928. Its board of directors consisted of three members appointed by the government, three by the banks, and one chosen by the other six.

The Great Depression and Britain's abandonment of the

gold standard in September 1931 led the Irish government to appoint another commission of inquiry in 1934, to determine whether further changes to the monetary system could help the economy. (Ireland had followed Britain off the gold standard, maintaining the parity of the Irish pound with sterling.) Among the 21 members of the commission were Per Jacobsson, an economic advisor to the Bank for International Settlements, and Theodor E. Gregory, a professor at the London School of Economics. The commission of inquiry delivered its report in March 1938. The report lauded the Currency Commission's success at maintaining the Irish pound at par with sterling, but, making little attempt to prove its case, claimed that a central bank would be more advantageous for Ireland (Ireland 1938a, pp. 1-3, 217-238). The Central Bank Act (No. 22 of 1942) gave the central bank even more power than the commission of inquiry had suggested, because World War II had broken out in the meantime and it was thought that emergency measures might be necessary. The Central Bank of Ireland replaced the Currency Commission on February 1, 1943. Total note and coin circulation was almost I£31 million at the time. (See Hall 1949, pp. 352-68; Meenan 1970, pp. 213-25; Moynihan 1975, pp. 20-283, 512).

#### Italian Somaliland

Until World War II, British Somaliland (the northern part

of present-day Somalia) was a British protectorate that used the Indian rupee as its currency. With Italian Somaliland (the southern part of present-day Somalia), Ethiopia, and Eritrea, it became part of the East African Currency Board area during the war when the British army routed the Italian army from the region. In 1950, Italy regained Italian Somaliland as a United Nations mandate. Italy promised to grant independence within ten years. Among the national institutions that Italy introduced was a national currency, the somalo, with a gold value equivalent to the East African shilling. Because of the opinion common at the time that a central bank was not appropriate for many undeveloped nations, Italian Somaliland (which Italy called simply Somalia) had a currency board for several years.

The Cassa per la Circolazione Monetaria della Somalia (Somalia Monetary Circulation Fund) opened on April 18, 1950. Its headquarters was in Rome, staff of the Bank of Italy ran it, and it was subject to the joint control of the Italian treasury and the Italian ministry for foreign affairs. It had 87.5 million lire in capital. The board was required to hold gold, silver, or foreign-currency securities equal to 100 percent of its note issue. No foreign-currency security was to have a maturity exceeding one year. The board also issued one-somalo silver coins, but only had to hold as reserves the difference between the coins' value as metal and their face

value. For coins below one somalo, no reserve requirement applied. At first the legal limit on the board's circulation was 55 million somali. The peak actual circulation was 48 million somali, at the end of 1960.

The currency board put somali into circulation by exchanging them for East African shillings and Italian lire, which were declared to be no longer legal tender. The 17.64 million somali of those currencies thus gained, plus the board's capital, comprised its initial reserves. The board kept its reserves in gold and silver, lire, sterling area currencies, and U.S. dollars. During the 1960s, first sterling area currencies, then lire, and finally dollars made up the bulk of its holdings. The board's holdings of gold and silver were minuscule. The justification for holding a basket of assets was that the somalo, though equivalent to one East African shilling, was defined by law to be a certain weight of gold.

Italian Somaliland's increasing economic development and approaching independence made a central bank seem advisable to the Italian authorities. Accordingly, the currency board gained central banking powers by an Italian law of December 2, 1958 (Decree No. 1311). On April 6, 1959 it moved its headquarters from Rome to Mogadishu, the Somali capital, and took over the deposit functions of the Mogadishu branch of the Bank of Italy. At that point it ceased to be a currency board

and became a true central bank. The requirement for 100 percent reserves in external assets did not apply against deposits, though it continued to apply against notes for some time after Italian Somaliland became independent in 1960. At independence, the board received new powers and a new name, the Somali National Bank, completing its transformation into a central bank. British Somaliland ceased being part of the East African Currency Board Area when it too became independent in 1960 and shortly thereafter united with the former Italian Somaliland as present-day Somalia (Somali National Bank 1962, pp. 141-72).

### Libya

Like Italian Somaliland, Libya was an Italian territory captured by the Allies during World War II. After the war until it gained independence in 1951, Libya was a United Nations mandate. Britain governed the two regions closest to Egypt and France governed the region next to Algeria. Each region was governed independently of the others, with its own trade regulations, finances, and currency. One British region used the Egyptian pound; the other British region, the British Military Authority lira; and the French region, the Algerian franc.

The Libyan national government that was about to assume power thought a unified national currency desirable, and the

International Monetary Fund dispatched two staff members to suggest how to achieve a unified currency. Their report proposed a currency board as a way-station to a central bank. They argued that a currency board was initially more appropriate because Libya lacked skilled personnel to staff a central bank, and because its banking system was so undeveloped that a central bank would offer no advantage over a currency board in achieving "conscious coordination...between the policies of the currency authorities, the treasury, and the authorities responsible for the supervision of banks. For the present, a central bank could accomplish nothing that could not be done equally well and with less risk in other ways" (Blowers and McLeod 1952, pp. 447-8).

Law No. 4 of October 24, 1951 established the Libyan Currency Commission. The currency board was to issue the Libyan pound (L£), which had a gold value equal to the pound sterling. The board was allowed to hold up to 25 percent of its reserves in non-sterling assets, but in practice its non-sterling assets were negligible. The British government lent the board £150,000 sterling at 2 percent annual interest to cover start-up costs. The board opened in February 1952. Beginning March 21, it exchanged about L£3.8 million of old currencies with the British government for sterling. Barclays Bank (Dominion, Colonial, and Overseas), then the only bank

in Libya, served as the board's agent for issuing currency in Libya and holding sterling assets in London (Bank of Libya [1966], pp. 13-15; Bank of Libya 1957, p. 5). The board did not deal directly with the public; the minimum amount it exchanged was L£10,000, and it charged a commission of 1/4 percent (Libyan Currency Commission 1953, para. 13).

The legal seat of the board was in Libya, but the directors met in London. Only two of its eight members were Libyans, although the Libyan members were required to be present for a quorum. Of the other members, two were required to be British, one Egyptian, one French, and one Italian. The chairman could be of any nationality; the first chairman was British (Libyan Currency Commission 1953, para. 5).

Libya's banking sector grew rapidly in the 1950s. Other banks opened to compete with Barclays, and total bank assets grew from L£4.05 million at the end of 1951 to L£13.7 million in 1955. By 1954, there was strong sentiment in the Libyan government for establishing a central bank. Law No. 30 of April 26, 1955 established the National Bank of Libya. On April 1, 1956, the bank took over the Libyan Currency Commission's note and coin issue, which was L£5.16 million (National Bank of Libya [1966], pp. 16, 32).

### Sudan

The Sudan was an Anglo-Egyptian colony until it achieved

independence in 1956. Egypt's central bank, the National Bank of Egypt, had also been the central bank of the Sudan since 1901. The Sudan government Currency Act of June 17, 1956 created the Sudan Currency Board. The board opened on April 8, 1957. It replaced the Egyptian pound with a Sudanese pound (S£) defined to have a gold value which at the time was equivalent to £1 Egyptian, or £1 6d. sterling.

The Sudan Currency Board had six directors. Two were Sudanese government officials, one had to be another Sudanese national, and the rest could be of any nationality. Non-Sudanese directors who served on the currency board included British, Egyptian, and Swedish nationals. The board could hold up to 50 percent of its reserves in unredeemable Sudanese government securities, denominated in Sudanese pounds. It had to hold the rest of its reserves in gold or sterling assets. Apparently part of the reason for allowing the board to hold domestic government securities was that the Egyptian government was unwilling to redeem immediately all of the Egyptian pounds collected by the currency board. The Egyptian government paid £15 million sterling immediately and another £6 million sterling to £7 million sterling at a rate of £2 million sterling per year.

The currency board put its own notes and coins into circulation by exchanging them for British and Egyptian currency, which lost their legal tender status in the Sudan.

The exchange was complete by May 1958. The board acquired its initial sterling reserves by exchanging British and Egyptian currency for sterling securities. The board held the maximum legal amount in Sudanese government securities, which paid interest of only 2 percent.

The Sudanese government intended the currency board to be a transitional institution, to exist until enough trained staff were available for a central bank. By an act of December 1, 1959, it created a central bank, the Bank of Sudan, patterned on the American Federal Reserve System. The Bank of Sudan opened on February 22, 1960. On February 21, currency in circulation was S£22.55 million, the National Bank of Egypt's deposit with the currency board was S£20.27 million, the board's holdings of British government securities were S£30.86 million, and its holdings of Sudanese government securities were S£12.98 million (Abdel-Salam 1970, p. 354; Basu 1967, pp. 294-7; Jucker-Fleetwood 1964, pp. 61-2; The Banker, May 1957, p. 348).

#### North Yemen (Yemen Arab Republic)

North Yemen (later called the Yemen Arab Republic, today united with the former Aden as Yemen) established a currency board in 1964 (Law No. 6). The Yemen currency board issued the Yemeni rial, tied to sterling at 3 rials per £1 sterling. The rate was apparently chosen to approximate the exchange

rate of the silver Maria Theresa thaler, which previously was the most widely used currency (Edo 1975b, pp. 517-18). Indian rupee notes and notes of the East African Currency Board also had a limited circulation in North Yemen (Loynes 1963, p. 4). The Yemen currency board was replaced by a central bank in 1971.

#### Swaziland; Lesotho

With Botswana and Lesotho, Swaziland had long been in a customs and monetary union with South Africa. All countries in the union used the South African rand as their currency. After the Bretton Woods system collapsed in 1973, Swaziland entered negotiations with South Africa on the rand's future in Swaziland. Among the bones of contention was whether the Reserve Bank of South Africa, the central bank, should pay the Swaziland to compensate for seigniorage on rand notes and coins in Swaziland. On March 20, 1974, Swaziland and South Africa agreed that Swaziland should issue a new currency, the lilangeni, equal to the rand. Emalangeni (the plural of lilangeni) and rands were both to be legal tender in Swaziland, though emalangeni were not to be legal tender in South Africa. The currency board, the Monetary Authority of Swaziland, was to keep 100 percent reserves in rands, which it could hold as a deposit with the Reserve Bank of South Africa. The Reserve Bank was to pay interest on the deposit

of 2 percent below the rate for long-term South African government funds. The Monetary Authority was to be able to borrow from the Reserve Bank under special circumstances, thus providing a type of lender of last resort facility. Swaziland was to remain subject to the foreign exchange regulations of the rand monetary area to avoid creating a loophole in the regulations.

The Swaziland currency board was established on April 1, 1974 and began issuing emalangeni on September 6. By the end of 1975, 6.5 million emalangeni were in circulation. On July 1, 1986, by agreement with South Africa the rand ceased to be legal tender in Swaziland and the 100 percent rand reserve requirement for emalangeni also ceased (Collings et al. 1978, pp. 114-16; World Currency Yearbook 1986-1987, p. 177).

From 1980 to 1982, Lesotho may have had a monetary system like Swaziland's. During that time it had a monetary authority rather than a central bank. However, information on the topic is hard to find.

## CHAPTER 7. DECLINE OF THE CURRENCY BOARD SYSTEM

The currency board system did not reach its zenith until the 1950s, more than a century after the first currency board was established. It then declined swiftly: by 1974, it had shrunk almost to its present extent. Most territories with currency boards quickly established central banks after becoming independent, despite the generally good performance of currency boards, which Chapter 9 will discuss.

How central banks replaced currency boards

Several nations that had currency boards replaced them with central banks by the early 1950s: Danzig (1924), Argentina (1929--a central bank was not established until 1935), Ireland (1943), the Philippines and Iraq (1949), Ceylon (1950), and Burma (1952). They were influenced by the prevailing trend in economic theorizing that favored central banks for independent nations. Conferences of the League of Nations in Brussels in 1920, Genoa in 1922, and London in 1933 issued statements that central banks should be established in all developed countries that did not already have them (League of Nations 1922, v. 1, p. 225; and 1933, July 15, p. 188; International Economic Conference of Genoa 1922, resolution 2). Even so, until the middle 1950s the currency board system continued to expand to economically backward areas, such as

colonies, United Nations mandates, and fledgling nations. Then currency boards rapidly disappeared in favor of central banks. By 1967 the Yemen Arab Republic (North Yemen) was the only independent nation with a currency board that was not a former British colony. Even most former British colonies had replaced their currency boards with central banks (see the Appendix).

Replacing currency boards with central banks was a fairly simple administrative matter. The constitutions of British colonial currency boards typically allowed the boards wide latitude of action. The West African Currency Board statute, which became a model for currency board statutes elsewhere, set no reserve requirement, nor did it much restrict the type of assets the board could hold. It said only that "The Board may invest its funds in sterling securities of the Government of any part of His Majesty's dominions, or in such other manner as the [British] Secretary of State [for the Colonies] may approve." The statute added that "When the Board is satisfied, and shall have satisfied the Secretary of State, that its reserves are more than sufficient to secure the convertibility of the note and coin issue, and to provide a reasonable reserve against possible depreciation, the Board may pay over the whole or part of the surplus amount in aid of the revenues of the British West African governments" (West African Currency Board statute, reprinted in Loynes 1962, pp.

42-3).

British colonial currency boards for many years did not take advantage of the powers implicit in their statutes because imperial administrative regulations dictated strict operating procedures. Until 1955, British colonial boards were required to invest at least 70 percent of total assets in British national and municipal securities, and could invest up to 30 percent in the government securities of other colonies, but they could not invest in securities of their own colonies.<sup>8</sup> The Southern Rhodesia board was an exception. As a self-governing colony, Southern Rhodesia faced less imperial supervision of its currency laws than other colonies did. A 1942 amendment to the Southern Rhodesian currency board statute permitted the board to invest up to 7 percent of its assets in Southern Rhodesian securities and up to 3 percent in Northern Rhodesian securities. A 1947 amendment provided that "the Board shall, if required by any Government [of the three in its currency area], invest in such local stock of that Government and to such amount as may be requested by that Government" up to a maximum of 20 percent of the board's assets. The amendment permitted the board to hold Nyasaland securities for the first time. In 1951, 44.9 percent of the

---

<sup>8</sup> This division does not necessarily correspond to the division of assets into a long-term securities portfolio of about 70 percent and a short-term portfolio of about 30 percent, discussed later in this chapter.

board's assets were invested in local securities (Newlyn and Rowan 1954, pp. 67, 284).

In the late 1950s, other British colonial currency boards were also permitted to hold local securities. The West African Currency Board took little advantage of its new freedom, holding only WA£2.6 million in Sierra Leone government securities by 1962, near the end of its life. (The board's total assets were over WA£100 million when it began purchasing the securities [WACB 1957, pp. 17-18].)

The East African Currency Board, on the other hand, was aggressive in holding local securities and transforming itself into a quasi central bank through a series of permissions from the Secretary of State for the Colonies. In December 1955 the board's regulations were amended to allow it to hold up to EA£10 million in local (long-term) government securities, and in December 1957 the limit was raised to EA£20 million. In 1959 the board was authorized to buy local (short-term) Treasury bills, in November 1960 it was allowed to finance certain export crops up to an overall limit of EA£5 million, and in October 1964 it was allowed to hold up to EA£35 million in local government securities. By June 1965 the board held local assets of EA£19.7 million, or 28.2 percent of its total assets. The board divided its holdings of local assets among its member territories in proportion to their estimated shares of its note and coin circulation. The board reduced the

average maturity of its remaining sterling assets, which gave it more power to change its local asset holdings quickly. Another step towards "Africanizing" the board occurred in August 1960, when the board moved its headquarters from London to Nairobi and enlarged its board of directors from four to seven persons. The Secretary of State continued to appoint the directors, but the directors were local government officials rather than officials in London. The board started a clearing system for banks in May 1962. Banks had to deposit sterling to back their clearing accounts and could not overdraw the accounts, so the clearing system did not become a type of discount window.

In May 1962, during political uncertainty related to Kenya's struggle for independence, the East African board changed its commission rates for the first time since April 1946. It changed rates from 1/4 percent for both purchases and sales of sterling to 1/8 percent for purchases and 3/8 percent for sales. The purpose was to prevent investors from shifting from local Treasury bills into British Treasury bills, which were paying 1/8 percent higher interest. From then until the end of its existence the board changed commission rates a few times, within the legal maximum of 1/2 percent for purchases or sales. In March 1965 an amendment to the board's regulations allowed it to increase commission rates to as much as 1 percent. The board's published rates

did not always reflect actual rates because it sometimes dealt with banks at smaller commissions. The board required banks to keep deposits with it as a condition for dealing at favorable commission rates and for being allowed to rediscount with it their loans for export crops. In November 1964, when interest rates in London increased sharply, the board signalled its intent to act as a lender of last resort for crop finance. By this time the East African Currency Board was a quasi central bank, or if you will, an unorthodox currency board. However, it still lacked certain powers typical of a full-fledged central bank: for example, it could not impose reserve requirements and could not require banks that took no advantage of its facilities to hold deposits with it (Kratz 1966; Crick 1965, pp. 390-3).

Other British colonies or former colonies established central banks without a transition period of quasi central banking. A common central bank for Southern Rhodesia, Northern Rhodesia, and Nyasaland (now Zimbabwe, Zambia, and Malawi) replaced the Central African (originally Southern Rhodesian) Currency Board in 1956. The central bank lasted until 1964, when the three colonies dissolved their economic federation and established individual central banks.

The West African Currency Board, the original modern orthodox board, began to break up in 1958. In that year the Bank of Ghana took over note issuing functions from the Accra

branch of the currency board and began operating as a central bank. The Bank of Ghana was a government commercial bank that had been established in 1953 as the Bank of the Gold Coast. Ghana had become independent in 1957. Nigeria opened a central bank opened in 1959 and became independent in 1960. Sierra Leone became independent in 1961 and established a central bank in 1964. The West African Currency Board, reduced to a rump in Gambia, continued as the Gambia Currency Board until Gambia opened a central bank in 1971. The board did not finally close until 1973, but its only job during its last two years was to redeem the few West African notes and coins still in circulation.

Malaysia (formerly the colonies of Malaya, North Borneo, Sarawak, and the Straits Settlements cities of Penang and Malacca) established a central bank alongside the Malay Currency Board in 1959. The central bank exercised few powers until 1967. Singapore and Brunei retained the currency board system when they split from the Malaysian monetary system in 1967 (see Chapter 8).

Since the late 1950s there had been talk of replacing the East African Currency Board with a common central bank for Kenya, Tanzania, and Uganda after they became independent (McWilliam 1959, Blumenthal 1963). As independence approached they could not agree on the powers and distribution of seigniorage from the proposed central bank. In June 1965,

each colony announced that it would set up its own central bank (Hazlewood 1967, pp. 103-5). The new central banks opened in 1966.

Jamaica opened a central bank in 1961 to replace its currency board. Trinidad and Tobago opened a central bank in 1964 to replace the local operations of the multicolonial Board of Commissioners of Currency, British Caribbean Territories (Eastern Group). Guyana (formerly British Guiana), also a member of the East Caribbean board, established a central bank in 1965. The Leeward Islands (Antigua and Barbuda, St. Kitts and Nevis, and Montserrat) and the Windward Islands (Grenada, St. Vincent and the Grenadines, St. Lucia, and Dominica) transformed the East Caribbean board into a central bank in 1983, in parallel with their own transition to greater or complete independence from Britain.

#### Criticisms of the currency board system

Why did the currency board system decline so quickly? Perhaps the most important influence was the idea that central banking was a more modern and advantageous monetary arrangement than the currency board system. In the 1950s the currency board system came under sustained scrutiny from a

large group of economists for the first and so far only time.<sup>9</sup> The approaching end of colonial rule in many currency board countries provoked controversy among economists about the relative merits of the currency board system and central banking. Debate peaked in the mid-1950s.

Later developments in monetary theory have shown the consensus about the workings of the currency board system to be wrong in many important respects. No comprehensive published analysis re-examining the consensus of the 1950s yet exists. However, the unpublished dissertation of Chwee-Huay Ow (1985) provides the tools for a re-examination. I shall draw on her work and other recent advances in monetary theory to comment critically on the main objections advanced against the currency board system in the 1950s.

The opening salvo in the theoretical debate about currency boards was fired by J. Mars, an Oxford University development economist. Throughout the 1950s, debate centered around criticisms that he first raised. Mars's 1948 account

---

<sup>9</sup> Critics of the currency board system were Mars (1948); Hazlewood (1952, 1954a, 1954b); "Analyst" 1953, 1954; Newlyn and Rowan (1954, pp. 188-205); Niculescu (1954); Rowan (1954a); Nevin (1961, pp. 1-44, 67-71); and Thomas (1965, pp. 20-24). Basu (1971, pp. 54-66, 240-4) ably summarizes the criticisms. Defenders of the currency system were Greaves (1953a, 1953b, 1954a, 1957a); King (1955; 1957, pp. 61-99); and to some extent, Earle (1954); Birnbaum (1957); and Olakanpo (1961). See also the essays collected in Drake (1966), and, for more recent assessments, McLeod (1975); Ow (1985, pp. 54-86); Walters (1987); and Walters and Hanke (1992).

of the Nigerian financial system claimed that the currency board system needlessly diverted funds to the reserve-currency country that could instead be used to foster local economic development. According to him, "whenever the localised currency increases the increment is virtually obtained at the expense of a commodity loan by Nigerian producers to London" (Mars 1948, p. 190).<sup>10</sup> Using statistical evidence, Mars (p. 199) contended that "operating in a situation where the terms of trade between primary and secondary industries have been continuously deteriorating, the 100 percent sterling exchange standard has had a deflationary effect on the Nigerian internal price level," which he saw as undesirable. "[A] poverty-stricken country, like Nigeria, with an undeveloped banking system, can much less afford a costly 100 percent exchange standard currency than a rich country" (p. 194). Mars proposed instituting a "'managed sterling exchange standard currency,'" an arrangement in between a currency board system and full-fledged central banking. The monetary authority would hold less than 100 percent sterling reserves and would have limited power to alter the fixed exchange rate

---

<sup>10</sup> Grove and Exter (1948, p. 938) made a similar criticism, but did not attract as much notice as Mars. Much earlier, Currency School writers had commented on the high cost of full-bodied coins compared to token coins, and of a 100 percent gold reserve requirement for all notes compared to a 100 percent marginal gold reserve requirement beyond a hard core of circulation.

with sterling (pp. 204-7).

Mars and other critics from the late 1940s and the 1960s made four main charges against the currency board system. One charge concerned the cost of a currency board's reserves. Any regime of fixed exchange rates that promises redemption on demand needs to hold some external reserves, but Mars and others thought that 100 percent external reserves against currency was too high a ratio. They claimed that some portion of the reserves represented a clear loss of resources, because under a less restrictive monetary system the country could instead safely use that portion to buy foreign goods (Hazlewood 1952; Newlyn and Rowan 1954, p. 202). It seemed absurd that the currency board system should take funds from poor countries to invest them in Britain. The currency board system appeared from this perspective to retard economic development (Mars 1948, p. 194; Nevin 1961, pp. 11-12).

What portion of a currency board's reserves could safely be invested in domestic assets? The practice of British colonial currency boards suggested an answer. British colonial boards divided their assets into two or three parts. The "liquid reserve" corresponded to their estimate of the maximum amount of notes and coins that the public might want to redeem within a few months, because of regular seasonal changes in demand or because of a depression. It usually equalled 30 to 50 percent of total circulation. As liquid

reserves, British colonial currency boards held high-quality securities, especially British government securities, that had maturities of a year or less. They could sell the securities quickly with little loss if the need arose. The "investment reserve" corresponded to the boards' estimate of the hard core of circulation that would never be redeemed. In the investment reserve, boards held long-term securities, often of lower quality than the securities in the liquid reserve. Such bonds yielded higher interest rates but carried more risk of capital loss. The liquid reserve plus the investment of reserve equalled 100 percent of notes and coins in circulation, plus deposits, if any. To ensure that capital losses on securities would not reduce reserves below 100 percent, many boards also held a "surplus account" of 5 or 10 percent (Clauson 1944, pp. 8-11), a practice that had originated with the Mauritius currency board in the nineteenth century. Many boards had a small margin for discretion with the surplus account: within the range of 100 to 105 or 110 percent reserves, they could either retain the seigniorage accumulated in the previous year or pass it on to the government. Below 100 percent they had to retain seigniorage and above 105 or 110 percent they had to pass it on.

It appeared to critics of the currency board system that the investment reserve could safely be held in the form of domestic assets rather than external assets. Doing so would

raise the average return on assets for colonial currency boards, because the rate of return was higher for colonial securities than for British securities of the same maturity. It would speed domestic economic development, because more savings would be channeled into the domestic economy. And it would not jeopardize convertibility into the reserve currency, because the hard core of circulation would never be converted into the reserve currency anyway (Mars 1948, p. 188).

The second charge against the currency board system was that it unnecessarily forced the money supply to shadow the current account balance. The Currency School had thought this to be the main advantage of a currency board-type system, but Mars and other economists correctly contended that in a fractional-reserve banking system it was not necessarily desirable. An individual person may be better off by going into debt to buy his weekly supply of groceries rather than waiting until he has accumulated enough to pay cash for it. Similarly, a nation may be better off if the supply of money (which reflects credit granted by financial institutions) is not rigidly connected to transitory fluctuations in foreign trade. Fiduciary issue of currency, critics of the currency board system said, need not endanger convertibility, and it would afford an advantageous degree of freedom to the local supply of money (Mars 1948, pp. 186, 200-204).

The third charge against the currency board system was

that it did not allow a discretionary monetary policy. Economists of the 1940s, 1950s, and 1960s thought that discretionary policy could promote economic growth more effectively than the currency board system (Mars 1948, pp. 204-7, 212; "Analyst" 1953, p. 45; Hazlewood 1954b, p. 307). Here is a typical statement from the period about the benefits that economists expected a discretionary monetary policy to bring: "A national bank enables the government of the country to control the monetary policy of the country more closely, and....A national bank, through the rates of interest for its own bills or short-term moneys, can virtually control the interest rates charged by other banks operating in the territory. In Libya, generally speaking, the interest rates charged by banks at present are considerably higher than customarily prevails in European countries, or indeed in most parts of the world" (Bank of Libya [1966], p. 18, quoting a Libyan government memorandum of 1954).

The final major charge against the currency board system was that it lacked a lender of last resort. Critics argued that a lender of resort could bolster the liquidity of commercial banks and prevent a financial crisis from worsening a recession caused by a decline in exports (Newlyn and Rowan 1954, p. 272). Also, a lender of last resort could use its powers of reserve sterilization to offset changes in the public's holdings of currency to bank deposits. Sterilization

could neutralize the character of currency as high-powered money, preventing a mere change in the public's payment habits from affecting bank reserves in a manner that the public did not intend. An orthodox currency board, in contrast, is by design unable to create unbacked reserves or to sterilize reserves.

The charges against the currency board system made by Mars and others gained adherents as the 1950s passed. At the beginning of the decade a number of colonial officials, economists, and even central bankers questioned the wisdom of establishing central banks in developing countries (e.g., Sayers 1957; see also Basu 1967, pp. 53-5). They feared that central banks might become instruments of inflationary deficit finance. Some also pointed to practical problems of training a sufficient number of native officials to run a central bank and to the alleged impotence of central bank policy in countries without well-developed domestic bond markets (Central Bank of Nigeria 1979, p. 38; J. L. Fisher 1953, pp. 17-18). World Bank missions to undeveloped countries in the 1950s and 1960s were divided: a mission to Malaya recommended replacing a currency board with a central bank to promote economic development (IBRD 1955, p. 228), while other missions recommended retaining currency boards temporarily or indefinitely (IBRD 1957b, pp. 32-3; 1961, p. 36; 1962, p. 71; and 1963, p. 271).

By the late 1950s the tide turned, and central banking won the theoretical discussion. Scholarly debate about the history and theory of the currency board system, which had been vigorous from 1944 to the mid-1950s, dried up by the early 1960s. Edward Nevin's 1961 book Capital Funds in Underdeveloped Countries: The Role of Financial Institutions was the final nail in the coffin. Nevin (1961, pp. 22-24, 40-44) argued that central banking could spur economic development more effectively than the currency board system. He correctly pointed out that, contrary to an opinion widely held before the 1950s, a central bank could conduct an effective monetary policy even though no domestic bond market existed. A central bank in a backward country could influence credit by changing the minimum reserve ratios required of commercial banks. Alternatively (though less desirably, in Nevin's opinion), the central bank could rediscount loans and other assets held by commercial banks or even offer credit to the public directly. Such measures could work in backward countries even though they were rare in many advanced countries.<sup>11</sup> Nevin's book seemed at the time the last word on the theory of the currency board system.

---

<sup>11</sup> Minimum reserve ratio requirements, to which Nevin devoted particular attention, are today common in all countries.

Were the criticisms correct?

Chapter 9 will address empirical issues related to the charges against the currency board system that Mars and other economists raised. Here I shall discuss the charges on a theoretical level.

Critics of the currency board system had in mind a particular model of its workings. Neither critics nor defenders of the currency board system systematically explained the assumptions of the model, although some displayed a good grasp of the implications of particular assumptions. In retrospect it is apparent that important assumptions of the model were:

1. The ratio of the public's currency holdings to its bank deposits is constant.
2. The aggregate reserve ratio of banks is constant.
3. Income and money holdings move in the same direction.
4. There is no branch banking between the currency board country and the reserve-currency country.
5. Changes in the balance of payments occur to the current account and are settled by transfers of the reserve currency; the capital account does not change.

Chwee-Huay Ow (1985, pp. 57-66) and Alan Walters (1987), who supervised Ow's dissertation, point out that it is more realistic to model the currency board system in a manner that requires none of these assumptions. Ow elaborates an IS-LM

model of the currency board system, which some economists might fault, but her achievement transcends the IS-LM framework. By exposing the assumptions on which theoretical criticism of the currency board system rested, she shows the similarity between the currency board system and the classical gold standard. Economists still do not agree on all the details of how the classical gold standard worked (see Bordo and Schwartz 1984), but they now agree on many points similar to those debated by critics and defenders of the currency board system in the 1950s. In light of Ow's work and other recent developments in monetary theory, let us briefly examine the criticisms of the currency board system. (I have examined the criticisms at length in Hanke and Schuler [1991b] and Hanke, Jonung, and Schuler [1992].)

The first of the four main charges against the currency board system in the 1940s and 1950s was that holding 100 percent external reserves was wasteful. Eugene A. Birnbaum (1957) expressed a contrary view, claiming that the hard core of circulation, and hence the scope for replacing external assets with domestic assets in currency board portfolios, was smaller than critics of the currency board system believed. Also, by the mid-1950s, many British colonial currency boards were allowed to hold up to 30 percent of their assets in bonds issued by Commonwealth governments other than Britain (King 1955, p. 719), though the boards often did not do so. Leaving

these empirical matters aside, consider the gain that would result from using the investment reserve differently. If spent on imports in a one-time consumption spree, the investment reserve would yield no pecuniary interest. If invested in domestic assets it would yield interest. Assume that the present value of those two courses of action is equal, then compare it with the present value of holding external assets. The currency board system is more costly than central banking only if the return on domestic assets exceeds the return on similarly risky external assets (see also Ow 1985, pp. 80-2).

A contradiction arises. If arbitrage is efficient, returns on similarly risky domestic and external assets should be equal, plus or minus an allowance for transaction costs. Persistently higher returns on domestic assets implies either that arbitrage is not efficient or that domestic assets are riskier than external assets of similar maturity.

In the nineteenth century, long-terms colonial government securities had much higher yields than long-term British local government securities<sup>12</sup> (say, 6 percent versus 4 percent), but by the 1950s the yields were about equal. As I have

---

<sup>12</sup> British local government bonds were like colonial government securities in that both carried risks not present with imperial government securities. The imperial government operated similar guarantee schemes for local and colonial government securities.

mentioned, many British colonial currency boards were permitted to invest in domestic securities, chiefly government bonds. Currency board managers were aware that domestic securities were riskier than British securities. The Mauritius currency board at first experimented with holding a large proportion of local bonds. During local financial crises it needed to sell the bonds to meet demands to redeem its notes and coins. The board found that it could only sell at a great loss, if at all. British bonds paid lower interest rates, but were more liquid and less likely to drop sharply in price. The experience of the Mauritius currency board influenced the practice of later boards.

The second charge against the currency board system was that it forced the money supply to shadow the current account balance, thus constraining economic growth. The currency board system is deflationary when demand for notes and coins grows, given the assumptions enumerated above. (The converse, which no one seems to have mentioned, is that the currency board system is inflationary when demand for notes and coins shrinks.) Under those assumptions, when the public wants to hold more notes and coins, or when banks wish to hold more notes and coins as reserves, the currency board country must run a current account surplus equal to the desired increase in the supply of high-powered money. It is unlikely that a currency board system can run the continual surpluses

necessary to satisfy the expanding demand for notes and coins. When the current account is in balance or in deficit, the supply of notes and coins grows more slowly than the demand, resulting in a fall in prices. In contrast, a central banking system need not run continual current account surpluses to satisfy a growing demand to hold money, because a central bank need not hold 100 percent reserves in external assets. If the public wants to hold more money the central bank can issue more notes and coins and increase commercial bank reserves without increasing its own external reserves. If the central bank gauges the public's demand correctly the real and nominal money supply can rise without generating deflationary effects on prices or the current account balance. (This is the ideal of "neutral money.")

Ow (1985, pp. 58-66) points out that capital account transactions and branch banking with the reserve currency country can enable a currency board system to expand its note and coin issue despite persistent deficits in the current account. The flexibility of commercial banks' ratio of deposits to reserves enables them to increase their part of the money supply, deposits, without increasing their reserves (see also Hazlewood 1954b, p. 296).

Furthermore, although currency board systems in some small territories lacked commercial banks, even they had means of absorbing capital-account transfers. Overseas trading

companies could invest in the colonies without affecting the local supply of currency by granting colonial plantations credits in London for purchasing machinery, for example. Alternatively, capital-account transfers could be made by means of the exchange facilities offered by the currency boards, which would affect the local supply of currency but tie it to the overall balance of payments rather than to the current account alone.

The third charge against the currency board system was that it did not permit discretionary monetary policy. Ow (1985, pp. 70-5) counters that although under the currency board system a government cannot issue high-powered money at will, it can influence the supply of money by other measures. It can impose binding minimum reserve requirements, liquidity requirements, or interest rate ceilings on commercial banks; Hong Kong and Singapore have done so (see Chapter 8). Even if the government eschews regulation, it may be able to affect the money supply by shifting its funds from inside to outside the domestic financial system. Of course, international branch banking and the development of financial markets reduce the effectiveness of such shifts because they barriers between the domestic financial system and the rest of the world.

Ow does not attack discretionary monetary policy itself. An attack can be made in the spirit of recent literature of "time consistency," however. (For a summary of literature on

time consistency see Persson and Tabellini [1990]). Economic literature of the 1950s tended to assume that each new turn in monetary policy was a new game, in which no long-run constraints bound a monetary authority with discretionary powers. Kydland and Prescott (1977), in an extension of Lucas's (1972) influential idea, alerted economists to the possibility that long-run constraints on monetary policy exist. Many agents can make profits by correctly anticipating the policies of the monetary authority. It pays for them to take actions that reduce the effectiveness of monetary policy surprises. If their actions are effective enough, no rationale for discretionary monetary policy exists. Instead, the monetary authority should focus its attention on instituting policies that are time consistent and therefore credible to other agents in the economy. Typically such policies will be extremely rule-bound. The precise content of a good monetary rule is a subject of continuing debate, but Alan Meltzer (1991), a leading authority on monetary rules and credibility, has advocated the currency board system as one possible type of "rule-like behavior" (a term he prefers over "rule").

Another aspect of the presumed superiority of discretionary monetary policy was that economists in the 1950s and 1960s assumed that through credit controls or mild inflation, discretionary policy could encourage economic

growth by keeping real interest rates permanently low. Ronald McKinnon (1973) and Edward Shaw (1973) later showed that such policies of "financial repression" in fact reduce financial savings and retard economic growth. (For a recent synthesis of literature on financial repression see M. Fry [1988].)

The currency board system was criticized for lacking a lender of last resort. As with the charge concerning lack of ability to conduct a discretionary monetary policy, Ow (1985, p. 89) observes that the Monetary Authority of Singapore, an unorthodox currency board, does in fact act as a lender of last resort. But this does not answer the question of how an orthodox currency board system can compensate for the lack of a lender of last resort. I would reply that the currency board system does not preclude government guarantee of deposits. Moreover, it is possible to take a more radical tack, as some recent research has done, and question the rationale of a government lender of last resort (Selgin 1988b; Dowd 1989, pp. 38-43; Kaufman 1991). According to this line of argument, it is possible to offer liquidity in emergencies without a central bank. Suppose banks suffer reduced liquidity because of a sudden shift in the payment habits of the public. In that case, banks can entice the public to redeposit currency by raising short-term deposit rates. Raising deposit rates also attracts funds from abroad, causing an inflow of reserves.

As a more far-reaching step, banks could be permitted to issue their own notes alongside those of the currency board (Selgin 1988a), as occurred in some British Caribbean colonies until the 1950s (Sayers 1952, pp. 427-8), in Ceylon and the Straits Settlements during the early years of their currency boards, and in the Philippines until a central bank opened there. If banks suffer reduced liquidity because the public has lost confidence in the banking system, the circulation of bank-issued notes will contract along with bank deposits. In that case banks could invoke an "option clause," a contractual agreement to enable them to delay redemption according to specified procedures, which might include paying a penalty rate of interest to depositors and holders of bank notes during the delay (Dowd 1988).

#### Other factors in the decline of the currency board system

Besides the strong theoretical case that appeared to exist against the currency board system in the 1950s, other factors contributing to the decline of the currency board system were the desire for central banks as expressions of national sovereignty, the chronic weakness of sterling under the Bretton Woods system, and the greater ease of increasing government spending under central banking.

Few newly independent nations were satisfied with anything less than a full-fledged central bank. A central

bank seemed an essential aspect of national sovereignty. Sierra Leone, for instance, commissioned a report from a West African Currency Board official (Loynes 1961) who had earlier advised Nigeria on establishing its central bank. The report recommended that Sierra Leone establish a Monetary Institute, which would be allowed to hold up to 40 percent of its reserves in local assets but which would assume central banking powers only gradually. Sierra Leone rejected the report. (See also Basu [1967, p. 53] and Newlyn and Rowan [1954, p. 268n.] for other cases.) Nations that established currency boards after independence generally replaced them with central banks after a few years.

The weakness of sterling, the reserve currency for most currency boards, contributed to the perceived desirability of replacing currency boards with central banks. Britain's Defence (Finance) Regulations of September 1939 had imposed strict foreign-exchange controls to prevent enemy nations from acquiring supplies from the British Commonwealth through neutral parties. During the war, currency board territories and other countries whose currencies were tied to sterling (the "sterling area") accumulated large credits in Britain as Britain paid them for war materiel. The Bretton Woods treaty of July 1944, which Britain signed, envisioned a postwar system of convertible currencies with pegged exchange rates, centered on the U.S. dollar. To fulfill its treaty promise,

Britain abolished exchange controls on July 15, 1947. Sterling became convertible at a gold parity equivalent to \$4.03. Many sterling holders rushed to convert the credits they had accumulated during the war. Speculation against sterling developed and Britain lost much of its gold reserves. On August 20, 1947, Britain reimposed exchange controls. The controls applied to all colonial currency board systems except Hong Kong, which depended on a free foreign exchange market as an adjunct to its entrepot trade. The controls also extended to independent nations in the sterling area. People in many sterling area territories became dissatisfied with the new controls, which prevented them from trading readily with countries that used the U.S. dollar. Unlike sterling, the dollar was readily convertible into gold at a fixed rate of exchange.

Britain's devaluation of sterling to the equivalent of \$2.80 on September 18, 1949 caused further discontent among holders of sterling. Britain removed current-account controls in December 1958, but did not abolish the last capital controls until October 24, 1979. It persuaded certain sterling area governments to maintain minimum holdings of sterling (Great Britain, Parliament 1961 and 1966), but could not stop the decline of sterling as an international currency relative to the dollar, the German mark, and the Japanese yen.

On November 18, 1967, Britain devalued sterling to the

equivalent of \$2.40. The devaluation imposed losses on sterling area territories. To stem a mass rush out of sterling by their governments, including the currency boards of Hong Kong and Singapore, in 1968 Britain offered to compensate them for most of the effect of future devaluations. The means of doing so was the Basle facility, a line of credit that other nations offered Britain through the Bank for International Settlements in Basle, Switzerland (Great Britain, Parliament 1968a).

When the United States halted the convertibility of the dollar into gold on August 15, 1971, sterling remained at its previous gold parity (though it was not convertible into gold), so its exchange rate rose to \$2.60571. However, in June 1972 sterling came under heavy speculative selling pressure. On June 23 Britain let sterling float, in effect devaluing it. The remnants of the Bretton Woods system collapsed in March 1973.

If sterling had remained a stable currency, many former British colonies would probably have been content to remain on the sterling exchange standard, and perhaps more would have retained the currency board system. Instead, even the currency boards of Hong Kong and the British Caribbean colonies switched to the dollar as their reserve currency. Newly independent nations switched to the dollar or to floating exchange rates.

A final factor that may have contributed to the decline of the currency board system was that it prevented governments from financing themselves by creating inflation. I have found no statements by officials in any country that the prospect of greater short-term seigniorage from a central bank influenced them to abandon the currency board system. None the less, government budget deficits and inflation have generally been higher in most former currency board countries since they established central banks, higher than in countries that retained the currency board system, and higher than in Britain or the United States (see Chapter 9).

Of the factors that caused the decline of the currency board system, the desire for a central bank as an expression of national sovereignty seems to have been strongest. Even persons who advocated the currency board system as appropriate for undeveloped nations implicitly accepted that every developed nation should have its own central bank. Establishing a central bank was a way for former colonies with currency boards to assert that their status as sovereign nations was equal to that of older nations.

## CHAPTER 8. CURRENCY BOARDS TODAY

Currency boards exist today in Hong Kong, Singapore (in modified form), Brunei, the Cayman Islands, Gibraltar, the Falkland Islands, and the Faroe Islands. Hong Kong, the Cayman Islands, and Gibraltar are British colonies, Singapore and Brunei are former British colonies, and even the currency board system of the Faroe Islands has a British origin, although the islands are Danish territory. The currency board systems of Hong Kong and Singapore merit particular attention because Hong Kong and Singapore are often praised as models of successful economic development. This chapter examines their currency board systems in detail and the remaining present-day currency board systems briefly.

The Hong Kong currency board system 1935-1972

Hong Kong established a currency board in 1935. The currency board system replaced free banking, which had existed since the first bank opened in 1845.

Hong Kong was on the silver standard until 1935, long after most other nations had switched to the gold standard. A 1930 local committee of inquiry and a 1931 British Parliamentary committee both concluded that Hong Kong's extensive trade with China made it advantageous to follow the silver standard so long as China did (Hong Kong 1930; Great

Britain, Parliament 1931). That was not to be much longer. By October 1935, Chinese bank notes and deposits traded at a 45 percent discount to their official silver value because government note-issuing banks were inflating the currency to finance the civil war against the Communists. On November 3, 1935 China nationalized all silver holdings and declared that bank notes would be legal tender effective the next day (King 1957, p. 107).

People in Hong Kong began hoarding silver dollars. To combat the developing shortage, Hong Kong swiftly passed an ordinance (No. 42 of 1935) authorizing inconvertible, government-issued Hong Kong dollar (HK\$) notes of HK\$1. (Banks had long been prohibited from issuing notes for less than HK\$5.) The Currency Ordinance (No. 54) of December 6, 1935 declared bank notes to be legal tender and nationalized all silver holdings except those of jewelers. A newly established Exchange Fund was given charge of the silver, which amounted to £12,313,938, or roughly HK\$200 million (Ghose 1987, p. 15). The silver became a reserve against bank notes and government notes. It was more than sufficient to back bank notes in circulation, which in 1934 had been HK\$154 million (Tom 1964b, Appendix B). The Exchange Fund was allowed to invest the silver reserve and subsequent earnings in any currency, in gold or silver, or in securities approved by the British Secretary of State for the Colonies. It could

also draw on government surpluses and borrow up to the equivalent of HK\$30 million. The Exchange Fund was to be managed by a treasurer-chairman (the Financial Secretary of Hong Kong) and an advisory committee appointed by the Governor.

For the silver that the three note-issuing banks surrendered to the Exchange Fund, it gave them noninterest-bearing Certificates of Indebtedness entitling them to issue bank notes. Some years earlier the note-issuing banks had been required to hold 100 to 105 percent reserves in silver or approved securities against notes issued beyond certain low thresholds (Ordinance No. 65 of 1911; No. 6 of 1929; Chartered Bank of India, Australia, and China, British charter amendment of 1897). The Certificates of Indebtedness worked similarly: to issue more notes, note-issuing banks had to buy more certificates. Other banks had been effectively prohibited from issuing notes since 1895 (Ordinance No. 2 of 1895), so to convert customers' deposits into Hong Kong dollar notes they had to acquire notes from one of the three issuing banks: the Hongkong and Shanghai Banking Corporation; the Chartered Bank of India, Australia, and China; or the Mercantile Bank of India, Australia and China.

The two 1935 ordinances gave the Hong Kong government maximum ability to manipulate the Hong Kong dollar in whatever way seemed most appropriate to respond to China's monetary

policy. By regulating note issue they in effect regulated Hong Kong dollar deposits too because of the one-to-one convertibility of notes into deposits. The ordinances said nothing about a currency board system. They specified no fixed exchange rate and no reserve requirements for the Exchange Fund, or for the similar but far smaller Coinage Security Fund for HK\$1 notes (absorbed into the Exchange Fund on December 31, 1978). The Exchange Fund in theory could accept almost anything, including Hong Kong dollar bank deposits, as collateral for Certificates of Indebtedness. Furthermore, the Exchange Fund had no legal obligation to repurchase Certificates of Indebtedness, which hence could have become the basis of a floating exchange rate, fiat monetary standard. In practice, Hong Kong soon settled into a currency board system. The Exchange Fund kept all but a minuscule amount of its reserves in sterling securities or sterling bank deposits in London. Its reserves were from the start 100 percent or more of its notes in circulation (King 1957, p. 109); it later settled on 105 percent reserves as its desired ratio.

Unlike currency board systems elsewhere, in Hong Kong banks rather than the currency board issued notes. Banks made no profit from their issue, except for a fiduciary issue totalling HK\$12 million, against which they were permitted to hold approved interest-bearing securities rather than

noninterest-bearing Certificates of Indebtedness. The Exchange Fund required the note-issuing banks to pay sterling for 100 percent of the value of Certificates of Indebtedness. Since the certificates paid no interest, the Exchange Fund reaped almost the whole profit of bank note issues. The Exchange Fund paid the expenses of printing all notes in excess of the banks' fiduciary issues (King 1988, v. 3, pp. 248-50). These arrangements persist today for the Hongkong Bank and the Standard Chartered Bank (Hong Kong, Hong Kong 1990, p. 177). The Hongkong Bank absorbed the note issues of the Mercantile Bank in the 1970s. In the near future the Bank of China, the foreign trade bank of the Chinese government, may be allowed to issue notes on a similar basis as the Hongkong Bank and the Standard Chartered Bank.

The Exchange Fund dealt mainly in sterling. It kept the Hong Kong dollar's exchange rate with sterling within a range of 1s. 3-5/8d. (HK\$15.36 = £1), the rate when the Fund opened in December 1935, to 1s. 2-9/32d. (HK\$16.45 = £1) (Stammer 1968, p. 59). In September 1939 the Exchange Fund made official the exchange rate link with sterling. It offered to sell Certificates of Indebtedness to note-issuing banks in unlimited amounts at 1s. 3d. (HK\$16 = £1) and to repurchase them at 1s. 2-13/16d. (HK\$16.20 = £1). Note-issuing banks agreed to do business with other banks at a spread of 1/32d. (3.33 Hong Kong cents per £1) around the Exchange Fund's rates

(King 1956, p. 108); the public faced a still wider spread of 1/32d., buying Hong dollars at 1s. 3-1/16d. (about HK\$15.93 = £1) and selling at 1s. 2-3/4d. (about HK\$16.27 = £1). (The Exchange Fund has never done business with the public.) Later the Exchange Fund increased its rate for buying Hong Kong dollars to 1s. 2-7/8d. (about HK\$16.13 = £1), and in the late 1960s it increased the buying rate to 1s. 3d., eliminating the spread for note-issuing banks (Stammer 1968, p. 61). Spreads in the interbank and retail markets narrowed in step with the spreads maintained by the Exchange Fund.

When the Japanese army captured Hong Kong on December 26, 1941, it found HK\$121.9 of unissued bank notes in bank vaults, of which HK\$119.8 million were notes of the Hongkong Bank. (Total bank note issue at the time was about HK\$290 million; there were also over \$6 million of government notes [Hong Kong Blue Book 1941].) The Japanese illegally spent the notes into circulation, whence the notes came to be called the "duress" notes. The Japanese were unable to seize the Exchange Fund's assets, which were held in London. At British request, Free China Radio told the populace that after the war the banks would not accept the duress notes, and it announced the serial numbers of the notes. For a time the notes passed at as much as a two-thirds discount to their face value (King 1957, p. 109), which was not the case for legally issued notes. In January 1943, the Japanese introduced a new currency, the

military yen, which they declared the only legal currency. They initially issued military yen at a rate of 1 yen per HK\$4. People continued to hold Hong Kong dollar notes in anticipation of an Allied victory (Jao 1974, pp. 16-17). By the end of the war an estimated 1.8 billion military yen notes were in circulation. At the official exchange rate, military yen plus Hong Kong dollar notes in circulation amounted to about HK\$868 million, nearly treble the prewar note issue for a population half as large as the prewar population. As the Japanese lost battles to the Allies the military yen lost value: at the end of the war a plate of food cost 1,400 yen, officially equal to HK\$350 but in fact just a few dollars at the black-market rate (Braun 1982, pp. 45, 103).

After Japanese occupation ended on August 16, 1945, the British restored the Hong Kong dollar as legal tender and allowed people to convert military yen into Hong Kong dollars at a rate of 100 yen per dollar, up to a limit of 500 yen. The currency board system resumed operations on September 13. After some discussion about how to handle the duress notes, the government in August 1946 decided to honor them (Ordinance No. 13 of 1946). The Exchange Fund probably had HK\$300 million or more in reserves, but it believed that publishing a financial statement would raise unfounded fears about its solvency. It has never resumed publishing financial statements, so 1939 is the last year a statement appeared.

However, in 1953 the Exchange Fund did announce that sterling reserves again equalled 100 percent of notes in circulation (Ghose 1987, p. 24).

Hong Kong had become part of the sterling area in August 1940 under the British Defence (Finance) Regulations. After World War II Hong Kong remained subject to some sterling area exchange controls. Unlike the case most other British colonies, though, the authorities tolerated a free market for sterling exchange, mainly against the U.S. dollar, because of the importance of foreign exchange to Hong Kong's entrepot trade.

The Hong Kong dollar kept its fixed rate with sterling when Britain devalued sterling to US\$2.80 in 1949. When Britain devalued sterling to US\$2.40 on November 18, 1967, Hong Kong at first followed suit, making the implied exchange of the Hong Kong dollar against the U.S. dollar  $\text{HK\$}5.714 = \text{US\$}1$ . On November 23 Hong Kong revalued the Hong Kong dollar to  $\text{HK\$}14.55 = \text{£}1$  ( $\text{HK\$}6.061 = \text{US\$}1$ ), leaving a net devaluation of about 6.07 percent against the U.S. dollar. By this time, Hong Kong's trade and investment links with the U.S. dollar area were more important than its links with the sterling area. Hong Kong had ample reserves of foreign exchange, so the Hong Kong dollar maintained its new rate.

On December 18, 1971 the United States devalued the dollar from \$35 per ounce of gold to \$38 per ounce. Hong

Kong, like Britain, offset the devaluation by revaluing its currency by 8.57 percent against the U.S. dollar, to HK\$5.582 = US\$1. After Britain floated sterling against the U.S. dollar on June 23, 1972, sterling drifted downward 3.7 percent. Hong Kong responded by uncoupling the Hong Kong dollar from sterling on July 6 and linking it to the U.S. dollar at a central rate of HK\$5.65 = US\$1. The Hong Kong dollar was allowed to move within a band 2.25 percent wide on either side of the central rate. The Exchange Fund lost HK\$91.3 million from sterling's float against the U.S. dollar (Ghose 1987, p. 31). Beginning in 1971 the Exchange Fund had begun to shift assets from sterling securities to dollar securities, but it still held substantial sterling assets (see Lee and Jao 1982, pp. 24-5). Sterling area controls in effect ended for Hong Kong at the end of 1972 (Jao 1974, p. 90).

#### The currency board system modified and abandoned, 1972-1983

No law required the Exchange Fund to maintain a fixed exchange rate or to hold any particular type of reserves. From 1972 to 1974 it drifted insensibly towards a fiat monetary standard.

Almost from the start of its existence the Exchange Fund had stood ready to sell Certificates of Indebtedness for sterling in unlimited amounts. To preserve the currency board system under the link with the U.S. dollar, the Exchange Fund

should have stood ready to sell Certificates of Indebtedness for U.S. dollars only. Instead, it allowed note-issuing banks to buy Certificates of Indebtedness with Hong Kong dollars. A possibility existed that note-issuing banks would deplete the Exchange Fund's U.S. dollar reserves by replacing them with Hong Kong dollar assets, including their own Hong Kong dollar deposits.

On February 14, 1973, the U.S. dollar was devalued 10 percent. The Hong Kong dollar was revalued to HK\$5.085 = US\$1, offsetting the American devaluation. By mid-March the German mark, Japanese yen and other major currencies were floating against the U.S. dollar. Speculation against the U.S. dollar brought an inflow of capital into Hong Kong. To try to preserve price stability, Hong Kong on November 26, 1974 announced that the Hong Kong dollar would float against the U.S. dollar.

The floating exchange rate "free issue" system that followed has few parallels in monetary history.<sup>13</sup> Under it, the Exchange Fund no longer acted as a currency board, but it did not act like a central bank either. It sold Certificates of Indebtedness to note-issuing banks on demand for Hong Kong dollars. Because the Exchange Fund kept its account "inside" the banking system with the Hongkong Bank, its sales and

---

<sup>13</sup> Canada had a similar system from 1914 to 1935.

purchases of Certificates of Indebtedness did not affect bank reserves. Suppose the Exchange Fund sold Certificates of Indebtedness to the Hongkong Bank, which had the bulk of the note issue. The Hongkong Bank would transfer a credit from its own account to the Exchange Fund's account, but the Hongkong Bank's reserves would not change. Under a central banking system, in contrast, the Hongkong Bank would have kept an account with the Exchange Fund rather than the reverse, and the Exchange Fund's sales of Certificates of Indebtedness would have reduced the Hongkong Bank's reserves and hence its ability to extend credit.

The free issue system imposed no limit on the power of the note-issuing banks to increase the nominal supply of Hong Kong dollars (Greenwood 1977, 1983a). The banks did not take full advantage of their power, partly because they seem not to have understood it well and partly because they thought hyperinflation was not in their interests. The Exchange Fund tried to control the money supply by imposing liquidity requirements in April 1979 (Ordinance No. 17/79). Note-issuing banks had to keep 100 percent liquid asset cover against any Exchange Fund deposits designated as short-term funds. However, the banks could create liquid assets by borrowing foreign currency, so the requirements did not restrain creation of Hong Kong dollar credit.

The government deposited its foreign currency holdings

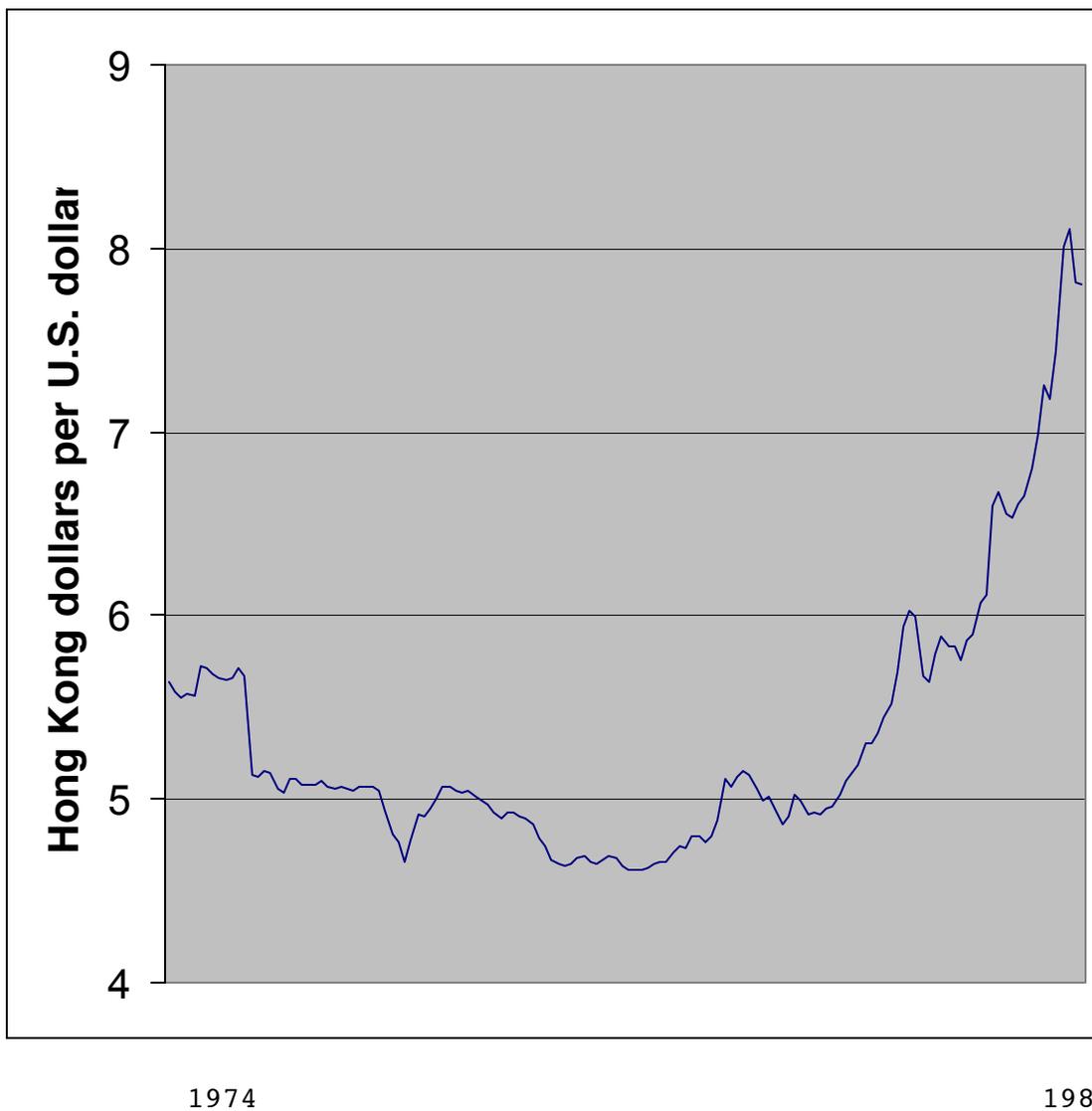
with the Exchange Fund in 1978. The Exchange Fund gained control of invested government budget surpluses, increasing its power enormously. The Exchange Fund does not publish a financial statement, but its estimated size today is HK\$100 billion to HK\$120 billion. Recently a number of prominent persons have requested that the Exchange Fund make public its finances (South China Morning Post, March 29, 1992).

The currency board system returns, 1983-present

The free issue system worked acceptably for a number of years. Despite money supply growth that was on average far greater and more variable than under the currency board system, the economy grew rapidly and the Hong Kong dollar kept a trade-weighted value close to its value in the early 1970s.

Figure 1

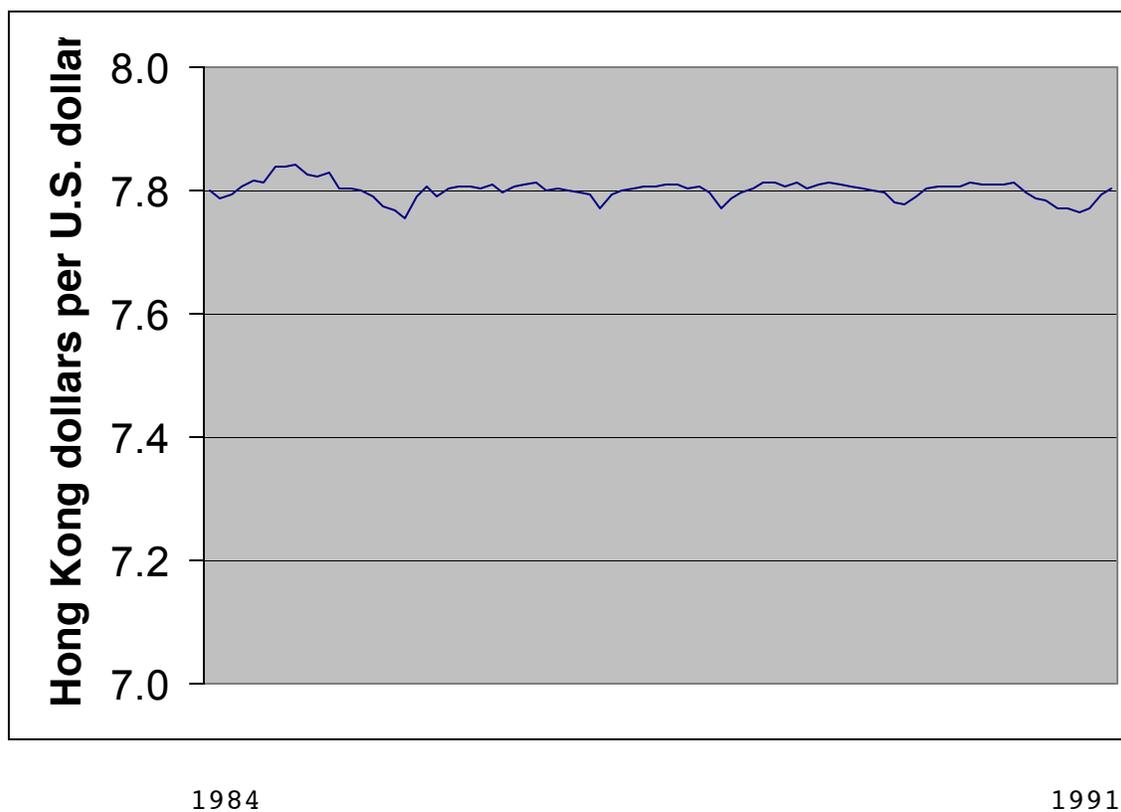
Exchange rate of Hong Kong dollar, 1974 to 1983



Monthly average rates. Source: International Financial Statistics, March 1991 compact disk.

Figure 2

Exchange rate of Hong Kong dollar, 1984 to 1990



Monthly average rates. Sources: International Financial Statistics, March 1991 compact disk.

Confidence in the Hong Kong dollar began to erode after Sino-British talks on the future of Hong Kong began in 1982. During 1982 the stock market fell over 50 percent from its high for the year, the property market crumbled, and there were runs on several small banks that had lent to the property market (Freris 1991, p. 186). The Hong Kong dollar fell steadily against major currencies, dropping through the psychologically important barriers of HK\$6 and HK\$7 per U.S. dollar. Difficulties with the Sino-British talks and a Chinese propaganda offensive against British rule accentuated fears, and the Hong Kong dollar fell below HK\$8 per U.S. dollar on September 17, 1983 to a low of HK\$9.55 on September 24. When confidence was at its ebb many shops refused to accept Hong Kong dollars and quoted prices in U.S. dollars for imported goods. Panic buying of rice, vegetable oil, and other staples set in.

John Greenwood, a Hong Kong business economist, had for several years been alone in warning of the defects of the free issue system. He had proposed that Hong Kong either establish central banking or return to the currency board system (e.g., Greenwood 1979b, 1981, 1983a). On September 25, 1983 he met with government officials and representatives of the note-issuing banks to discuss ways of resolving the crisis. The next day the Hong Kong Association of Banks raised interest rates 3 percent; rates on savings deposits, for instance, rose

to 10 percent. On October 15 the government announced that it would follow a modified version of Greenwood's proposal to return to the currency board system, with U.S. dollar reserves equal to 105 percent of notes and coins in circulation. It fixed the exchange rate at HK\$7.80 = US\$1<sup>14</sup> and required note-issuing banks to pay U.S. dollars to the Exchange Fund for Certificates of Indebtedness. The Exchange Fund stood ready to buy or sell Certificates of Indebtedness at that rate in unlimited quantities. Note-issuing banks agreed to charge no spread to other banks that wanted to buy or sell notes (Greenwood 1983b).

Since Hong Kong returned to the currency board system, the exchange rate that the public faces has usually remained within 1/2 percent of the HK\$7.80 rate. Exceptions have occurred in July 1984, when the rate fell as low as HK\$7.94 on rumors of difficulties in Sino-British talks, and on a few occasions since when there was speculation that Hong Kong

---

<sup>14</sup> According to Sir Alan Walters, personal economic advisor to Margaret Thatcher at the time, the U.S. dollar was chosen as the reserve currency because dollar zone countries were important trading partners for Hong Kong, the dollar was a fairly credible currency, and dollar transactions lacked the government controls to which transactions in Japanese yen were subject. An exchange rate of HK\$7.80 per U.S. dollar was chosen because it appeared that the appropriate range to make Hong Kong export goods competitive was HK\$7.50 to HK\$8.00. John Greenwood advocated a rate of HK\$8.00 because of its psychological advantages. It is a convenient whole number and Hong Kong people consider it lucky because the word "eight" sounds like the word "wealth" in Chinese. (See also Walters [1992] on the Hong Kong currency crisis.)

would revalue the dollar (see Figure 2). The larger deviations from the rate of HK\$7.80, which have not exceeded 2 percent, have caused some dissatisfaction. In 1983 Greenwood proposed that the public should be permitted to do business directly with the Exchange Fund. The government feared mass conversion of Hong Kong dollar notes into U.S. dollars by the public, so it rejected the idea. There have been other proposals for harnessing market forces to improve Hong Kong dollar-U.S. dollar arbitrage (Greenwood and Gressel 1988, Selgin 1988a), but the government chose another path. On July 15, 1988, it announced changes that gave the Exchange Fund more discretionary power.

The Exchange Fund moved some of its operations from "inside" to "outside" the banking system by creating a new accounting arrangement with the Hongkong Bank, which held the clearing balances for other banks. Previously, the Hongkong Bank could use the clearing balances to somewhat influence the ability of other banks to create Hong Kong dollar credits. Under the new arrangements, the Hongkong Bank could not expand the clearing balances of other banks with it unless it expanded its own noninterest-bearing deposit with the Exchange Fund. The Exchange Fund gained the power to conduct open market operations like a central bank (Greenwood 1988a, Freris 1990). To give itself an instrument for conveniently exercising its new power, the Exchange Fund began issuing

three-month Treasury bills in March 1990. The Exchange Fund customarily conducts open market operations by buying or selling Treasury bills.

The Exchange Fund so far has exercised its powers to narrow the spread between the Hong Kong dollar and the U.S. dollar, but it could just as well use them to increase the spread. The Exchange Fund now has all the important powers of a central bank and can be converted into a central bank by administrative decree. After the Tienanmen Square massacre in June 1989, when depositors withdrew money from banks owned by the Chinese government in protest, the Exchange Fund acted as a provider of liquidity to those banks (Freris 1990, pp. 12-13). It did the same during the August 1991 bank runs that followed the government's shutdown of the Bank of Credit and Commerce Hong Kong. (During these episodes large banks also provided liquidity by lending to or even taking over the banks affected by runs.) Currently the Exchange Fund is proposing that it formalize its role as a provider of liquidity by opening a discount window (Wall Street Journal, March 30, 1992, p. A5). The Exchange Fund is today no longer an orthodox currency board, although it is not yet a full-fledged central bank either. The Exchange Fund has moved away from the orthodox currency board system with remarkably little public debate or justification by the government.

Recently some government officials and other persons have

worried about Hong Kong's high inflation rate. Under the fixed exchange rate with the U.S. dollar, the consumer price index has risen faster in Hong Kong than in the United States (see Table 1).<sup>15</sup> The government has tried to reduce inflation by imposing a stamp tax on property transactions, since property prices have risen especially fast (Financial Times, November 7, 1991, p. 7). The Exchange Fund has temporarily drained reserves from the banks, thus raising interest rates (Financial Times, May 28, 1991, p. 1; and June 29-30, p. 2). As Greenwood (1991) has pointed out, though, there is really no cause to worry that the current monetary system will make Hong Kong products uncompetitive compared to American products. Prices of tradable goods are rising at about the same rate as in the United States, according to comparisons of the Hong Kong export goods index and the American wholesale price index. International price arbitrage tends to keep the prices and price rises of tradable goods roughly the same in Hong Kong as in the United States. Consumer prices indexes are a combination of tradable and nontradable goods. Prices of nontradable goods in the Hong Kong consumer price index, such as wages and rents, are rising faster than in the United

---

<sup>15</sup> Under the Bretton Woods system, the Hong Kong dollar was indirectly linked to the U.S. dollar through sterling, so Table 1 includes the American consumer price index from the first year that the change in the Hong Kong consumer price index is available.

States because productivity is growing faster in Hong Kong. So long as the trend continues, higher consumer price inflation than in the United States is sustainable and in fact inevitable. Japan experienced a similarly rapid rise in its consumer price index relative to that of the United States under the Bretton Woods system, because the Japanese economy was growing faster than the American economy (see International Monetary Fund, International Financial Statistics).

Circulation of Hong Kong dollar notes and coins was HK\$44.564 billion in July 1991, of which HK\$42.146 billion were bank notes and the rest were coins and government notes for HK\$1 or less (Hong Kong, Census and Statistics Department, Hong Kong Monthly Digest of Statistics, August 1991, p. 58). Hong Kong notes circulate extensively in the nearby regions of China; one estimate is that about 15 percent of Hong Kong notes circulate in China (Greenwood 1990a). Chinese circulation of Hong Kong dollar notes has deep historical roots; until at least 1950, the bulk of Hong Kong dollar notes circulated in China (King 1991, v. 4, p. 236).

Table 1

## Inflation in Hong Kong and the United States

Annual percentage change in consumer price indexes

	Hong Kong	United States		Hong Kong	United States
1954	-2.3	0.4	1974	14.6	11.0
1955	-3.3	-0.3	1975	2.7	9.1
1956	3.4	1.5	1976	3.8	5.7
1957	0.5	3.4	1977	5.6	6.5
1958	-1.9	2.7	1978	5.8	7.7
1959	8.0	0.9	1979	11.7	11.3
1960	-3.9	1.5	1980	14.8	13.5
1961	0.9	1.1	1981	13.8	10.3
1962	-1.8	1.1	1982	10.6	6.2
1963	2.3	1.2	1983	9.9	3.2
1964	3.1	1.3	1984	8.5	4.3
1965	0.4	1.7	1985	3.5	3.6
1966	2.6	3.0	1986	3.2	1.9
1967	6.3	2.8	1987	5.3	3.7
1968	2.4	4.2	1988	7.4	4.0
1969	3.5	5.4	1989	9.7	4.8
1970	7.1	4.9	1990	9.7	4.0
1971	3.5	4.3			
1972	6.1	3.3			
1973	18.2	6.2	AVERAGE	5.3	4.4

Sources: Hong Kong, Census and Statistics Department 1969; Hong Kong, Census and Statistics Department, Hong Kong Annual Digest of Statistics, various issues; International Monetary Fund, International Financial Statistics, March 1991 compact disk.

Banking and finance in Hong Kong

Hong Kong had no banking ordinance until 1949; even then, it was among the first British colonies to pass one. The ordinance has been revised several times since. Perhaps its most important feature is its distinction between banks and deposit taking companies. Deposit taking companies are not subject to the 8 percent capital requirement and the 25 percent liquid asset requirement that banks face, but on the other hand they may not accept deposits of less than HK\$50,000. Banks by law must belong to the Hong Kong Association of Banks, which enforces an interest rate cartel agreement on deposits under HK\$500,000 or of less than 15 months. Rates on small deposits are lower than comparable rates in the United States. The interest rate agreement originated in 1964 after a period of "ruinous" interest rate competition among banks (Jao 1974, p. 241; Ghose 1987, pp. 77-80). The government supports the agreement as a way of trying to reduce bank runs. A recent study (Kroszner 1990, p. 24) estimates that the cartel agreement costs depositors HK\$5.46 billion a year in lost interest.

Hong Kong has experienced a number of bank runs under the currency board system. A small local bank suffered a run in June 1961. Several small and medium-sized local banks, including the prominent Hang Seng Bank, suffered runs in 1965, when a sort of mob psychology sparked simultaneous runs on

their offices in the central business district. Runs also occurred during unrest in 1967 related to the Chinese Cultural Revolution and during the uncertainty of 1982-3 about Sino-British talks on the future of Hong Kong. The government has frequently responded by bailing out bankrupt banks even though it officially does not ensure deposits (Jao 1974, pp. 238-50, 265-6; Freris 1991, pp. 38-9). Runs occurred most recently in the summer of 1991. Hong Kong banking regulators closed the local arm of the Bank of Credit and Commerce International on Monday, July 8, three days after regulators elsewhere. On July 18 they liquidated the bank. The government offered to pay depositors 25 percent of the value of their deposits within a week, up to a maximum payment of HK\$50,000 (Financial Times, July 20-21, 1991, p. 4). According to an auditor's report of July 15 the Hong Kong subsidiary of the bank had HK\$7.79 billion in deposits and HK\$6.63 billion in assets (Far Eastern Economic Review, September 5, 1991, p. 8). The bank is now being liquidated. Depositors may eventually recover 70 to 75 percent of their deposits (Financial Times, February 20, 1992, p. 4).

The failure of the Bank of Credit and Commerce caused runs on two small local banks that like it had Middle East connections. On August 8-10, runs occurred on large banks for the first time in the history of the currency board system in Hong Kong. Local branches of Citibank suffered a run after

an erroneous statement by U.S. Congressman John Dingell at a Congressional hearing that the bank was "technically insolvent." The Standard Chartered Bank suffered a run following unfounded rumors that Britain, the bank's home base, had stripped the bank of its license. Citibank suffered net withdrawals of up to HK\$500 million and Standard Chartered suffered net withdrawals of more than HK\$3 billion (South China Morning Post, August 10, 1991, p. 2; Financial Times, August 10-11, 1991, p. 1). Withdrawals were just a few percent of the banks' total assets, and the runs subsided after two days.

The frequency of bank runs in Hong Kong is a puzzling contrast with the placid record of most other currency board systems. Perhaps it has something to do with the feeling common to many people in Hong Kong that they are living on a political fault line. The jittery psychology of Hong Kong's inhabitants is evident in the locally famous story of the run on Maria's Cake Shops in May 1984. The shops had issued gift certificates worth HK\$18 apiece. When false rumors spread that the shops were near bankruptcy, certificate holders formed long lines to exchange their gift certificates for edibles (South China Morning Post, August 12, 1991, Spectrum p. 1). Be that as it may, a study made before the recent bank runs found that the prices of bank stocks suffered no contagion effects when rival banks failed, if the troubles of

the failing banks were previously known to the stock market (Gay, Timme, and Yung 1990).

The Hong Kong government apparently does not publish statistics of Hong Kong's current account balance or of the overall balance of payments; it only publishes statistics of the balance of merchandise trade. Since Hong Kong is a major center of finance, shipping, insurance, and other sources of invisible earnings, statistics of the merchandise trade balance probably understate Hong Kong's current account balance considerably. Examining the statistics of the merchandise trade balance, though, one can see that Hong Kong has sustained decade after decade of merchandise trade deficits by attracting capital investment from Britain, the United States, Japan, and China. As Table 2 shows, both the supply of notes and the broadest measure of the money supply have grown rapidly despite merchandise trade deficits. If any relation exists between the balance of merchandise trade and changes in the money supply, it appears to be negative, contrary to the criticism of the currency board system advanced by some economists in the 1940s and 1950s that a positive relation existed. Since 1985 Hong Kong has run a merchandise trade surplus, indicating capital exports in advance of the Chinese takeover scheduled to occur in 1997. The currency board system eliminated exchange rate risk with sterling during the period when Britain was the most important

source of investment, and with the United States today. China unofficially pegs its currency to the U.S. dollar, though the Chinese currency is hedged about with convertibility restrictions. The New Taiwan dollar is also loosely pegged to the U.S. dollar. The nearby Portuguese colony of Macau pegs its currency to the Hong Kong dollar (Schuler 1989a). Hong Kong is thus in a common currency area with nations that account for roughly half of its trade.

Table 3 shows that Hong Kong's budget has enjoyed rapid growth in gross domestic product (GDP) per person under the currency board system. Adherence to the currency board system is part of the government's commitment to refrain from chronic deficit finance.

Table 2

**Money supply growth and merchandise  
trade balance in Hong Kong**

Amounts in millions of Hong Kong dollars

	Notes	Change	Broad money	Change	Merchandise trade bal.
1952	842.9	-0.6			-880
1953	841.5	-1.4			-1,138
1954	770.9	-70.6	1,838.9		-1,018
1955	771.7	0.8	1,908.7	69.8	-1,185
1956	783.3	11.6	2,050.3	141.6	-1,356
1957	812.6	29.3	2,224.6	174.3	-2,134
1958	827.6	15.0	2,409.6	185.0	-1,605
1959	896.2	68.6	2,951.2	541.6	-1,671
1960	974.1	77.9	3,655.1	703.9	-1,927
1961	1,026.6	52.5	4,393.6	738.5	-2,040
1962	1,123.7	97.1	5,434.7	1,041.1	-2,269
1963	1,129.8	6.1	6,554.8	1,120.1	-2,421
1964	1,399.5	269.7	7,890.5	1,335.7	-2,766
1965	1,739.8	340.3	8,989.8	1,099.3	-2,436
1966	1,852.4	112.6	10,257.4	1,267.6	-2,534
1967	2,307.7	455.3	10,469.7	212.3	-1,668
1968	2,131.0	-176.7	12,188.0	1,718.3	-1,901
1969	2,261.0	130.0	14,225.0	2,037.0	-1,696
1970	2,578.0	317.0	17,177.0	2,952.0	-2,369
1971	2,932.0	354.0	21,360.0	4,183.0	-3,092
1972	3,378.0	446.0	27,526.0	6,166.0	-2,364
1973	3,712.0	334.0	29,329.0	1,803.0	-3,005
1974	3,867.0	155.0	34,207.0	4,878.0	-4,084
1975	4,427.0	560.0	39,995.0	5,788.0	-3,640
1976	5,177.0	750.0	48,413.0	8,418.0	-1,736
1977	6,355.0	1,178.0	58,450.0	10,037.0	-3,868
1978	7,775.0	1,420.0	76,919.0	18,469.0	-9,147
1979	8,784.0	1,009.0	99,765.0	22,846.0	-9,903
1980	10,464.0	1,680.0	138,843.0	39,078.0	-13,408
1981	12,307.0	1,843.0	176,818.0	37,975.0	-16,212
1982	13,928.0	1,621.0	250,240.0	73,422.0	-15,508
1983	15,343.0	1,415.0	306,939.0	56,699.0	-14,743

					160
1984	15,621.0	278.0	374,879.0	67,940.0	-1,929
1985	19,458.0	3,837.0	457,803.0	82,924.0	3,733
1986	22,412.0	2,954.0	582,208.0	124,405.0	575
1987	28,766.0	6,354.0	743,353.0	161,145.0	87
1988	34,087.0	5,321.0	893,342.0	149,989.0	-5,729

Sources: Hong Kong, Census and Statistics Department 1969; Hong Kong, Census and Statistics Department, Hong Kong Annual Digest of Statistics, various issues.

**Table 3**  
**GDP growth in Hong Kong**

	GDP per person (HK\$)	Change		GDP per person (HK\$)	Change
1966	12,030		1980	27,014	7.5
1967	11,960	-0.6	1981	28,858	6.8
1968	12,087	1.1	1982	29,169	1.1
1969	13,320	10.2	1983	30,544	4.7
1970	14,236	6.9	1984	33,205	8.7
1971	14,965	5.1	1985	32,913	-0.9
1972	16,296	8.9	1986	36,111	9.7
1973	17,853	9.6	1987	40,943	13.4
1974	17,659	-1.1	1988	43,965	7.4
1975	17,396	-1.5	1989	44,756	1.8
1976	20,134	15.7	1990	45,962	2.7
1977	22,229	10.4	1991	47,348	3.0
1978	23,744	6.8			
1979	25,138	5.9	AVERAGE		5.7

Source: Hong Kong, Census and Statistics Department 1992.

The Singapore currency board system 1899-1973

As in Hong Kong, in Singapore the currency board system replaced free banking. The first bank branches were established in 1840 and the first local bank notes were issued in 1849 (King 1957, p. 4).

In the late nineteenth century Singapore and the other Straits Settlements, Penang and Malacca, suffered from several currency problems. One was a shortage of silver dollars. There was no local dollar coinage, though the government did make unbacked issues of smaller coins late in the century. The populace used Mexican and other foreign silver dollars. Ordinance No. 2 of 1891 prohibited importing certain silver coins. Imperial restrictions prohibited banks from issuing notes for less than \$5, which could have replaced silver coins. In 1881, the Straits Settlements Legislative Council appealed to the British Treasury to allow banks to issue \$1 notes. The Treasury refused, but permitted a government \$1 note issue, which the Straits Settlements did not establish (King 1957, p. 7).

Another currency problem was that limits on bank note issue prevented banks from expanding the supply of their notes to keep abreast of demand. Bank charters prohibited banks from issuing more notes than the amount of their paid-in capital, and required banks to keep reserves of 33-1/3 or 50 percent on deposit with the government in coin or approved

securities against notes in circulation. That reduced the profitability of note issue. The Oriental Bank failure of 1884 hurt Ceylon most, but also affected Singapore because the bank had a note-issuing branch there. The failure left Singapore with only three note-issuing banks. Because of the restrictions on bank note issue, the failure of any of the remaining banks would have left the others unable to supply the deficiency, according to the secretary of the colony (Nelson 1984, p. 186). In 1892, the Chartered Bank of India, Australia, and China reached the legal limit of its note issue and found it necessary to pay out the notes of a rival, the Chartered Mercantile Bank of India, London, and China (Mackenzie 1954, p. 174).

Rather than preventing note shortages by eliminating restrictions on bank note issue, the Straits Settlements in 1897 decided on a Straits dollar (S\$) government note issue. A Board of Commissioners of the Currency was to issue notes, which it first did in 1899. The board was to hold coin and securities equal to at least 100 percent of notes in circulation. (It did not issue S\$1 notes until 1906.) By an ordinance of 1899 (No. 14), the government forbade further entry by banks into the business of issuing notes. By 1908, the charters of the existing note-issuing banks had lapsed; they continued in the Straits Settlements as banks of deposit only (King 1957, pp. 7-8).

Another 1899 ordinance (No. 4) added some specifics about the nature of the board's reserves. Two-thirds of the reserves were to be legal tender coin, including a silver coin reserve of at least 10 percent; the rest of the reserves were to be Indian and other authorized securities. The Commissioners could raise the proportion of securities to a maximum of 50 percent of reserves. (Although local securities were not on the list of authorized securities, in 1913 the board held about 8 percent of its assets in local securities; it continued to hold local securities until 1936.) The board also had to accumulate a Depreciation Fund equal to 10 percent of the value of its securities, that is, 10 percent of 50 percent of total reserves. Total reserves were thus 105 percent. Any further income was to be paid to the government. If reserves fell below 100 percent the government had to replenish the shortfall. The accounts of the board were simplified in 1912 on the instructions of the British Secretary of State for the Colonies (King 1957, pp. 17-19).

The government used the powers of note issue granted by the currency board ordinances to solve another currency problem: whether to switch to the gold standard or remain on the silver standard. India had switched from silver to a sterling exchange standard in 1893. Other East Asian nations had also switched from silver to gold as their trade with Europe became more important. A British committee appointed

to investigate the question of the standard recommended that the Straits Settlements mint a legal tender fiduciary silver dollar coin and gradually adopt the gold standard (Great Britain, Parliament 1903). The Straits Settlements adopted the committee's plan and began issuing silver dollars in 1903. By limiting the supply of Straits dollar coins, it intended to divorce the Straits dollar from silver. The plan assumed that the gold price of silver would continue to fall, as it had done in the recent past. Instead, the price of silver rose from 1903 to 1907, nearly wrecking the reform because the Straits dollar's value as metal exceeded its face value. The Straits government issued a new dollar with less silver in 1907, and again in 1920 after the price of silver rose anew (Kemmerer 1916, pp. 391-449; King 1957, pp. 11-12).

A 1905 ordinance (No. 3) provided that the currency board could issue notes in exchange for gold received in London or Singapore at such rate of exchange as it might set in agreement with the Straits government and the British Secretary of State for the Colonies. On February 29, 1906, the Straits government fixed the rate at S\$60 per £7, or 2s. 4d. per S\$1. The board redeemed notes in gold in Singapore. Ordinances of 1906 (Nos. 1 and 23) allowed it to charge fees to cover the cost of telegraphic transfers of funds between London and Singapore. The board sold Straits dollars at 2s. 4-5/16d. (about S\$8.47 = £1) and bought at 2s. 3-11/16d (about

S\$8.67 = £1). In 1913 it changed the rates to 2s. 4-3/16d. (about S\$8.51 = £1) and 2s. 3-3/4d. (about S\$8.65 = £1) (King 1957, p. 17; see also Nelson 1984, pp. 233-63.)

The Straits currency board kept the sterling value of the Straits dollar constant and stopped paying out gold in 1917, making it clear that the Straits Settlements adhered to the sterling exchange standard rather than the gold exchange standard. Ordinance No. 15 of 1923 officially recognized the sterling exchange standard, dropping the requirement of a coin reserve and allowing the currency board to keep all reserves in sterling securities.

The Straits currency board experienced the only run that any currency board has apparently suffered. The worldwide financial crisis of October 1907 bankrupted many speculators in silver in the Straits Settlements. A scramble for gold and sudden redemptions of many currency board notes ensued. The currency board ran out of gold in Singapore, but maintained the value of the Straits dollar by selling telegraphic transfers for funds in London, where it held much of its reserves (Mackenzie 1954, p. 191).

Until 1926, the currency board paid no profits because the value of its silver assets was often declining in terms of gold. In 1926 it paid S\$20 million to the Straits government. The Malay states, which had been using Straits notes, wanted a share of the board's profits. Ordinance No.

23 of 1938 reconstituted the currency board as the Board of Commissioners of Currency, Malaya. The Straits dollar was renamed the Malay dollar (M\$). The Straits Settlements and the Malay states divided profits according to a formula of estimated "currency consumption." The board's reserve was increased from 105 percent to 110 percent. The Currency Fund (100 percent of reserves) was divided into a Liquid Portion of short-term sterling securities and sterling bank deposits (corresponding to the former coin reserve), and an Investment Portion of long-term sterling securities. Previously, the Liquid Portion had been required to be not less than 40 percent of notes in circulation. Now the Commissioners were allowed to change the Liquid Portion by vote. The All-Malaya (Currency Surplus) Fund held the board's reserves in excess of 100 percent, and an income account received all money earned during the year and paid for board's expenses. At the end of the year, an amount equal to 1 percent of the board's note circulation was transferred to the surplus fund if reserves were below 100 percent; any excess went to the member governments of the board. The board was governed by five directors nominated by the Governor of Malaya; two directors were not government officials. Singapore remained the headquarters of the board, which began operations in 1939.

The Japanese army captured Malaya early in 1942. The Japanese did not demonetize local currency, as they did in

Hong Kong, but they did issue their own unbacked occupation currency. People hoarded Malay dollars as a store of value. One reason for their confidence in the notes of the currency board was that the assets of the board were safe in London. After the Japanese were defeated, the currency board resumed redemptions on January 1, 1946 under British military agency and from April 1 under civilian government (King 1957, p. 23).

The British military had issued some Malay currency in Sarawak,<sup>16</sup> North Borneo, and Brunei during the war to pay soldiers and other persons. An agreement of 1950 brought those territories into the currency board as of January 1952 (Singapore Ordinance No. 42 of 1951). The agreement altered the formula for distributing the board's profits and narrowed its spread for buying and selling Malay dollars to 2s. 3-7/8d. and 2s. 4-1/8d. The minimum amounts for transactions were £10,000 or M\$100,000.

As the prospect of independence developed after World War II, debate arose over whether to replace the currency board with a central bank. (Malaya at the time had some self-government; it was to become independent in 1963. The Straits Settlements of Penang and Malacca had been assigned to Malaya after the war.) A 1955 World Bank mission recommended

---

<sup>16</sup> As far back as 1880 Sarawak had issued government notes backed 100 percent by silver dollars. A currency board system with external securities comprising the reserves existed by 1927 (King 1957, p. 31).

establishing a central bank. The mission argued that a central bank could reduced economic fluctuations arising from swings in export trade (IBRD 1955a, p. 228). In 1956 two economic advisors appointed by the Malayan government to study the matter also recommended a central bank (Watson and Caine 1956). The two reports provoked some academic writing on the merits of a currency board versus a central bank (collected in Drake 1966), which paralleled the debate outlined in Chapter 7.

The Central Bank Ordinance 1958 established Bank Negara Malaysia, which opened on January 1, 1959. Simultaneously, Malaysia (as united Malaya, Sarawak, North Borneo, and Brunei were now called) passed its first banking ordinance (No. 62 of 1958). The central bank existed alongside the currency board until 1967 because Malaysia did not want to kill the prospect of a currency union with Singapore. The central bank exercised practically no discretionary power over the money supply during that period, though it did establish minimum legal reserve ratios, which had not previously existed for banks. The central bank had the power to invest up to M\$300 million in Malayan government securities, but it did not do so before 1967. The Malaysian monetary system of the period was hence a currency board system with a dormant central bank. On August 9, 1965, Singapore separated from Malaysia, though it did not become independent of Britain until 1967. From

November 1965 to August 1966, Singapore and Malaysia negotiated about establishing a common central bank. Malaysia wanted a central bank with extensive discretionary power, whereas Singapore did not; furthermore, Singapore distrusted Malaysia's ability to run the joint central bank competently. (Malaysia would have dominated the central bank since it was the larger economy.)

After the negotiations failed, Malaysia announced that Bank Negara Malaysia would take over the functions of the currency board effective June 12, 1967. Singapore retained the currency board system, and the Board of Commissioners of Currency Singapore took over the functions of the Malayan currency board in Singapore on April 12, 1967, as authorized by the Currency Act of 1967. The new Singapore and Malaysian dollars were both equal to the old Malay dollar (Lee 1986, pp. 61-6).

Malaysia and Singapore did not devalue their currencies with sterling on November 18, 1967. Singapore had been accumulating reserves in non-sterling currencies since the previous year, so it was somewhat protected against the devaluation. When the U.S. dollar was devalued on December 18, 1971, Malaysia and Singapore again did not devalue. By March 1973, the yen and West European currencies had begun to float against the U.S. dollar, but the Malaysian and Singapore dollars still had fixed exchange rates with the U.S. dollar.

A strong speculative inflow of funds into Malaysia and Singapore occurred in May and June. Singapore responded by floating its currency against the U.S. dollar on June 20, 1973; Malaysia followed the next day. The Singapore dollar and the Malaysian currency (today called the ringgitt) became floating currencies with respect to one another also (Lee 1986, pp. 77-80). Sterling area controls ceased to apply in 1973, although certain other foreign exchange regulations were not removed until 1978. A bank interest-rate cartel apparently like that of Hong Kong ceased operating in 1975 (Fry 1988, p. 354).

#### The modified Singapore currency board system, 1973-present

Ever since the Singapore dollar became a floating currency, Singapore has followed an unorthodox version of the currency board system. External asset backing against high-powered money (including the deposits of the Monetary Authority of Singapore) remains 100 percent or more, but Singapore dollars are not redeemable on demand in reserve currency at a fixed rate of exchange. The Singapore monetary system no longer has a reserve currency in the manner of an orthodox currency board. Also, the government intervenes in monetary affairs considerably more than it did under the pre-1973 or pre-1967 currency board system.

In the first years of Singapore's independence the

Ministry of Finance exercised some regulatory functions over banks. From 1967 the Ministry of Finance required banks to hold reserves with it of at least 3-1/2 percent of their deposits. The Monetary Authority of Singapore Act 1970 established a body that took over most powers of financial regulation as of 1971 and that had all central banking powers except note issue. The Monetary Authority today requires commercial banks to hold reserves with it of 6 percent of their deposits. It also requires banks to hold at least 20 percent of their assets in liquid form (cash, Singapore government securities, and other specified assets). On occasion, both before and after creating the Monetary Authority of Singapore, the government has shifted its deposits between the Singapore dollar and other currencies to influence the money supply. The Monetary Authority of Singapore can serve as a lender of last resort to the banking system (Lee 1986, pp. 85-91).

The Monetary Authority and the Board of Commissioners of Currency have interlocking, identical boards of directors. The Minister of Finance is chairman and the president of Singapore appoints six other members. The Commissioners of Currency do business only with the Monetary Authority. The Monetary Authority manages the value of the Singapore dollar according to a target basket of currencies. The Monetary Authority does not reveal the composition of the basket, which

changes from time to time. In practice, the basket has been a less rapid depreciation of the purchasing power of the Singapore dollar than of the U.S. dollar in recent years. The Monetary Authority usually uses the Singapore dollar-U.S. dollar market for foreign-exchange interventions. It has discouraged transactions of other foreign currencies against the Singapore dollar for fear of reducing its control of the domestic money supply (Lee 1986, pp. 150, 153-5, 165). As of March 31, 1991, S\$14.937 billion of notes and coins were in circulation (Monetary Authority of Singapore 1990/91, p. 78). As of March 31, 1990, the Monetary Authority had total liabilities excluding capital and reserves of S\$30.47 billion (Monetary Authority of Singapore 1989/1990).

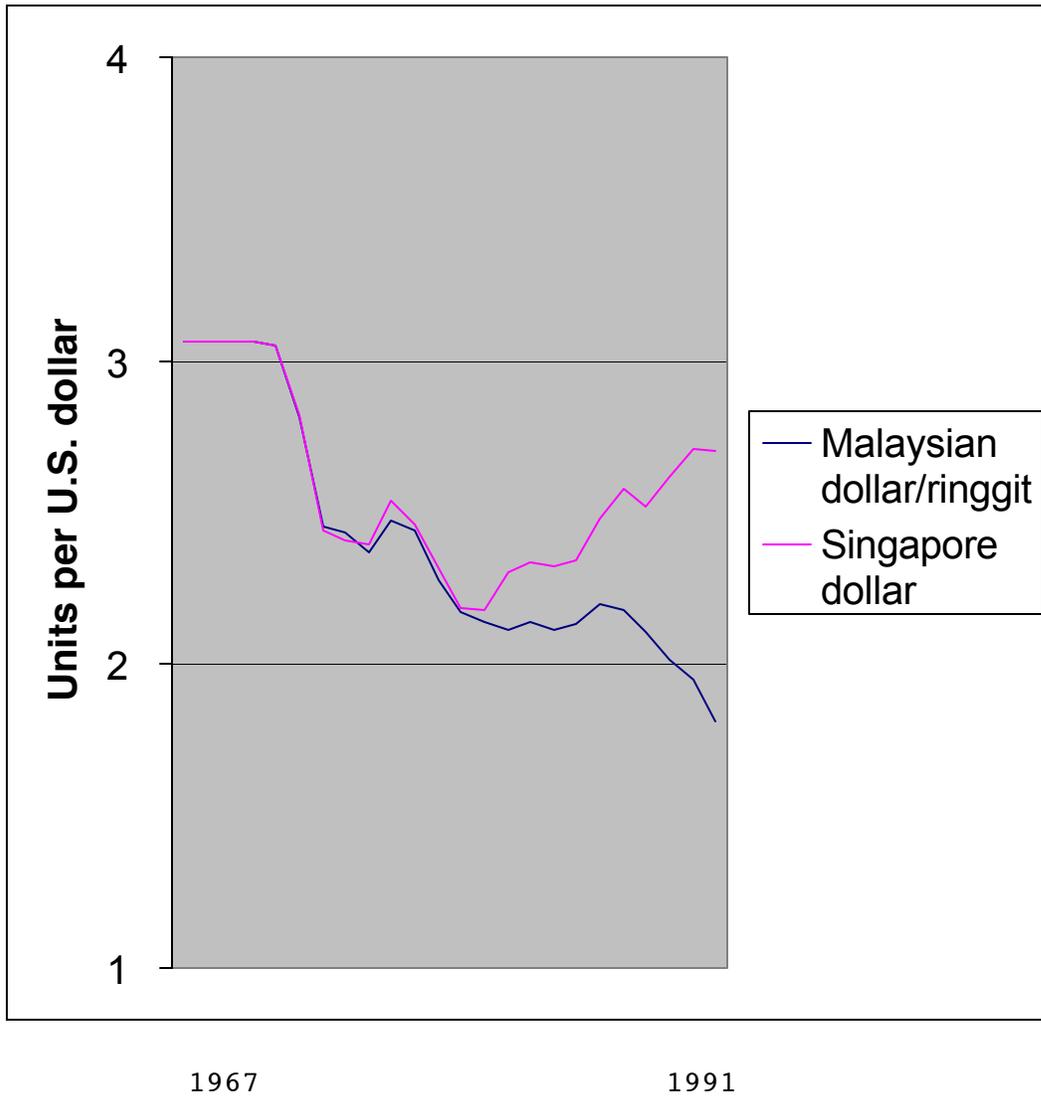
Singapore's monetary system is much further than Hong Kong's post-1988 system from being an orthodox currency board. The Monetary Authority makes no commitment to maintain any fixed exchange rate. It maintains 100 percent or slightly greater reserves in external assets against all high-powered money, but is not required to do so. The reserve requirements that it imposes on banks are foreign to the orthodox currency board system, which left the deposit business of banks unregulated. The Monetary Authority follows an active policy instead of passively waiting for people to exchange reserve currency for its currency. None of these things is true of Hong Kong's currency board system, except the last, to a small

extent.

If Singapore can be said to follow a greatly modified currency board system, Malaysia has definitely been off the currency board system since 1967. The statistics that follow compare some key economic indicators of the two countries. As with Hong Kong, Table 5 shows that the relationship between the current account balance and changes in the money supply has not been positive. The relationship between the overall balance of payments and changes in the money supply has been positive, but not rigid: there is no coefficient of expansion that would have accurately predicted growth in reserve money or domestic credit from growth in the overall balance of payments.

Figure 3

Exchange rate of Singapore dollar and  
Malaysian dollar/ringgitt, 1967 to 1990



Annual average rates. Source: International Monetary Fund, International Financial Statistics, March 1991 compact disk.

Table 4

## Inflation in Singapore, Malaysia, and the United States

Annual percentage change in consumer price indexes

	Singapore	Malaysia	United States
1950		10.2	-1.4
1951		25.9	8.0
1952		1.5	2.2
1953		-2.9	0.8
1954		-6.0	0.4
1955		-3.2	-0.3
1956		0.8	1.5
1957		4.5	3.4
1958		-1.4	2.7
1959		-2.0	0.9
1960		0.1	1.5
1961	0.4	-0.2	1.1
1962	0.5	0.1	1.1
1963	2.2	3.1	1.2
1964	1.6	-0.4	1.3
1965	0.3	-0.1	1.7
1966	2.0	1.0	3.0
1967	3.3	4.6	2.8
1968	0.6	-0.2	4.2
1969	-0.2	-0.4	5.4
1970	0.4	1.8	5.9
1971	1.8	1.6	4.3
1972	2.1	3.2	3.3
1973	26.2	10.6	6.2
1974	22.4	17.3	11.0
1975	2.6	4.5	9.1
1976	-1.9	2.6	5.7
1977	3.2	4.8	6.5
1978	4.8	4.9	7.7
1979	4.0	3.7	11.3
1980	8.5	6.7	13.5
1981	8.2	9.7	10.3

1982	3.9	5.8	6.2
1983	1.2	3.7	3.2
1984	2.6	3.9	4.3
1985	0.5	0.4	3.6
1986	-1.4	0.7	1.9
1987	0.5	0.9	3.7
1988	1.5	2.0	4.0
1989	2.4	2.8	4.8
1990	3.4		5.4
AVERAGE	2.8	2.5	3.4

Inflation rates for Malaysia before 1961 include Singapore, whose rates were not computed separately.

Source: International Monetary Fund, International Financial Statistics, March 1991 compact disk.

Table 5

## Money supply growth and balance of payments in Singapore

Amounts in millions of U.S. dollars

	Reserve money	Change	Current account balance	Domestic credit	Change	Overall balance
1963			-108	108	201	
1964	469	15	-55	316	115	
1965	555	86	-59	494	178	
1966	624	69	1	612	118	
1967	560	-64	-69	628	16	
1968	647	87	-133	834	206	217
1969	765	118	-191	968	134	95
1970	891	126	-572	1,163	195	184
1971	996	105	-724	1,090	-73	320
1972	1,296	300	-495	1,637	547	335
1973	1,779	483	-519	2,578	941	413
1974	1,850	71	-1,021	2,619	41	295
1975	2,197	347	-584	3,048	429	407
1976	2,563	366	-567	4,206	1,158	298
1977	2,904	341	-295	4,638	432	313
1978	3,369	465	-453	5,467	829	665
1979	3,838	469	-736	6,951	1,484	516
1980	4,340	502	-1,563	10,654	3,703	663
1981	4,809	469	-1,470	20,195	9,541	909
1982	5,690	881	-1,296	20,189	-6	1,177
1983	6,220	530	-610	28,789	8,600	1,059
1984	6,656	436	-385	33,029	4,240	1,524
1985	6,944	288	-4	30,134	-2,895	1,337
1986	7,319	375	319	30,471	337	538
1987	7,910	591	224	33,530	3,059	1,095
1988	8,932	1,022	1,306	34,973	1,443	1,659
1989	10,316	1,384	2,338	36,782	1,809	2,738
1990	11,056	740	41,317	4,535		

Amounts are given in U.S. dollars because International Financial Statistics keeps trade balance statistics in U.S. dollars.

Source: International Monetary Fund, International Financial Statistics, March 1991 compact disk.

Table 6

**GDP growth per person and government budget balance  
in Singapore and Malaysia**

	Singapore GDP per person growth	Singapore budget balance as percent of GDP	Malaysia GDP per person growth	Malaysia budget balance as percent of GDP
1960	1.9			
1961	4.5			-0.5
1962	3.3			-3.1
1963	6.9	-0.4		-4.4
1964	-5.6	-4.5		-4.5
1965	4.7	-2.7		-5.5
1966	8.8	-1.7		-5.5
1967	9.0	-0.5		-5.4
1968	12.2	1.6		-4.7
1969	12.0	1.5		-3.6
1970	12.1	1.6		-3.8
1971	10.8	0.6	19.7	-7.8
1972	20.8	1.3	15.2	-9.2
1973	25.3	-0.1	25.4	-5.6
1974	5.3	1.6	6.7	-6.0
1975	5.5	0.9	-0.8	-8.5
1976	1.8	0.2	1.7	-7.1
1977	7.3	1.0	8.8	-8.6
1978	15.5	0.8	10.5	-7.6
1979	12.9	2.3	11.0	-7.9
1980	10.0	2.1	6.4	-13.3
1981	9.7	0.7	-1.5	-19.1
1982	4.2	3.4	1.8	-17.9
1983	8.3	1.8	4.1	-13.1
1984	6.0	4.1	4.3	-8.9
1985	-5.8	2.1	-10.1	-7.4
1986	1.7	1.5	-10.5	
1987	12.3	-2.7	-7.7	
1988	14.6	7.1	-4.3	
1989	11.5	-4.9		
AVERAGE	8.5	0.9		-7.1

Growth rates of GDP per person are for U.S. dollar equivalents.

Source: International Monetary Fund, International Financial Statistics, March 1991 compact disk.

Other currency boards today

Besides Hong Kong and Singapore, currency board systems exist in several smaller territories today.

Brunei, a former British protectorate on the island of Borneo, belonged to the Malay Currency Board from 1952 until the currency split of 1967. The Currency Enactment 1967 established the Brunei Currency Board, which opened on June 12, 1967. The currency board has maintained the Brunei dollar equivalent to the Singapore dollar, and exchanges Brunei dollars for Singapore dollars without charge. Under an agreement between Brunei and Singapore, the currency of each nation may circulate in the other nation. The currency board holds 100 percent external assets. It has a staff of 12 persons. Administrative staff hold joint appointments with the currency board and the Currency Division of the Brunei Treasury Department. Brunei became independent of Britain in 1983 (Skully 1984, pp. 5-10). Brunei's enormous oil reserves are its main source of wealth.

The Cayman Islands, an autonomous British colony, used Jamaican currency until 1972. (Jamaica had competitive issue of currency until the early 1950s and had a currency board from 1933 until it opened a central bank in 1961.) In 1972 the Cayman Islands Currency Board was established as part of political reforms giving the Caymans greater independence. The board maintains the Cayman Islands dollar (CI\$) at CI\$0.83

= US\$1. At the end of 1988 the board had CI\$16.75 million of currency in circulation (Cayman Islands Currency Board, 1981-1988).

The Falkland Islands, also a British colony, have had a currency board since 1899, when the Falkland Islands Commissioners of Currency began issuing notes. Originally part of the reserve for the notes consisted of British gold and silver coins. (The Falklands have never issued their own coins.) In 1930, the currency board adopted the 100 percent sterling exchange standard and ceased holding coin. The Falkland pound is equal to the pound sterling (Caine 1948-9, part VII, p. 48). Until 1984 the Falklands had no commercial bank, although the government operated a savings bank (I. Strange 1983, p. 38).

Gibraltar, likewise a British colony, established a board of Commissioners of Currency in 1927. As in Hong Kong and Singapore, the currency board replaced free banking. The currency board originally held some reserves in British gold coin, but in 1934 switched to the 100 percent sterling exchange standard. The Gibraltar pound is equal to the pound sterling (Caine 1948-9, part VII, pp. 47-8). As of March 31, 1989, Gibraltar £10.59 million of notes and coins were in circulation (Statesman's Year-Book 1990-91, p. 569).

The Faroe Islands, a self-governing Danish territory lying between Scotland and Iceland, issue notes backed 100

percent by a deposit at the Danish central bank. The system originated in 1940, when Denmark was occupied by the German army while the Faroe Islands remained free and were protected by British troops. Danish kroner notes in circulation were replaced by Faroe Islands kroner, which were linked to sterling at a rate of 22.40 Faroese kroner per £1. The sterling backing was provided by the British government and was held on deposit at a British bank. By an act of April 12, 1949, the Faroes rejoined the Danish monetary system. The Faroese krone is equal to the Danish krone. The Faroese government earns interest from the deposit at the Danish central bank. At the end of 1990, 154 million kroner of notes were in circulation (Danmarks Nationalbank 1949, pp. 21-2, and 1990, Appendix, Table 17; West 1972, p. 180).

## CHAPTER 9. PERFORMANCE OF THE CURRENCY BOARD SYSTEM

Now that we have examined the history of various individual currency boards, what generalizations can we make? A number of indicators of the performance of currency boards suggest themselves. Some are narrow, relating to the stated mission of currency boards. Others are broader, relating to the often undesigned effects of the currency board system on macroeconomic aggregates.

Performance of currency boards

The single most important narrow indicator of the performance of currency board is their ability to maintain convertibility with the reserve currency at their stated fixed rates of exchange, because that after all is what currency boards are designed to do. Most currency boards have done so without interruption. Convertibility in the currency board systems of Hong Kong, Malaya, the Philippines, and the British Solomon Islands was interrupted by Japanese occupation in World War II. Although the boards stopped converting currency, their assets were safe in London (or, for the Philippines, New York). People in the occupied territories hoarded currency board notes as stores of value and distrusted Japanese military currency, which they correctly viewed as inflation-prone. The Hong Kong currency board resumed

operations within a month of the Japanese surrender, and the Malaya currency board within four months. Both boards honored prewar notes still in circulation. The Hong Kong board also honored the unbacked "duress" notes that the Japanese had seized from the note-issuing banks. The Philippine and Solomon Islands boards also resumed operations shortly after victory over the Japanese army was achieved. Two currency boards that maintained convertibility even in the midst of civil war were those of North Russia and Burma. The North Russian board actually outlived the North Russian government. Other currency boards also maintained convertibility during periods of civil unrest, such as the Mau-Mau rebellion of 1952 to 1956 in Kenya and the communist guerilla war of 1948 to 1962 in Malaysia.

Only one genuine devaluation by a currency board seems to have occurred. The East Caribbean Currency Authority in effect devalued the East Caribbean dollar by about 30 percent in 1976, when it switched from sterling to the U.S. dollar as its reserve currency. The board's assets were more than sufficient to have supported the switch of reserve currencies without devaluation. The decision to devalue appears to be an attempt by the governments belonging to the currency board to increase export trade. A case of apparent devaluation by the British Honduras currency board in 1949 was in reality a delayed reaction (by two and a half months) to the devaluation

of sterling. The British Honduras board held both sterling and U.S. dollar assets. The devaluation of sterling reduced its reserves to well under 100 percent of liabilities, since the board hedged neither its sterling nor dollar assets. The currency board law required the government to replenish the shortfall immediately from its general revenue, which would have strained its resources (Wyeth 1979, pp. 26-9).

Revaluations by currency boards have also been rare. The currency boards of Hong Kong, Singapore, and Brunei revalued their currencies against sterling in 1967, and Hong Kong revalued its currency against the U.S. dollar in 1973. The purpose of the revaluations was to achieve greater domestic price stability during periods of instability in the reserve currencies. It has been a weakness of the currency board system as hitherto practiced that no board has had a formal procedure for revaluing or for switching reserve currencies. Elsewhere (Hanke, Jonung, and Schuler 1992, pp. 49-51) I have suggested that the constitutions of currency boards could specify the conditions under which the boards would revalue against the reserve currency or switch reserve currencies. If, say, the annual rise in the consumer price index of the reserve currency country exceeded 25 percent for two years, the currency board would be required to revalue or to switch to a more stable reserve currency.

Except for the West African Currency Board, all boards

apparently avoided "currency famines"--shortages of coins relative to notes, or of notes and coins relative to deposits. There are cases of £1 notes buying only 12s. in coins in 1937 and 1938 in Kano, the largest city in northern Nigeria and home to an agency of the West African Currency Board (Newlyn and Rowan 1954, p. 57). The currency famine seems to have resulted from the high costs of transporting coins to widely dispersed currency board agencies and bank branches. Territories where distances between bank branches were smaller experienced no currency famines. In West Africa, coin premiums became rarer as bank branching increased. The only way to have prevented coin premiums would have been a more extensive and costly network of currency board agencies and bank branches.

East African Currency Board branches until October 1945 charged a fee of 1/16 percent for exchanging coins for notes that had been issued at other branches (EACB 1950, p. 4). In May 1962, the board imposed an exchange fee of 1/8 percent for transfers from East Africa to Aden, where its exchange rates for transfers on London were lower than in East Africa (EACB 1963, p. 29). This was similar to bank practice of the time, which charged commissions for transferring deposit funds by check over long distances (Greaves 1953a, p. 47). (Even in the United States at the time some banks charged commissions for certain out-of-town checks [Jessup 1967].) The West

African Currency Board did not charge fees, but its agencies had the right to refuse to pay out coins for notes issued at other branches if supplies of coin were low. Most other currency boards operated in far smaller territories, and did not have the high costs of transporting notes and coins that led to the policies of the two African boards.

No currency board ever failed. The North Russian board was technically insolvent at the end of its life because it held 25 percent of its reserves in worthless North Russian government bonds. The board redeemed in full the notes that the public presented to it, but did not fully redeem the notes presented to it by the British government, which had lent the sterling reserves to start the board. If the North Russian board had followed orthodox procedure and held all its assets in reserve currency, the British government would have suffered no loss (see Chapter 6). The Argentine currency board suspended convertibility in 1914 and 1929, but that was because of a government directive rather than because of insufficient reserves (see Chapter 5).

All currency boards except the North Russian and Argentine boards were profitable. The North Russian board would have been profitable had it existed longer. The Argentine board was a case apart because by design it held no interest-earning assets. The Argentine government gained an implicit profit by means of the currency board's fiduciary

issue of 293 million pesos. Typically, currency board constitutions or policy provided that a board should retain all seigniorage if reserves were below 100 percent, pass along a specified amount of seigniorage if reserves were 100 percent to 105 or 110 percent, and pass along all seigniorage left after paying expenses if reserves exceeded 105 or 110 percent. Currency boards usually had expenses of 1/2 to 1 percent per year of their note and coin circulation. They had extremely few staff; the West African Currency Board, for instance, had only one full-time employee in Britain and a handful in West Africa. Many boards kept costs low by using one or more commercial banks as their agents. British colonial boards used the Crown Agents for the Colonies, an imperial bureau in London that provided various services to colonial governments, to manage their investment portfolios (Greaves 1954a, pp. 14-15).

Stanley Fischer (1982) has estimated the seigniorage lost from use of foreign notes and coins rather than locally issued notes and coins. His calculations indicate that the average one-time cost of acquiring an initial stock of foreign notes and coins is 8 percent of GNP. Since unlike bank deposits currency pays no interest, currency generates a continuing stream of implicit revenue to the issuer. Fischer estimates the average flow cost of the stream to be 3/4 percent to 1 percent of GNP per year. Seigniorage is higher in economies

that have higher inflation, are growing or rapidly, or are in advanced stages of becoming monetized.

The purpose of the currency board system is not to maximize seigniorage, but to capture seigniorage subject to the condition that local notes and coins always be convertible into the reserve currency. Currency boards were extremely careful to fulfill the condition; indeed, their reluctance to hold domestic assets provoked complaints from some economists (see Chapter 7). Statistics on the seigniorage generated by most small currency boards are not readily available, but statistics are available for some of the larger boards. From 1919 (the first year it paid seigniorage) until 1959 (the year Nigeria established a central bank) the West African Currency Board paid WAF19,252,837 in seigniorage to Nigeria, the Gold Coast, and Sierra Leone (Loynes 1962, p. 38). Total government revenue for those three governments for the period was approximately WAF 1.707 billion (Mitchell 1982, pp. 647-9, 653-6), so the currency board's contribution was about 1.12 percent. The board also paid WAF397,163 in seigniorage to the Gambia, but I was unable to find statistics of Gambia's total government revenue over the period. From 1950 (the first year it paid seigniorage) until the end of its life in 1972, the East African Currency Board paid EAF22.49 million seigniorage from profits (EACB 1972, p. 23). The Palestine Currency Board distributed £P4.86 million from 1928, the first year it paid

seigniorage, to 1949, when its notes were demonetized in Israel (Palestine Currency Board 1949, p. 3). In addition, currency boards also distributed reserves when they were dissolved, but the reserves would not have been distributed had they continued to exist. It is impossible to calculate seigniorage as a percentage of GNP, as Fischer did, because accurate statistics of GNP do not exist for many countries during their currency board periods.

The only currency board ever to suffer a run was the Straits Settlement board, which experienced high redemption demand in October 1907. As Chapter 8 explained, the demand was the result an extraordinary demand for gold by speculators in gold and silver, not the result of lack of confidence in the board. The board met the demand by paying drafts on London, which were acceptable to note holders. The board did not fail.

#### Performance of banks

Banks were established before currency boards in almost all currency board systems. Trading companies were another channel for foreign investment before and during the life of currency boards. The existence of such intermediaries allowed currency board countries to finance persistent current account deficits with foreign capital investment. Currency board countries did not necessarily have to sacrifice present

consumption to effect an increase in the money supply, because intermediaries for foreign capital investment broke the rigid link between the current account balance and the money supply.

Bank failures in currency board systems were rare. British imperial banks dominated in most currency board systems, and no imperial bank failed after the Oriental Bank Corporation in 1884. The imperial banks' size, easy access to the London money market, and international scope made them very strong. Because most had branches in more than one colony, they were able to spread risks effectively. There seem to have been only two nonlocal banks that have failed in currency board systems. One was the Exchange Bank of India and Africa Ltd. It was incorporated in Bombay in 1942, established branches in Kenya and Uganda after 1945, and failed on May 3, 1949 (Newlyn and Rowan 1954, pp. 247-8). I was unable to discover whether depositors suffered any losses. The other foreign bank to fail was the Abu Dhabi-chartered Bank of Credit and Commerce International, which had branches in Hong Kong and Singapore (see Chapter 8). As of this writing, it appears that Hong Kong depositors will lose perhaps US\$300 million, or 30 percent of deposits. The bank's operations in Singapore were much smaller; no figures of probable losses there are yet available.

Runs on imperial banks have been extremely rare and have quickly subsided when they have occurred. The most recent was

a run on the Standard Chartered Bank's Hong Kong branches on August 8-10, 1991 (see Chapter 8). Other cases of runs on imperial banks have been minor (for instances, see Newlyn and Rowan 1954, p. 218).

Local banks in currency board systems have been far more prone to failure and to runs. Foreign political tensions led to a banking panic affecting local banks in Palestine in August and September 1935, and a restriction of payments by local banks in August 1940. Two banks failed in 1940. During both periods imperial banks lent to some of the local banks to tide them over the crisis (The Banker, January 1936, p. 72, and October 1940, p. 59-60). Nigeria experienced a number of runs and failures among its native banks in the 1950s (Newlyn and Rowan 1954, pp. 238-9). Chapter 8 has already discussed runs on small local banks in Hong Kong.

Most currency board systems had no lender of last resort to bail out troubled banks, but they did not seem to need one because significant bank failures were rare. The East African Currency Board acted as a lender of last resort towards the end of its life, but the East African banking system experienced no financial panics during that time and apparently experienced none before. More recently, the monetary authorities of Hong Kong and Singapore have acted as lenders of last resort on occasion, but they have done so to rescue small banks rather than large ones. Large banks have

sometimes received loans from the monetary authorities, but it appears that they could equally well have borrowed in the interbank market at higher rates of interest.

Lack of a lender of last resort was just one aspect of the minimal monetary role of governments in currency board systems. Most British colonies had no local banking regulations at all until the 1940s or later, except usury laws aimed more at small moneylenders than at banks. (In any event, banks could easily evade usury laws by requiring compensating balances from borrowers, or by means of other tricks.) There were no required reserve ratios for deposits, no credit controls, and no restrictions on bank branching or bank ownership.

No systematic studies of interest rates in currency board systems seem to exist. Rates were closely linked to rates in the reserve-currency country. For instance, in East Africa the rate on one-year deposits was for many years 1-1/2 to 2-1/2 percent higher than the Bank of England's discount rate. In October 1960, for instance, the minimum rate on loans in East Africa was 8 percent, the rate for one-year deposits was 5 percent, and the rate on savings bank deposits was 3-1/2 percent (Crick 1965, p. 402). In Nigeria in 1951, rates were 8 to 12 percent for overdrafts, 12-1/2 percent (the legal maximum) for mortgages, and 45 percent (the legal maximum) for unsecured loans (Newlyn and Rowan 1954, p. 113). In the

British Caribbean colonies, rates around 1950 were 4 to 6 percent for the best-quality loans; deposits paid 1 percent (Greaves 1953a, pp. 41, 47).

Loan rates were higher in British colonial currency board systems than in Britain for a number of reasons. The ratio of expenses to deposits was often higher in the colonies than in Britain. Many territories with currency boards were considered hardship posts for Europeans, so they paid higher salaries to European staff than banks in Britain. Transport costs could be higher than in Britain (Greaves 1953a, p. 49). Banks were often restricted from gaining suitable property as loan collateral from natives. In West Africa, much African land ownership was communal and could not be transferred to banks without government permission (Crick 1965, p. 362). In Uganda, certain land could only be sold to other Africans (Engberg 1965, p. 197). In Kenya, few Africans had registered land titles to offer as loan collateral, whereas British settlers had registered titles and hence were better credit risks for banks (Zwanenberg and King 1975, p. 287). In Malaya certain land could only be sold to other Malays (IBRD 1955, p. 84). Prohibitions on European-style individual ownership had existed before British colonization, and the British did not change it except for Europeans. Since land was the main asset of most Africans or Malays, lack of ability to pledge it as collateral meant that if they could get bank loans at

all, it was at high rates; more often, they had to turn to revolving credit associations, money lenders, pawnshop dealers and other lenders who offered less favorable terms than banks.

Banks in currency board systems seem not to have made persistent above-normal profits. No easy way exists to measure the profits they made in currency board territories, because the larger banks also operated in territories with central banks and reported profits on a consolidated basis. Legal barriers to new competitors were low in most currency board systems, however, so it seems that the interest rates that resulted were the outcome of genuinely higher costs as tested by competition.

In many currency board systems, local assets were less than 50 percent of local deposits through the 1950s. British imperial banks usually invested the difference in British assets. Critics of the currency board system considered this a type of disinvestment that hampered growth of the local economy. But locally owned banks in the colonies, whose local assets were nearly equal to their local deposits, were precisely those most prone to failure. Imperial banks had large holdings of British assets because they saw no further opportunities for colonial lending that promised satisfactory risk-adjusted returns. (Restrictions on land ownership by natives in many British colonies eliminated an important segment of potential borrowers from the market, as I explained

above.) As colonial economies grew, opportunities for lending grew and the ratio of local assets to local deposits increased. For instance, by December 1963 local earning assets were 86.1 percent of local deposits for East Africa as a whole, and 121.6 percent for Uganda (Engberg 1965, p. 196). The ratio first exceeded 100 percent in Singapore by September 1961 (Great Britain, Colonial Office, Digest of Colonial Statistics, January 1962, p. 50). It appears that the low ratio of local assets to local deposits in many currency board systems was caused by economic conditions that would have existed under central banking also, if central banks had allowed international mobility of funds as currency boards did. Restricting the mobility of investments by banks can equalize the ratio of local assets to local deposits, but it reduces global economic growth and the profitability of banks. Complaints about disinvestment are not unique to the currency board system: they are often made in nations with central banking as well. (Usually, those who make such complaints in the United States are in areas that lag in economic growth, such as the Northeast and inner cities in recent years.)

#### Performance of the economy

Orthodox currency boards had no power to engage in discretionary monetary policy. In contrast, the central banks established to replace currency boards have tried to manage

the economy by determining the growth rate of high-powered money, imposing credit controls, and supervising commercial banks. Therefore, it is worthwhile to ask whether basic indicators of macroeconomic performance indicate that central banking has been more successful than the currency board system at promoting economic growth and low inflation.

The table and figures (graphs) that follow use as their data set all nations for which statistics are readily available that had currency boards for any part of the period 1950 to 1990. The data are cross-sectional and time series data. The starting point is 1950 because that is the first year for estimates in the Penn World Table, which contain the most conscientious attempt to estimate real gross domestic product per person. (For a description of the Penn World Table, see Summers and Heston 1991.) The other main source of statistics used here was the International Monetary Fund's International Monetary Statistics. The International Monetary Statistics often contain little information for the period before a nation became a member of the IMF. Other sources of statistics exist that go back further than IMF statistics (for instance, the British Colonial Office Digest of Colonial Statistics). However, it became apparent when comparing them with IMF statistics for the same years there were differences in the methods of compiling the statistics, so splicing other statistical series onto the IMF statistics would have made the

resulting series even less reliable than its components. Banking and financial statistics are probably the most reliable of the statistics analyzed here because they require little estimation and are fairly easy to gather. Statistics of inflation and economic growth are less reliable because they require more estimation and because until recently much of the economy in some countries, especially those in Africa and the Arabian Peninsula, was still not monetized. Statistics involving population, such as GDP per person, are probably least reliable, because censuses have been incomplete. Nigeria, for instance, has never conducted a census widely accepted as comprehensive and accurate.

With those caveats in mind, let us examine statistics on economic growth, inflation, exchange rates, money supply, and the balance of payments under the currency board system and under central banking in nations that have had currency boards.

Table 7 illustrates the depreciation of most former currency board currencies relative to sterling, their former reserve currency. Since one of the reasons for the decline of the currency board system was discontent with sterling as a reserve currency, it is appropriate to ask whether central banks have maintained the value of their national currencies better than currency boards would have done. No currency still issued by a currency board is worth fewer sterling today

than in 1950. (Currency boards remain in Cayman Islands, Falkland Islands, Faroe Islands, Gibraltar, Hong Kong, and Singapore). Other exceptions to the trend of depreciation are currencies tied to the U.S. dollar (the East Caribbean dollar of Barbados and the Leeward and Windward Islands; and the currencies of Bahamas, Bermuda, and Belize) or tied to the SDR (Seychelles). Of the other former currency board currencies, those of Kuwait and Oman are fortunate to be issued by lightly populated, oil-rich nations that have experienced little pressure for inflationary finance. The only former currency board currencies not falling within these groups whose currencies have appreciated against sterling are those of Cyprus, Malta, and Malaysia. Even some of the currencies that have appreciated against sterling, such as the Malaysian ringgitt, are subject to exchange rate restrictions, so that published exchange rates overstate their value compared to what it would be in a completely free foreign exchange market.

Table 7

## Exchange rates versus sterling, 1950 and 1992

Country	Percent change	Country	Percent change
Bahamas	-12	Malawi	-65
Barbados	+36	Malaysia	+91
Belize	+14	Malta	+77
Bermuda	+37	Mauritius	-52
Brunei	+196#	Nigeria	-94
Burma	-87**	Oman	+49#
Cayman Islands	0*#	Panama	0*
Cyprus	+23	Philippines	-92*
Eastern Caribbean dollar zone	+17	Seychelles	+46
Falkland Islands	0	Sierra Leone	-99
Faroe Islands	0*	Singapore	+196
Fiji	-57	Solomon Islands	-67*
Gambia	-67	Sri Lanka	-82
Ghana	-99	Sudan	-99
Gibraltar	0	Swaziland	0*#
Guyana	-98	Tanzania	-96
Hong Kong	+18	Tonga	0*
Iraq	-94	Trinidad and Tobago	-35
Ireland	-7	Uganda	-99
Israel	-99	United Arab Emirates	-12#
Jordan	-16	Western Samoa	-33*
Jamaica	-95	Yemen (P.D.R.)	-82
Kenya	-62	Yemen (Arab Rep.)	-87
Kuwait	+94	Zambia	-99
Libya	-33**	Zimbabwe	-77

## NOTES

Changes are adjusted for redenomination of currencies.

\*Change versus former reserve currency other than sterling: U.S. dollar (Cayman Islands, Panama, Philippines), Danish krone (Faroe Islands), South African rand (Swaziland), Australian dollar (Solomon Islands, Tonga), New Zealand dollar (Western Samoa).

#Benchmark date instead of 1950: 1952 (Brunei), 1966 (United Arab Emirates), 1970 (Oman), 1972 (Cayman Islands), 1974 (Swaziland).

\*\*Black market rate for 1992 is used in calculation.

Sources: Text; Pick and Sedillot 1971; Pick's Currency Yearbook; World Currency Yearbook; Financial Times, April 7, 1992, p. 26.

Table 8 shows statistics of consumer price inflation and real growth in GDP per person in the data set. Inflation has generally been lower and GDP growth per person higher under currency boards than under central banks. For comparison, average GDP growth and inflation for the United States, Britain, and LDCs are included. Table 9 shows statistics of money supply growth and the balance of payments. It uses both the narrowest monetary aggregate measured by the IMF, reserve money (M0), and a broad aggregate, domestic credit (roughly comparable to M3 or even L in American monetary statistics). Table 9 excludes Hong Kong and Singapore because we already saw in Chapter 8 that for them no rigid relationship existed between the current account balance or the overall balance of payments, on the one hand, and growth in various measures of the money supply, on the other hand.

Table 8

**Inflation and real GDP growth per person under  
currency boards and central banking**

	Inflation under currency board	Inflation under central banking	GDP growth under currency board	GDP growth under central banking
Antigua	10.5	2.4		
Bahamas	6.9	6.3		
Bahrain	4.5	7.6		
Barbados	8.6	9.8	4.3	0.5
Belize	11.2	3.4		
Burma	3.0	6.8	5.4	2.8
Cyprus	4.1	5.3	3.5	5.6
Fiji	12.3	7.7	3.0	-0.5
Gambia	1.5	15.0	4.7	1.1
Ghana			0.4	-0.5
Grenada	16.0	2.9		
Guyana	1.7	12.6	-0.3	-0.3
Hong Kong	4.2	8.7	6.5	6.5
Jamaica	2.9	13.0	5.8	1.1
Jordan			7.8	1.6
Kenya	2.3	9.6	1.4	1.6
Malawi		5.4		1.1
Malaysia	2.0	4.1	2.8	3.9
Malta	2.5	3.9	2.3	6.4
Mauritius	2.0	10.6	-0.4	3.5
Nigeria	2.3	13.2	2.5	0.7
St. Kitts	9.1	1.9		
St. Lucia	10.4	3.1	2.6	0.5
St. Vincent	10.5	2.2	3.8	4.8
Sierra Leone	2.8	33.4	8.0	-0.9
Singapore	3.6	6.1		
Sudan	1.0	17.2	1.9	-0.1
Swaziland	14.4	5.4	-0.3	5.4
Tanzania	9.8	19.8	4.0	1.8
Tonga	9.2			
Trinidad	2.4	10.1	5.5	0.6
Uganda			0.9	1.7
Western Samoa	3.8	12.7		
Yemen P.D.R.	5.2	9.1	13.6	6.2
Zambia	8.3	-1.4		

Zimbabwe	6.8	1.2		
AVERAGE	5.5	10.9	3.5	1.6
Britain	6.8		2.4	
United States		4.2		2.0
LDCs (see Notes)	30.9		2.9	

## NOTES

AVERAGE is the average of all observations, not the average of the country averages. The LDCs figure for inflation is the average for non-oil LDCs 1961-1990; for real GDP growth per person, it is in fact growth in real gross national product per person 1965-1989.

For countries that have experienced both currency boards and central banking, data on inflation or growth in real GDP per person were included only if data from both the currency board period and the central banking period were available. The bounds of data for inflation are 1950 to 1990; the bounds of data for growth in real GDP per person are 1951 to 1988. For many countries only partial data are available within those bounds, and inflation data (for example) may be available while growth data are not.

Data for real GDP growth per person from Kuwait were excluded as not reflecting the standard of living. The data show a steady decline under both the currency board system and under central banking as the population has increased.

Averages of annual data. Sources: International Monetary Fund, International Financial Statistics, March 1991 compact disk (inflation); Penn World Table 5 disk (real growth in GDP per person); World Development Report 1991, p. 204 (real growth in GNP per person, LDCs).

Table 9

**Balance of payments versus money supply growth  
in currency board systems, except Hong Kong and Singapore**

Amounts in millions of U.S. dollars

Year, country	Current account balance	Change in reserve money	Overall balance	Change in domestic credit
1977 Antigua	-9.6	-4.5	-4.5	-1.1
1978	-2.2	1.1	0.8	2.9
1979	-19.5	5.3	5.0	4.1
1980	-18.8	-2.3	-3.8	8.5
1981	-32.7	-0.4	-1.9	9.2
1982	-41.6	2.0	-3.2	7.5
1983	-9.1	1.9	-6.1	12.5
1973 Bahamas	-145.1	-1.8	7.2	127.7
1974	-122.5	6.1	6.5	-66.4
1966 Barbados	-18.4	9.4	-3.1	33.9
1967	-16.8	0.6	-1.7	5.1
1968	-19.6	5.7	6.7	5.6
1969	-30.0	-3.1	14.9	23.8
1970	-41.8	2.3	-5.9	17.7
1971	-35.1	1.1	11.7	19.3
1972	-43.3	2.2	3.1	5.6
1973	-52.3	5.6	-0.4	7.5
1948 Burma	28.6	123.6		50.0
1949	-37.9	19.7		-11.9
1950	4.4	-19.3		-16.2
1951	3.2	8.0		-22.7
1952	-112.6	8.0		-27.5
1958 Cyprus	7.3	26.8		63.1
1959	-11.2	-1.0		24.4
1960	-0.3	-0.4		-2.8
1961	4.5	3.2		-3.4
1962	-2.8	0.8		5.1
1963	-8.2	1.2		-1.1
1964	1.7	5.2		6.7
1961 Fiji	-10.4	14.5		12.3
1962	-5.3	-1.0		-1.4
1963	4.8	2.7		-1.9
1964	-5.0	4.3		-0.4
1965	-15.2	-4.2		1.3
1966	-7.3	-0.3		5.5
1967	-8.1	1.1		-0.9
1968	-12.6	-0.1		6.0
1969	-16.8	2.4		-2.1
1970	-14.3	1.9	0.5	8.9

1971	-27.6	3.7	9.2	6.6
1972	-31.9	5.4	24.2	18.3
1973	-58.2	16.0	8.2	10.8
1974	-28.9	13.6	33.9	41.6
1975	-26.3	18.1	49.8	6.1
1970 Gambia	0.5	1.1	1.6	0.1
1971	-1.0	0.3	1.7	1.3
1955 Ghana	7.0	2.2		-13.0
1956	-13.0	7.8		27.6
1957	-13.4	-13.0		33.9
1958	61.3	2.5		-6.7
1977 Grenada	1.3	-0.4	-0.6	3.8
1978	1.0	2.3	0.3	4.2
1979	-1.1	2.9	1.0	3.0
1980	0.2	1.0	0.2	3.5
1981	-14.0	4.0	-3.9	8.2
1982	-17.7	-2.9	-2.0	7.9
1983	-15.1	0.9	-0.3	1.6
1955 Guyana	-2.5			7.5
1956	-3.1			0.7
1957	-6.2			1.0
1958	-10.6			3.4
1959	-3.9			0.5
1960	-11.8			7.5
1961	1.1			-1.5
1962	-3.2			0.5
1963	15.3			-0.9
1964	-6.8			2.2
1965	-15.5	0.6		10.5
1960 Jamaica	-26.6	0.3		14.8
1961	-12.4	8.3		58.8
1951 Jordan	-36.4	0.7		8.1
1952	-39.2	-1.6		-3.4
1953	1.9	1.6		-1.1
1954	4.0	7.5		3.4
1955	-9.0	2.6		-0.6
1956	5.6	10.8		-3.6
1957	-5.9	-3.2		3.7
1958	-2.5	2.0		-2.8
1959	-8.1	-1.0		4.1
1960	-5.3	1.2		4.9
1961	2.3	4.4		5.2
1962	-4.7	6.4		-1.1
1963	-33.6	4.3		36.9
1964	11.5	8.4		-19.9
1966 Kenya	-18.6	68.6		140.0
1956 Malaysia	67.3	10.8		-12.1
1957	-6.2	1.3		43.4
1958	-48.0	2.9		32.3
1959	151.6	-77.1		171.5
1960	174.8	15.8		33.2

1961	3.0	6.9		68.0
1962	-50.0	10.9		15.1
1963	-78.0	15.4		66.2
1964	-24.0	12.7		25.0
1965	39.0	23.5		21.8
1966	12.0	33.5		84.2
1967	-4.0	-44.6		69.2
1956 Mauritius	4.8	12.7		0.0
1957	12.9	1.0		0.0
1958	-2.8	0.9		0.0
1959	-0.8	1.7		0.0
1960	-32.5	0.0		23.6
1961	-6.4	1.0		0.6
1962	-5.3			0.2
1963	19.0	4.0		-7.8
1964	-8.1	-0.7		3.9
1965	-11.4	0.3		5.5
1966	5.3	-0.1		5.4
1967	-14.1	0.5	-8.1	15.1
1960 Malta	11.7	62.5		23.3
1961	11.5	2.9		3.9
1962	7.7	3.0		3.6
1963	4.8	1.9		1.7
1964	-7.7	4.2		2.7
1953 Nigeria	44.8			28.3
1954	100.8			5.6
1955	-11.2			20.4
1956	-50.4			17.4
1957	-89.6			25.8
1958	-116.2			10.6
1959	-98.0	215.2		-96.7
1974 Oman	179.2	45.1	50.5	244.2
1963 SierraLeone	-17.1	0.3		5.6
1964	-21.1	2.7		1.9
1980 St.Kitts	-2.7	-1.5	-1.6	4.3
1981	-4.7	7.7	0.1	11.5
1982	-8.7	-2.5	-3.8	6.7
1983	-14.7	1.5	1.2	8.3
1976 St.Lucia	-5.4	2.4	2.5	2.2
1977	-10.9	0.5	0.6	7.8
1978	-23.0	1.8	1.0	6.0
1979	-28.1	2.6	1.6	10.8
1980	-33.3	0.9	-0.2	12.1
1981	-39.8	-0.5	-1.5	12.0
1982	-30.8	1.0	0.8	3.7
1983	-4.9	0.7	-0.4	5.7
1957 Sudan	-62.1	-30.9		71.2
1958	-36.4	13.0		57.1
1959	50.6	10.9		-59.8
1960	13.6	1.0		-15.6

1978				
St.Vincent	2.7	0.4	0.1	5.3
1979	-3.6	3.6	3.8	5.7
1980	-9.3	-1.5	-1.9	4.7
1981	-0.8	1.7	0.1	6.9
1982	-10.8	-1.1	-3.7	11.4
1983	-2.6	-0.6	0.3	4.7
1974 Swaziland	41.9	9.3	10.0	35.4
1975	50.7	9.7	39.2	-17.3
1976	29.8	23.1	27.7	6.5
1977	10.8	14.9	21.8	-4.2
1978	-69.3	-2.5	15.9	20.4
1979	-120.7	2.1	-8.5	7.1
1980	-131.7	14.2	34.1	-0.2
1981	-90.0	-9.2	-49.4	55.3
1982	-111.6	5.3	-8.7	27.2
1983	-108.7	22.0	11.6	18.8
1984	-77.1	18.0	-9.2	10.4
1985	-43.8	5.5	-4.2	7.6
1986	8.5	30.9	7.5	12.3
1982 Tonga	3.4		1.5	8.4
1983	0.2		-0.1	-1.1
1984	0.3		6.1	-1.3
1985	-1.3		3.8	4.3
1986	0.9		0.5	0.4
1987	5.7		1.1	2.3
1988	-11.4		0.7	4.6
1951 Trinidad	-2.5	6.2		17.9
1952	-7.8	3.5		-0.1
1953	12.0	1.3		0.9
1954	7.3	2.1		1.2
1955	-4.5	-0.1		5.7
1956	16.5	0.1		-0.9
1957	21.6	7.1		-14.9
1958	-10.6	2.0		9.3
1959	0.0	4.1		1.3
1960	-59.0	0.7		18.4
1961	-41.2	2.7		24.6
1962	-57.0	-2.9		13.8
1963	-59.7	1.2		4.3
1964	-49.3	4.4		10.0
1966 Tanzania	-6.0	78.1		93.8
1966 Uganda	8.8	60.1		107.0
1967 Western Samoa	-0.7	0.1	-1.0	0.7
1968	0.9	0.0	0.4	0.0
1969	0.0	0.0	2.0	-1.7
1970	-5.1	0.0	0.6	0.9
1971	-2.7	0.0	0.7	0.7
1972	-11.5	0.0	-2.7	3.0
1973	-7.6	0.0	-1.5	1.5

1967 Yemen				
P.D.R.	14.3	1.9	6.6	-1.7
1968	-72.8	3.9	-2.7	-2.0
1969	5.2	-0.5	-3.8	5.8
1970	-3.9	6.9	-0.2	7.4
1971	-8.0	3.7	-3.3	8.1
1972	-28.7	14.5	-0.2	13.7

Source: International Financial Statistics, March 1991 compact disk.

Criticisms of the currency board system in light of historical evidence

Chapter 7 discussed theoretical criticisms that economists made against the currency board system in the 1940s, 1950s, and 1960s. We are now in a position to examine the practical significance of the criticisms.

The claim that the money supply shadows the current account balance in a currency board system is not borne out by the data. Chapter 8 showed that the supply of money grew rapidly in Hong Kong despite deficits in the balance of merchandise trade from 1947 to 1985, and in Singapore despite deficits in the current account balance every year except one from 1963 to 1986. Figures 4 and 5 shows that many currency board systems have experienced simultaneous deficits in the current account balance and growth in the supply of money, and that no obvious link between the two exists. This finding agrees with investigations by previous writers (Newlyn and Rowan 1954; Greaves 1955; Irvine 1959; Wyeth 1979, p. 44; Mars 1948 is an exception).

The currency board system was criticized for preventing monetary policy from being used to promote economic growth. Critics had in mind that a central bank could, for instance, increase reserves to the banking system during depressions. The main exports of most economies with currency boards have been agricultural products and raw materials. (Hong Kong and

Singapore have been noteworthy exceptions to the rule.) The economies of currency board systems frequently experienced severe fluctuations in their terms of trade, sometimes causing depressions. The worldwide depression of 1920 to 1922 and the Great Depression caused the prices of such important export goods as rubber, peanuts, sisal, tin, bananas, and beef to fall much further than the prices of most imported manufactured goods. During depressions, currency board systems experienced steep contractions in note and coin issue and in bank deposits, but suffered no financial crises. Because the currency board system is a regime of fixed exchange rates, domestic prices bear the whole burden of price adjustment during depressions or booms, whereas in a system of floating exchange rates the exchange rate can bear some of the burden. Whatever one may think of the advantages of floating exchange rates, the experience of currency board systems indicates that fixed exchange rates have been compatible with high average rates of economic growth. As Table 8 shows, currency board systems have on average had higher growth and lower inflation than central banking systems. It perhaps remains an open question, however, whether central banking has an advantage over the currency board system to the extent that a central bank may be able to reflate the economy during extreme depressions. Central bankers stress that a central bank can reflate the economy,

whereas advocates of rules in monetary policy stress that discretionary monetary policy causes or worsens depressions in the first place.

Currency board systems seem to have had little experience of deflation caused by increases in the demand for notes and coins. The only case that I am aware of occurred in Hong Kong in December 1983 and January 1984. A few months before, Hong Kong had reintroduced the currency board system. During the Chinese New Year, the demand for notes increases because it is customary to give currency as a gift. The increased demand for notes affected bank reserves and interest rates for about two weeks, after which they settled back to their previous levels. The banks learned their lesson: during subsequent Chinese New Years, they have kept higher than usual reserves on hand, and interest rates have been little affected (Selgin 1988a, p. 19).

Currency board banking systems were stable without a lender of last resort. Many currency board systems have been dominated by international banks, such as the British imperial banks, that had branches scattered around the globe. International banks had diversified portfolios, and events in any single country affected their overall soundness little. Most imperial banks had their head offices in London and were readily able to draw on the London money market for liquidity if they desired. Although imperial banks frequently drew on

the London money market, I have found no mention that the Bank of England ever acted as a lender of last resort to any imperial bank.

## CHAPTER 10. CONCLUSION

The currency board system originated as a response to a desire to avoid the perceived dangers of free banking, on the one hand, and unconstrained note issue by the government, on the other hand. Both the theories of the British Currency School (discussed in Chapter 2) and bank failures or the threat of bank failures in certain British colonies made free banking seem undesirable. Wide experience also indicated that note issue by the government could easily become a tool of inflationary finance for budget deficits, resulting in depreciation against gold, silver, and foreign currencies. The orthodox currency board system usually suppressed note issue by free banks, but made the currency board politically independent of the government and subjected it to strict (though often informal) rules that left the board with almost no ability to engage in discretionary monetary policy.

The currency board system originated in and was most widespread in British colonies, whose experience with currency boards I examined in Chapters 3 and 4. Mauritius opened the first currency board in 1849 in response to the failure of one of its two note-issuing banks in 1847. New Zealand opened the second currency board in 1850 as an attempt to practice the program of the British Currency School. The New Zealand currency board was imposed by the governor on an unwilling

populace, and after New Zealand attained home rule, the new parliament abolished the currency board in 1856. Ceylon opened a currency board in 1884 after a free bank failed in circumstances like those in Mauritius earlier. Around the turn of the century, the currency board system spread to a number of other British colonies. In most cases it replaced free banking.

Early currency boards had slightly different characteristics from the later, "orthodox" currency board system first embodied in the West African Currency Board, which opened in 1913 for British colonies in West Africa. Early currency boards often held large reserves of gold or silver coin as well as interest-bearing securities, and held domestic as well as foreign securities. For many, it was ambiguous whether they were following the gold (or silver) standard, or simply a foreign-exchange standard with a reserve currency that happened to be convertible into gold at a fixed rate. Later orthodox currency boards, in contrast, held only foreign securities as assets and followed an unambiguous foreign-exchange standard.

Although most currency boards have existed in British colonies, a number have existed elsewhere, including Argentina, the Philippines, and North Russia. Chapters 5 and 6 examined their experience. Most non-British currency boards drew their inspiration from British boards or from the quasi

currency board system that India had early in this century.

The currency board system reached its greatest extent in the early 1950s, when it existed in most British colonies and some nations recently independent or soon to be independent. In the late 1950s and the 1960s most newly independent nations replaced their currency boards with central banks. An important cause of the decline of the currency board system was the perceived superiority of central banking. Starting in the late 1940s, a number of economists criticized the currency board system on four major grounds, which I summarized in Chapter 7. The first was that holding 100 percent external reserves was wasteful. However, the critics implicitly assumed that the risk-adjusted return on domestic assets was higher than the risk-adjusted return on external assets. If arbitrage is efficient, returns on similarly risky domestic and external assets should be equal, plus or minus an allowance for transaction costs. The difficulty that some currency boards experienced in liquidating local assets seems to indicate that higher returns on domestic assets were indeed rewards for bearing higher risk.

The second charge against the currency board system was that it forced the money supply to shadow the current account balance, thus constraining economic growth. This charge assumed that the current account was the only channel for changes in the balance of payments. It neglected to recognize

that capital account transactions and branch banking with the reserve currency country can enable a currency board system to expand its note and coin issue despite persistent deficits in the current account. Furthermore, the flexibility of commercial banks' ratio of deposits to reserves enables them to increase their part of the money supply, deposits, without increasing their reserves. And even currency board systems that lacked commercial banks could absorb capital-account transfers by means of credits granted to overseas trading companies.

The third charge against the currency board system was that it did not permit discretionary monetary policy. Chapter 8 explained a number of measures that Hong Kong and Singapore have used to exercise some control over the supply of money. Although under the currency board system they have not been able to issue high-powered money at will, they have imposed binding minimum reserve requirements, liquidity requirements, and interest rate ceilings on commercial banks. Even a government that eschews legal regulation may be able to affect the money supply by shifting its funds from inside to outside the domestic financial system, although international branch banking and the development of financial markets reduce the effectiveness of such shifts because they reduce barriers between the domestic financial system and the rest of the world.

On a deeper level, the criticism can be attacked in the spirit of recent literature on time consistency. Economic literature of the 1950s tended to assume that each new turn in monetary policy was a new game, in which no long-run constraints bound a monetary authority with discretionary powers. Today there is a greater appreciation of the constraints that credibility imposes on monetary policy. Recent work in monetary theory generally concludes that monetary rules are superior to discretionary monetary policy. The currency board system is more rule-bound than central banking, and by this standard superior.

Finally, the currency board system was criticized for lacking a lender of last resort. As with the previous charge, a possible reply is that the Monetary Authority of Singapore, an unorthodox currency board, does in fact act as a lender of last resort. Taking a more radical tack, one may question the rationale of a government lender of last resort. Banks may be able to provide comparable facilities by means of interbank markets, issue of notes by commercial banks in competition with the currency board, or an "option clause" permitting a temporary delay of redemption. Private alternatives to a lender of last resort may be better able to avoid problems of moral hazard.

The theoretical debate of the late 1940s and 1950s was conducted on the basis of little evidence. Today a much wider

range of data is available to us, and it provides another basis for assessing the performance of the currency board system, which I discussed in Chapters 8 and 9. Indicators of macroeconomic performance in currency board systems were favorable compared to contemporary central banking systems and to the central banking systems that have succeeded most currency boards. Economic growth has been higher and inflation has been lower under most currency boards than under their successor central banks. The current account balance evidently has not constrained money supply growth in currency board systems in such a way as to cause deflation or retard economic growth. It is interesting that Hong Kong and Singapore, which are often cited as models of successful Third World economic development, retain their currency boards today, although in recent years they have moved away from the orthodox currency board system.

The currency board system had on the whole an excellent record. Only one currency board ever devalued (the East Caribbean Currency Authority in 1976). All currency boards maintained convertibility except those of Argentina and territories occupied by the Japanese army during World War II. The Argentine government compelled the Argentine board to suspend convertibility even though the board held adequate reserves to meet demands for redemption of its notes and coins. Currency boards in the territories occupied by

the Japanese army kept their assets intact abroad during World War II and resumed operations soon after the war ended.

All but two currency boards were profitable. The Argentine board by design held no interest-earning assets. The short-lived North Russian board held about 25 percent of its assets in the form of domestic government bonds, contrary to orthodox currency board practice. The bonds became worthless, leaving the board with less than 100 percent reserves when it was liquidated.

The banking systems of countries with currency boards have been quite stable. Bank runs and major bank failures have been rare, and there has been no apparent need for a lender of last resort.

The perceived failings of the currency board system were primarily political and intellectual. Most currency boards existed in British colonies, and all currency boards today are in British colonies or former colonies; even the Faroe Islands in a sense fit this description, since its currency board was established by the British during World War II. All independent nations that formerly had currency boards have replaced them with central banks, except for Singapore and Brunei. Currency boards were viewed as inappropriate vestiges of colonialism. Sentiment favoring central banks for reasons of national pride was reinforced by economic theories that criticized the currency board system as costly and inflexible.

The record of the central banks that replaced currency boards has generally been poor. Moreover, recent developments in monetary theory undermine the theoretical arguments once made against the currency board system. The features for which the currency board system was criticized from the late 1940s until recently would today be considered its greatest strengths. Recent interest in the possible benefits of the currency board system for former socialist countries and for the Third World results from a fresh appreciation of its political independence and rule-bound nature.

BIBLIOGRAPHY

## BIBLIOGRAPHY

Note

Dates of currency board reports list the end year of the reporting period, not the date of publication. For instance, I refer to the date of the Report of the East African Currency Board for the period ended the 30th June, 1921 as 1921, although it was printed in 1922.

Official documents

Argentine Republic. Caja de Conversión. 1890-1934. Memoria.

Argentine Republic. Boletín Oficial de la República Argentina.

Bahrain Monetary Agency. 1974-. Annual Report.

Bank for International Settlements. 1953. The Sterling Area. Basle: Bank for International Settlements.

Bank Negara Malaysia. 1978. The Financial System and Monetary Policy Experience of Malaysia. Kuala Lumpur: Bank Negara Malaysia Economic Research and Statistics Department.

Bank Negara Malaysia. 1979, 1984, 1989. Money and Banking in Malaysia. Kuala Lumpur: Bank Negara Malaysia Monetary and Economic Department.

Bank Negara Taneh Melayu (Central Bank of Malaysia). 1959-. Annual Report and Statement of Accounts.

Bank of England. 1962. Quarterly Bulletin. March.

Bank of Libya. 1957. Annual Report.

Bank of Libya. [1966]. Economic Research Division. Bank of Libya: A Brief History of Its First Decade 1956-1966. Tripoli: [Bank of Libya].

Bank of Rhodesia and Nyasaland. 1961. Annual Report.

Bank of Sierra Leone. 1964-. Annual Report and Statement of Accounts.

Bank of Sierra Leone. 1974. Bank of Sierra Leone: The First 10 Years. Freetown: Bank of Sierra Leone.

Bank of the Sudan. 1961a. Report for Year Ending 31st December, 1960.

Bank of Tanzania. 1967-. Economic and Operations Report.

Bank of Uganda. 1967. First Annual Report.

Bank von Danzig. 1924. Verwaltungsbericht der Bank von Danzig.

Bank von Danzig. 1925. Report.

Burma Currency Board. Report.

Cassa per la circolazione monetaria della Somalia. Assemblea generale ordinaria degli azionisti.

Cayman Islands Currency Board. Report.

Central African Currency Board. Report of the Central African Currency Board. Before 1954, see Southern Rhodesian Currency Board.

Central Bank of Ceylon. 1950. Annual Report of the Monetary Board to the Minister of Finance.

Central Bank of Ceylon. 1975. Central Bank of Ceylon 1950-1975. Colombo: Central Bank of Ceylon.

Central Bank of Cyprus. 1963-4. First Annual Report of the Board of Directors.

Central Bank of Ireland. 1943. Report of the Central Bank of Ireland.

Central Bank of Kenya. 1967. First Annual Report.

Central Bank of Malta. 1968. First Annual Report and Statement of Accounts.

Central Bank of the Gambia. 1971-2. Annual Report.

Central Bank of Kenya. 1967. Annual Report.

Central Bank of Kuwait. 1970. Annual Report.

Central Bank of Nigeria. Research Department. 1979. Twenty Years of Central Banking in Nigeria 1959-1979. Lagos: Central Bank of Nigeria.

Central Bank of the Philippines. 1949. First Annual Report. Manila.

Central Bank of Seychelles. 1983-. Annual Report.

Central Bank of Solomon Islands. 1982-. Annual Report.

Central Bank of Trinidad and Tobago. 1974. History of Banking and Currency in Trinidad and Tobago. Newtown, Port of Spain: Central Bank of Trinidad and Tobago.

Central Bank of Trinidad and Tobago. 1987. From Colony to Republic. Newtown, Port of Spain: Central Bank of Trinidad and Tobago.

Central Bank of Yemen. 1971/2-. Annual Report.

Ceylon. 1886. Issue of Currency Notes. Sessional Paper No. 1. Colombo: Government Press.

Ceylon. Banking Commission. 1934. Report, v. 1; Evidence, v. 2. Sessional Papers Nos. 22, 23. Colombo: Government Press.

Danmarks Nationalbank. 1949, 1990. Annual report, English translation.

EACB. 1921-71/72. East African Currency Board. Report.

East African Statistical Department. East African Economic and Statistical Review.

East Caribbean Central Bank. 1984-. Report and Statement of Accounts.

East Caribbean Currency Authority. 1966-83. Annual Report and Statement of Accounts.

F.O. Great Britain. Foreign Office. 1918, 1919. General Correspondence. Russia. F.O. 371, v. 3344, 3295 (1918); 3969, 3970 (1919). Wilmington, Del.: Scholarly Resources, microfilm. From archives of the Public Record Office.

Gambia Currency Board. 1964-70. Report.

Great Britain. Board of Trade. 1955. The Federation of Rhodesia and Nyasaland, by H. W. Woodruff. London: HMSO.

Great Britain. Colonial Office. 1950. Monetary Systems of the Colonies. London: HMSO.

Great Britain. Colonial Office. Digest of Colonial Statistics.

Great Britain. Colonial Office. 1953. Memorandum on the Sterling Assets of the British Colonies. Colonial No. 298. London: HMSO.

Great Britain. Parliament. 1860. House of Commons Paper No. 183.

Great Britain. Parliament. 1900. Report of the West African Committee. Minutes of Evidence. Colonial Office 879/62. (Barbour Report.)

Great Britain. Parliament. 1903. Report of the Committee Appointed to Inquire into the Currency of the Straits Settlements. Cmd. 1583.

Great Britain. Parliament. 1912. Report of the Departmental Committee on Matters Affecting Currency of the British West African Colonies and Protectorates. Cmd. 6426. (Emmott Report). Minutes of Evidence. Cmd. 6427. London: HMSO.

Great Britain. Parliament. 1931. Report of a Commission Appointed by the Secretary of State for the Colonies. May, 1931. Presented by the Secretary of State for the Colonies to Parliament by Command of His Majesty, August, 1931. Cmd. 3932. London: HMSO.

Great Britain. Parliament. 1961. Exchange of Notes and Letters concerning the Guarantee by the United Kingdom and the Maintenance of the Minimum Sterling Proportion by certain Overseas Sterling Area Governments. Cmd. 3834. London: HMSO.

Great Britain. Parliament. 1966. Exchange of Despatches and Letters concerning the Guarantee by the United Kingdom and the Maintenance of the Minimum Sterling Proportion by certain Overseas Sterling Area Governments. Cmd. 3835. London: HMSO.

Great Britain. Parliament. 1968a. "The Basle Facility and the Sterling Area." Cmd. 3787. Mimeograph.

Great Britain. Parliament. 1968b. "Exchanges of Notes and Letters concerning the Guarantee by the United Kingdom and the Maintenance of the Minimum Sterling Proportion by certain Overseas Sterling Area Governments." Cmd. 3834. London: HMSO.

Great Britain. Parliament. 1968c. "Exchanges of Despatches and Letters concerning the Guarantee by the United Kingdom and the Maintenance of the Minimum Sterling Proportion by certain Overseas Sterling Area Governments." Cmd. 3835. London: HMSO.

Hong Kong. 1930. Legislative Council. Report of Currency Committee. Hong Kong: Noronha and Co.

Hong Kong. 1941. Blue Book.

Hong Kong. 1962. Report on the Hong Kong Banking System and Recommendations for the Replacement of the Banking Ordinance. Hong Kong: Government Printer. (Tompkins Report.)

Hong Kong. Hong Kong 1990 (yearbook). Hong Kong.

Hong Kong. Census and Statistics Department. Annual Digest of Statistics.

Hong Kong. Census and Statistics Department. Monthly Digest of Statistics.

Hong Kong. Census and Statistics Department. 1969. Hong Kong Statistics 1947-1967. Hong Kong.

Hong Kong. Census and Statistics Department. 1992. Estimates of Gross Domestic Product 1966 to 1991. Hong Kong.

IBRD. 1952. International Bank for Reconstruction and Development. The Economic Development of Jamaica. Baltimore: Johns Hopkins University Press.

IBRD. 1953. International Bank for Reconstruction and Development. The Economic Development of British Guiana. Baltimore: Johns Hopkins University Press.

IBRD. 1955. International Bank for Reconstruction and Development. The Economic Development of Malaya. Singapore: Government Printer.

IBRD. 1957a. International Bank for Reconstruction and Development. The Economic Development of Jordan. Baltimore:

Johns Hopkins University Press.

IBRD. 1957b. International Bank for Reconstruction and Development. The Economic Development of Nigeria. Baltimore: Johns Hopkins University Press.

IBRD. 1961. International Bank for Reconstruction and Development. The Economic Development of Tanganyika. Baltimore: Johns Hopkins University Press.

IBRD. 1962. International Bank for Reconstruction and Development. The Economic Development of Uganda. Baltimore: Johns Hopkins University Press.

IBRD. 1963. International Bank for Reconstruction and Development. The Economic Development of Kenya: Report of a Mission Organized by the International Bank for Reconstruction and Development. Baltimore: Johns Hopkins University Press.

IBRD. 1965. International Bank for Reconstruction and Development. The Economic Development of Kuwait. Baltimore: Johns Hopkins University Press.

International Economic Conference of Genoa. 1922. Report of the Financial Commission (II).

International Monetary Fund. International Monetary Statistics.

Ireland (Eire). 1938a. Commission of Inquiry into Banking, Currency and Credit. Reports. Dublin: Stationery Office.

Ireland (Eire). 1938b. Commission of Inquiry into Banking, Currency and Credit. Memoranda and Minutes of Evidence, 2 v. Dublin: Stationery Office.

Irish Free State. 1926. Banking Commission. First Interim Report on Banking and Currency. Dublin: Stationery Office.

League of Nations. 1922. Brussels Financial Conference. Brussels Financial Conference 1920. The Recommendations and Their Application: A Review After Two Years. Geneva: League of Nations.

League of Nations. 1933. Journal of the Monetary and Economic Conference, London, 1933. London.

Libyan Currency Commission. Report.

Malaya. Board of Commissioners of Currency. Report of the Board of Commissioners of Currency, Malaya and British Borneo, 1949-68. Singapore: Government Printing Office.

Malaya. Currency Commission. 1948-9. Report on the Working of the Malayan Currency Commission, 1941-8. Singapore: Government Printing Office.

Monetary Authority of Singapore. Annual Report.

Monetary Authority of Singapore. Quarterly Bulletin.

National Bank of Libya. 1957a. 1st Annual Report of the Board of Directors. Tripoli: National Bank of Libya.

National Bank of Libya. 1957b. A Speech delivered by Dr. A. N. Aneizi, Governor of the National Bank of Libya, before the representative of H.M. the King, H.E. the Prime Minister on the 9th August 1957 on the occasion of the ceremonial opening of the Benghazi Office of the National Bank of Libya. [Tripoli: National Bank of Libya.]

Palestine Currency Board. 1929-1952. Report.

Philippine Islands. Division of Currency. Annual Report.

Philippine Islands. Department of Finance and Justice. Report.

Philippines (Commonwealth). Bureau of Banking. Annual Report of the Bank Commissioner.

Philippines (Commonwealth). Department of Finance. Annual Report.

Reserve Bank of Zambia. 1983. The Currency Media of Southern Rhodesia (from the Time of the Charter to 1953), of the Federation of Rhodesia and Nyasaland (from 1954 to 1963), of Rhodesia (from 1964 to 1979), and of Zimbabwe (from 1980). Harare: Reserve Bank of Zambia.

Singapore. Board of Commissioners of Currency. 1967-72. Report of the Board of Commissioners of Currency. Singapore: Government Printing Office.

Somali National Bank. 1962. Report and Balance Sheet (Financial Year: 1st July, 1960 to 31st December, 1961). Mogadishu: [Somali National Bank].

Southern Rhodesian Currency Board. 1939-53. Report of the Southern Rhodesian Currency Board. After 1953, see Central African Currency Board.

Straits Settlements. Legislative Council. 1902. Barbour Report, in Proceedings.

Straits Settlements. Legislative Council. 1946. Birse Report, in Proceedings.

Straits Settlements. "Report on the Working of the Currency Department." In Annual Reports of the Straits Settlements, 1899-1940.

United Arab Emirates Currency Board. 1974-9. Annual Report.

United Arab Emirates Central Bank. 1980. Annual Report, 31st December 1980.

United Nations. 1951, 1952. Second Annual Report of the United Nations Commissioner in Libya and Supplementary Report. General Assembly Official Records, Sixth Session, Supplement No. 17(A/1949) and 17A(A/1949 Add. 1). Paris.

United Nations. Economic Commission for Africa. 1961. Survey of Monetary Institutions in Africa. New York: United Nations.

United States. 1903, 1904. Commission on International Exchange. Report on the Introduction of the Gold Exchange Standard into China and Other Silver-Using Countries, v. 1, v. 2. Washington: Government Printing Office.

United States. Department of State. 1932. Foreign Relations of the United States. 1918. Russia, 3 v. Washington: Government Printing Office.

United States. 1947. Joint Philippine-American Finance Commission. Report and Recommendations of the Joint Philippine-American Finance Commission. 80th Congress, 1st Session, House Doc. no. 390. Washington: Government Printing Office.

WACB. West African Currency Board. 1914-73. Report of the West African Currency Board.

Other publications

Abbott, A. W. 1959. A Brief History of the Crown Agents and Their Office. London: Eyre and Spottiswoode.

Abdel Meguid, A. R. 1961. "Monetary Management." L'Egypte contemporaine, v. 52, no. 304, Apr., pp. 5-21.

Abdel-Salem, Osman Hashim. 1970. "Evolution of African Monetary Institutions." Journal of Modern African Studies, v. 8, no. 3, Oct., pp. 346-62.

Adomakoh, Albert. [1962]. "The Evolution of Currency and Banking in West African Countries, 1825-1925." Basle: Basle Centre for Economic and Financial Research. Series A, no. 42.

Al-Bustany, Basil. 1984. The Currency Board System in Iraq, 1932-1949. Baghdad: Research and Information Centre.

"Analyst." 1953. "Currency and Banking in Jamaica." Social and Economic Studies, v. 1, pp. 41-53.

"Analyst." 1954. "Rejoinder to Mr. Earle." Social and Economic Studies, v. 3, no. 1, pp. 105-8.

Anthonisz, J. O. 1915. Currency Reform in the Straits Settlements. Richmond, England: R. W. Simpson and Co.

Arkadie, B. van. 1965. "Central Banking in East Africa." In Colin Leys and Peter Robson, eds., Federation in East Africa. Oxford: Oxford University Press.

Bagehot, Walter. [1873] 1912. Lombard Street: A Description of the Money Market. New York: Charles Scribner's Sons.

Baker, John R. 1977. "Contemporary Tonga--an Economic Survey." In Noel Rutherford, ed., Friendly Islands: A History of Tonga. Melbourne: Oxford University Press.

Balogh, Thomas. 1958. "A Note on the Monetary Controversy in Malaya." Malayan Economic Review, v. 4, no. 2, Oct., pp. 21-6.

The Banker (London).

Barclays Bank (Dominion, Colonial, and Overseas). 1938. A Banking Centenary: Barclays Bank (Dominion, Colonial, and Overseas) 1836-1936. Plymouth, England: W. Brendon and Son, Ltd.

Bareau, Paul. 1958. The Future of the Sterling System. London: Institute of Economic Affairs.

Baster, A[lbert] S[tephen] J[ames]. 1929. The Imperial Banks. London: P. S. King and Son.

Basu, S[aroj] K[umar]. 1967. Central Banking in the Emerging Countries: A Study of African Experience. London: Asia Publishing House.

Basu, S[aroj] K[umar]. 1971. A Review of Current Banking Theory and Practice. Calcutta: Macmillan. 2nd ed., rev. and enl. by Alak Ghosh, London: Macmillan Press Ltd., 1974.

Basu, S[aroj] K[umar]. 1974. A Review of Current Banking Theory and Practice, 2nd ed., rev. and enl. by Alak Ghosh. London: Macmillan Press Ltd., 1974.

Beers, David T., Thomas J. Sargent, and Neil Wallace. 1983. "Speculations About Speculations Against the Hong Kong Dollar." Federal Bank of Minneapolis Review, v. 7, no. 4, Fall, pp. 14-22.

Bell, Phillip W. 1956. The Sterling Area and the Postwar World: Internal Mechanism and Cohesion 1946-1952. Oxford: Clarendon Press.

Bernardo y Valasquez, Marcelino. 1929. "The Monetary Standard of the Philippines." Ph.D. dissertation, University of Illinois, Urbana.

Best, Lloyd, and Alister McIntyre. 1961. "A First Appraisal of Monetary Management in Jamaica." Social and Economic Studies, v. 10, no. 3, Sept., pp. 353-63.

Betz, George W. 1967. "A Note on Money Supply in Singapore, 1957-1966." Malayan Economic Review, v. 12, no. 2, Oct., pp. 116-21.

Binhammer, H. H. 1969. "The Development of Central Banking and Monetary Management in Tanzania." University College, Economic Research Bureau Paper No. 69.9, Dar Es Salaam.

Birnbaum, Eugene A. 1957. "The Cost of a Foreign Exchange Standard or of the Use of a Foreign Currency as the Circulating Medium." International Monetary Fund Staff Papers, v. 5, no. 3, Feb., pp. 477-91.

Blackett, Basil. 1934. "Report on Question of Malayan

Currency." Straits Settlement Council Paper no. 78. Singapore: Government Printer.

Blomqvist, Ake Gunnar. 1971. "Monetary Policy and Development: The Case of Nigeria, 1950-1966." Ph.D. dissertation, Princeton University.

Bloomfield, Arthur I. 1961. Central Banking Arrangements for the West Indian Federation. Studies in Federal Economics (University of the West Indies), v. 2. Mona, Jamaica: University of the West Indies.

Blowers, G. A., and McLeod, A[lexander] N. 1952. "Currency Unification in Libya." International Monetary Fund Staff Papers, v. 2, no. 3, Nov., pp. 439-67.

Blumenthal, Erwin. 1963. Tanganyika--East Africa. The Present Monetary System and Its Future. Dar es Salaam: Government Printer.

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

Braun, Francis. 1982. The Banknote That Never Was. Hong Kong: Gulliver Books.

Brimmer, Andrew F. 1960. "Banking and Finance in the Sudan." South African Journal of Economics, v. 28, no. 1, March, pp. 23-34.

Brown, Charles V. 1966b. The Nigerian Banking System. Evanston, Ill.: Northwestern University Press.

Browning, P. R. 1954. "Banking and Money in East Africa." East African Economics Review, v. 1, no. 1, July, pp. 23-38.

Browning, P. R. 1955. "A Note on the Balance of Payments of East Africa." East African Economics Review, v. 2, no. 1, July, pp. 39-52.

Butterfield, Henry. 1958. Butterfield's Bank: Five Generations in Bermuda. Hamilton, Bermuda: Bermuda Book Stores.

[Caine, Sydney]. 1948-9. "Monetary Systems of the Colonies," The Banker, July 1948, pp. 21-4; "II. West Africa," Aug. 1948, pp. 93-9; "III. East Africa," Sept. 1948, pp. 169-75; "IV. Hong Kong," Oct. 1948, pp. 33-39; "V. Malaya," Nov. 1948, pp.

101-6; "VI. The West Indies," Dec. 1948, pp. 161-7; "VII. The Indian Ocean, Pacific, and Mediterranean Colonies," Jan. 1949, pp. 42-3. "VII. Trends and Future Possibilities," Feb. 1949, pp. 92-8.

[Caine, Sydney]. 1950. Monetary Systems of the Colonies. London: The Banker.

Caine, Sydney. 1959. "Malayan Monetary Problems." Malayan Economic Review, v. 2, no. 2, Oct.

Campbell-Smith, Duncan. 1990. "Central Bank for the UAE." The Banker, v. 130, no. 658, pp. 131-4.

Carboneri, G. 1937. "I sistemi monetari. Danzica." Rassegna monetaria, v. 34, nos. 3-4, Mar.-Apr., pp. 289-94.

Caselli, Clara. 1975. The Banking System of Tanzania. Milan: Cassa di Risparmio delle Provincie Lombarde.

Chalmers, Robert C[halmers]. 1893. A History of Currency in the British Colonies. London: Eyre and Spottiswoode for HMSO.

Chiang, Hai Ding. 1966. "The Origins of the Malaysian Currency System (1867-1906)." Royal Asiatic Society Journal of the Malaysian Branch, v. 39, part 1, July, pp. 1-18.

Chung, N. H. Paul. 1970. "A Note on Financial Development in Malaysia and Singapore." Malayan Economic Review, v. 15, no. 1, Apr., pp. 67-72.

Chung, N. H. Paul, and Chong Fei Wan. 1973. "The Currency Reform of the Straits Settlements and Malay States: Misunderstood Intention." Malayan Economic Review, v. 18, no. 1, Apr., pp. 48-54.

Clauson, G[erard] L. M. 1944. "The British Colonial Currency System." Economic Journal, v. 54, no. 213, April, pp. 1-25.

Cohen, J. L. 1933. "Palestine Currency." L'Egypte contemporaine, v. 34, Feb., pp. 344-52.

Colayco, Maria Theresa. 1984. A Tradition of Leadership: Bank of the Philippine Islands. Manila: Bank of the Philippine Islands.

Collings, Frances d'A., et al. 1978. "The Rand and the Monetary Systems of Botswana, Lesotho and Swaziland." Journal of Modern African Studies, v. 16, no. 1, Mar., pp. 97-121.

Collyns, Charles. 1983. Alternatives to the Central Bank in the Developing World. Occasional paper no. 20. Washington: International Monetary Fund.

Conan, A. R. The Sterling Area. London: Macmillan and Co.

Conant, Charles A[rthur]. 1901. Special Report on Coinage and Banking in the Philippine Islands to the Secretary of War. Washington: Government Printing Office.

Conant, Charles A[rthur]. 1902. "The Currency of the Philippine Islands." In Problems in Banking and Finance. Philadelphia: American Academy of Political and Economic Science.

Conant, Charles A[rthur]. 1909. "The Gold Exchange Standard in the Light of Experience." Economic Journal, v. 19, no. 74, June, pp. 190-200.

Conant, Charles A[rthur]. [1927] 1969. A History of Modern Banks of Issue, 6th. rev. ed. New York: Augustus M. Kelley.

Conte-Porras, J[orge]. 1976. Referencias historicas sobre el credito, las banca y la moneda paname?a. Panama City: Banco Nacional de Panama.

Conte-Porras, J[orge]. 1982. Colección numismatica paname?a. Panama City: Banco Nacional de Panama.

Cox-George, N. A. 1961. Finance and Development in West Africa: The Sierra Leone Experience. London: Dennis Dobson.

Crespo, Jose D. 1936. La moneda paname?a y el nuevo tratado del canal. Panama City: Editorial "La Moderna."

Crick, W[ilfred] F. 1965. Commonwealth Banking Systems. Oxford: Clarendon Press.

Crossley, Julian Stanley, and John Blandford. 1975. The DCO Story: A History of Banking in Many Countries, 1925-71. London: Barclays Bank International.

Davies, S. Gethyn, ed. 1960. Central Banking in South and East Asia. Hong Kong: Hong Kong University Press.

Degani, Amina H. 1967. "The Monetary System of Malaysia and Singapore, an Analytical Description." In Purcal 1967.

De Graft-Johnson, J. C. 1967. "Some Historical Observations

on Money and the West African Currency Board." Economic Bulletin of Ghana, v. 11, no. 2, pp. 3-19.

Dell'Amore, Giordano, ed. 1971. Banking Systems in Africa. Milan: Cassa di Risparmio delle Provincie Lombarde.

Diez Morales, Guillermo E. 1974. Historia completa y documentada de la moneda panamena. Panama City: Diez Morales.

Dowd, Kevin. 1988. "Option Clauses and the Stability of a Laissez Faire Monetary System." Journal of Financial Services Research, v. 1, pp. 319-33.

Dowd, Kevin. 1989. The State and the Monetary System. New York: St. Martin's Press.

Dowd, Kevin, ed. 1992. The Experience of Free Banking. London: Routledge.

Drake, P[eter] J[oseph], ed. 1966. Money and Banking in Malaya and Singapore. Singapore: Malayan Publications.

Drake, P[eter] J[oseph]. 1969. Financial Development in Malaya and Singapore. Canberra: Australian National University Press.

Drake, P[eter] J[oseph]. 1980. Money, Finance and Development. Oxford: Martin Robertson.

Drake, P[eter] J[oseph]. 1981. "The Evolution of Money in Singapore Since 1819." In Papers on Monetary Economics. Singapore: Singapore University Press for Monetary Authority of Singapore.

Drummond, Ian M. 1981. The Floating Pound and the Sterling Area, 1931-1939. Cambridge: Cambridge University Press.

Duncan, G. A. 1928. "The Currency System of the Irish Free State." Quarterly Journal of Economics, v. 42, no. 2, Feb., pp. 263-77.

Earle, A. F. 1954. "Colonial Monetary Theory." Social and Economic Studies, v. 3, no. 1, June, pp. 97-105.

Edo, Michael E. 1974. "Arabian Currency Arrangements Seen Evolving in the Context of Rapid Change." International Monetary Fund Survey, v. 3, no. 23, 9 Dec., pp. 374-7.

Edo, Michael E. 1975a. "Character of Currencies of Arabian Peninsula Shaped by Recent Origin: Area's Resources." International Monetary Fund Survey, v. 4, no. 1, 6 Jan., pp. 10-12.

Edo, Michael E. 1975b. "Currency and Banking Legislation in the Arabian Peninsula." International Monetary Fund Staff Papers, v. 22, no. 2, July, pp. 510-38.

Effros, Robert C. ed. 1982. Emerging Financial Centers: Legal and Institutional Framework: Bahamas, Hong Kong, Ivory Coast, Kenya, Kuwait, Panama, Singapore. Washington: International Monetary Fund.

Ekundare, R. Olufani. 1973. An Economic History of Nigeria 1860-1960. New York: African Publishing Co.

Emery, Robert F. 1991. The Money Markets of Developing East Asia. New York: Greenwood Press.

Engberg, Holger L. 1965. "Commercial Banking in East Africa, 1950-1963." Journal of Modern African Studies, v. 3, no. 2, pp. 175-200.

Engberg, Holger L. 1972. "The New African Central Banks and Monetary Management." In Arnold W. Sametz, ed., Financial Development and Economic Growth. New York: New York University Press.

Exter, John. 1949. Report on the Establishment of a Central Bank for Ceylon. Ceylon Sessional Paper no. 14. Colombo: Ceylon Government Press.

Ezcurra, Egas de. 1938. La caisse de conversion de la république argentine. Lyon: Bosc Frères M. & L. Riou. (Thèse, Université de Neuchâtel.)

Far Eastern Economic Review.

Fetter, Frank W[hitson]. 1965. Development of British Monetary Orthodoxy. Cambridge, Mass.: Harvard University Press.

Financial Times.

Fischer, Stanley. 1982. "Seigniorage and the Case for a National Money." Journal of Political Economy, v. 90, no. 2, Apr., pp. 295-313.

- Fisher, Irving. 1935. 100 Percent Money. New York: Adelphi Press.
- Fisher, J. L. 1953. Report on the Desirability and Practicability of Establishing a Central Bank in Nigeria as an Instrument for Promoting the Economic Development of the Country. Lagos: Government Printer.
- Freris, Andrew F. 1990. "The Exchange Fund and Monetary Policy." Asian Monetary Monitor, v. 14, no. 2, Mar.-Apr., pp. 1-18.
- Freris, Andrew F. 1991. The Financial Markets of Hong Kong. London: Routledge.
- [Friedman, Milton.] 1990. "Milton Friedman m fl: 'precis vad Estland behover.'" Dagens Industrie (Stockholm), Dec. 17, p. 9.
- Fry, Maxwell. 1988. Money, Interest, and Banking in Economic Development. Baltimore: Johns Hopkins University Press.
- Fry, Richard. 1976. Bankers in West Africa: The Story of the Bank of British West Africa Limited. London: Hutchison.
- Furness, Eric L. 1976. Money and Credit in Developing Africa. New York: St. Martin's Press.
- Gash, Norman. 1986. Sir Robert Peel: The Life of Sir Robert Peel After 1830. London: Longman.
- Gay, Gerald D., Stephen G. Timme, and Kenneth Yung. 1991. "Bank Failure and Contagion Effects: Evidence from Hong Kong." Journal of Financial Research, v. 14, no. 2, Summer, pp. 153-65.
- Ghose, T. K. 1987. The Banking System of Hong Kong. Singapore: Butterworths.
- Greaves, Ida C[ecil]. 1950. Monetary Systems of the Colonies. London: HMSO.
- Greaves, Ida C[ecil]. 1951a. "The Sterling Balances of Colonial Territories." Economic Journal, v. 61, no. 242, June, pp. 433-9.
- Greaves, Ida C[ecil]. 1951b. "Money and Currency in the West Indies." Journal of the Barbados Museum Historical Society, v. 18, nos. 3-4, May-Aug., pp. 138-42.

Greaves, Ida C[ecil]. 1952-3. "Money and Currency in Barbados." Journal of the Barbados Museum Historical Society, v. 19, no. 4, Aug., pp. 164-8; v. 20, no. 1, Nov., pp. 3-19; v. 20, no. 2, Feb., pp. 53-66.

Greaves, Ida C[ecil]. 1953a. Colonial Monetary Conditions. Colonial Research Studies no. 10. London: HMSO.

Greaves, Ida C[ecil]. 1953b. "Sterling Balances and the Colonial Currency Systems: A Comment." Economic Journal, v. 63, no. 252, Dec., pp. 921-3.

Greaves, Ida C[ecil]. 1954a. "The Character of British Colonial Trade." Journal of Political Economy, v. 62, no. 1, Feb., pp. 1-11.

Greaves, Ida C[ecil]. 1954b. "The Colonial Sterling Balances." Princeton University Essays in International Finance, no. 20, Sept.

Greaves, Ida C[ecil]. 1955. "Dollar Pooling in the Sterling Area: Comment." American Economic Review, v. 45, no.4, Sept., pp. 655-8.

Greaves, Ida C[ecil]. 1957a. "Colonial Trade and Payments." Economica (New Series), v. 24, no 93, Feb., pp. 47-58.

Greaves, Ida C[ecil]. 1957b. "Central Banks for New Dominions." The Banker, v. 107, no. 379, Aug.

Green, Andrew Wilson, and Philip M. De Moss. 1977. "The Money and Banking System of Libya." Paper presented at the Eastern Economic Association meeting, Hartford, Conn.

[Greenwood, John G.] 1977. "What Determines the Money Supply?" Asian Monetary Monitor, v. 1, no. 2, Nov.-Dec., pp. 8-17.

[Greenwood, John G.] 1978a. "The Value of the Hong Kong Dollar." Asian Monetary Monitor, v. 2, no. 4, July-Aug., pp. 6-11.

[Greenwood, John G.] 1978b. "Official Action and Bank Reaction?" Asian Monetary Monitor, v. 2, no. 6, Nov.-Dec., pp. 15-24.

Greenwood, John G. 1979a. "An Attempt to Control the Money Supply." Asian Monetary Monitor, v. 3, no. 1, Jan.-Feb., pp. 2-10.

Greenwood, John G. 1979b. "Proposals for a Reform of the Monetary System." Asian Monetary Monitor, v. 3, no. 2, Mar.-Apr., pp. 9-23.

Greenwood, John G. 1979c. "An Illusory Squeeze." Asian Monetary Monitor, v. 3, no. 3, May-June, pp. 15-23.

[Greenwood, John G.] 1979d. "A Discretionary Adjustment Mechanism." Asian Monetary Monitor, v. 3, no. 4, July-Aug., pp. 6-15.

[Greenwood, John G.]. 1979e. "The Role of Interest Rates in the Adjustment Mechanism." Asian Monetary Monitor, v. 3, no. 6, Nov.-Dec., pp. 10-17.

[Greenwood, John G.] 1981. "Time to Blow the Whistle." Asian Monetary Monitor, v. 5, no. 4, July-Aug., pp. 15-33.

Greenwood, John G. 1982. "Hong Kong's Financial Crisis: History, Analysis, Prescription." Asian Monetary Monitor, v. 6, no. 6, Nov.-Dec., pp. 1-69.

Greenwood, John G. 1983a. "How to Rescue the HK\$: Three Practical Proposals." Asian Monetary Monitor, v. 7, no. 5, Sept.-Oct., pp. 11-39.

Greenwood, John G. 1983b. "The Stabilisation of the Hong Kong Dollar." Asian Monetary Monitor, v. 7, no. 6, Nov.-Dec., pp. 9-37.

Greenwood, John G. 1984a. "The Operation of the New Exchange Rate Mechanism." Asian Monetary Monitor, v. 8, no. 1, Jan.-Feb., pp. 2-12.

Greenwood, John G. 1984b. "Why the HK\$/US\$ Linked Rate System Should Not Be Changed." Asian Monetary Monitor, v. 8, no. 6, Nov.-Dec.

Greenwood, John G. 1984c. "Underlying Ingredients of the Recent Hong Kong Dollar Crisis." Hong Kong Economic Papers, v. 15, pp. 119-24.

[Greenwood, John G.?] 1984d. "Partial Vs. Full Convertibility." Asian Monetary Monitor, v. 8, no. 6, Nov.-Dec.

Greenwood, John G. 1988a. "Intervention Replaces Arbitrage--the July Package of Monetary Measures." Asian Monetary Monitor, v. 12, no. 4, July-Aug., pp. 1-20.

Greenwood, John G. 1988b. "Response to Dr. Jao." Asian Monetary Monitor, v. 12, no. 6, Nov.-Dec., pp. 7-12.

Greenwood, John G. 1989. "Further Developments Affecting the Linked Rate System for the Hong Kong Dollar." Asian Monetary Monitor, v. 13, no. 3, May-June, pp. 12-21.

Greenwood, John G. 1990a. "An Estimate of HK\$ Currency Circulating in Guangdong Province." Asian Monetary Monitor, v. 14, no. 4, July-Aug., pp. 37-44.

Greenwood, John G. 1990b. "The Changing Structure and Competitiveness of the Hong Kong Economy." Asian Monetary Monitor, v. 14, no. 6, Nov.-Dec., pp. 21-31.

Greenwood, John G. 1991. "The Problem of CPI Inflation--Monetary or Structural?" Asian Monetary Monitor, v. 15, no. 3, May-June, pp. 1-14.

Greenwood, John G., and Daniel L. Gressel. 1988. "How to Tighten Up the Linked Rate Mechanism." Asian Monetary Monitor, v. 12, no. 1, Jan.-Feb., pp. 2-13.

Greenwood, John G., and Simon L. Ogus. 1991. "Financial and Monetary Policy." Unpublished manuscript, G.T. Management (Asia) Ltd., Hong Kong.

Gregory, T[heodor] E., ed. 1928. Select Statutes, Documents and Reports Relating to British Banking, 1832-1928, 2 v. London: Oxford University Press and H. Milford.

Gressel, Daniel. 1989. "Soviet Macroeconomic Imbalances During Perestroika." Unpublished manuscript, G.T. Capital Management, San Francisco.

Grove, David L., and John Exter. 1948. "The Philippine Central Bank Act." Federal Reserve Bulletin, v. 34, no. 8, Aug., pp. 938-49.

Gunasekera, H. A. de S. 1954. "The Money Supply and Balance of Payments of Ceylon." Review of the Banca Nazionale del Lavoro, v. 7, no. 30, Sept., pp 146-57.

Gunasekera, H. A. de S. 1962. From Dependent Currency to Central Banking in Ceylon: An Analysis of Monetary Experience 1825-1957. London: Bell/London School of Economics.

Hakim, George, and M. Y. El-Hussayni. 1938. "Monetary and Banking System." In Sa'id B. Himadeh, ed., Economic

Organization of Palestine. Beirut: American University of Beirut Press.

Hall, F[rederick] G[eorge]. 1949. The Bank of Ireland, 1783-1946. Dublin: Hodges Figgs and Co.

Hanke, Steve H., Lars Jonung, and Kurt Schuler. 1992. Monetary Reform for a Free Estonia: A Currency Board Solution. Stockholm: SNS Förlag.

Hanke, Steve H., and Kurt Schuler. 1991a. "Currency Boards for Eastern Europe." Heritage Lectures No. 355. Washington: Heritage Foundation.

Hanke, Steve H., and Kurt Schuler. 1991b. "Keynes's Russian Currency Board." In Steve H. Hanke and Alan A. Walters, eds., Capital Markets and Development. San Francisco: Institute for Contemporary Studies Press.

Hanke, Steve, and Alan Walters. February 21, 1990. "Reform Begins with a Currency Board." Financial Times, p. 17.

Hanke, Steve, and Alan Walters. March 7, 1990. "East German Currency Board." Financial Times, p. 19.

Hargreaves, R. P. [1972]. From Beads to Bank Notes. Dunedin, New Zealand: John McIndoe.

Hawkins, E. K. 1958. "The Growth of a Money Economy in Nigeria and Ghana." Oxford Economic Papers, v. 10, no. 3, Oct., pp. 339-54.

Hayek, F[riedrich] A[ugust] [von]. 1991. The Trend of Economic Thinking. (Collected Works of F. A. Hayek, v. 3.) Chicago: University of Chicago Press.

Hazlewood, Arthur. 1952. "Sterling Balances and the Colonial Currency System." Economic Journal, v. 62, no. 248, Dec., pp. 942-5.

Hazlewood, Arthur. 1953. "Colonial External Finance Since the War." Review of Economic Studies, v. 21, no. 1 (54), Dec., pp. 31-52.

Hazlewood, Arthur. 1954a. "Sterling Balances and the Colonial Currency System: A Reply." Economic Journal, v. 64, no. 255, Sept., pp. 616-17.

Hazlewood, Arthur. 1954b. "The Economics of Colonial

Monetary Arrangements." Social and Economic Studies, v. 3, nos. 3-4, Dec., pp. 291-315.

Hazlewood, Arthur. 1954-5. "Memorandum on the Sterling Assets of the British Colonies: A Comment." Review of Economic Studies, v. 22, no. 1, pp. 72-4.

Hazlewood, Arthur. 1959. The Economics of "Under-Developed" Areas: An Annotated List of Books, Articles, and Official Publications, 2nd ed. London: Oxford University Press.

Hazlewood, Arthur. 1967. "Economic Integration in East Africa." In Arthur Hazlewood, ed., African Integration and Disintegration: Case Studies in Economic and Political Union. London: Oxford University Press.

Henry, J. A. 1963. The First Hundred Years of the Standard Bank. London: Oxford University Press.

Hetzl, Robert L. 1990. "Free Enterprise and Central Banking in Formerly Communist Countries." Federal Reserve Bank of Richmond Economic Review, v. 76, no. 3, July, pp. 13-19.

Ho, Y. K., R. H. Scott, and K. A. Wong. 1991. The Hong Kong Financial System. Oxford: Oxford University Press.

Hogendorn, Jan S., and Henry A. Gemery. 1981. "Cropping, Currency Acquisition and Seignorage in West Africa: 1923-1950." African Economic History, v. 11, pp. 15-27.

Hogendorn, Jan S. and Gemery, Henry A. 1988. "Continuity in West African Monetary History? An Outline of Monetary Development." African Economic History, v. 17, pp. 127-46.

Hopkins, Anthony G. 1970. "The Creation of a Colonial Monetary System: The Origins of the West African Currency Board." African Historical Studies, v. 3, no. 1, pp. 101-32.

Hopkins, Anthony G. 1973. An Economic History of West Africa. New York: Columbia University Press.

Horsefield, J. Keith. [1945] 1953. "The Origins of the Bank Charter Act, 1844." In T[homas] S[outhfield] Ashton and R[ichard] S[idney] Sayers, eds., Papers in English Monetary History. Oxford: Clarendon Press. Originally published in Economica, New Series.

Howard, Rhoda. 1978. Colonialism and Underdevelopment in Ghana. New York: African Publishing Co.

Hsu, Chung-yuan. 1985. "Exchange-Rate Management Without a Central Bank: The Hong Kong Experience." Hong Kong Economic Papers, v. 16.

Hsu, John. 1988. "Hong Kong Exchange Rate System and the Money Supply." Hong Kong Economic Papers, v. 18, pp. 43-52.

Huttenback, A. 1903. The Silver Standard and the Straits Currency System. Singapore.

Ironside, William Edmund. 1953. Archangel: 1918-1919. London: Constable.

Irvine, A. G. 1959. The Balance of Payments of Rhodesia and Nyasaland 1945-1954. London: Oxford University Press.

Isong, Clement Nyong. 1957. "Currency and Credit in Nigeria, 1850-1955: A Study of the Monetary System of a British Tropical Dependency, and Methods of Mobilizing Its Domestic Resources for Economic Development." Ph.D. dissertation, Harvard University.

Iversen, Carl, with Poul Winding and Poul Norregaard Rasmussen. 1954. A Report on Monetary Policy in Iraq. Copenhagen: Nordlundes Bogtrykkeri for National Bank of Iraq.

Jack, D. T. 1958. Economic Survey of Sierra Leone. Freetown: Government Printing Department.

Jao, Y. C. 1971. "Commercial Banking in Hong Kong: An Analysis of Its Growth, Structure and Strains, 1954-1968." Ph.D. dissertation, University of Hong Kong.

Jao, Y. C. 1974. Banking and Currency in Hong Kong. London: Macmillan.

Jao, Y. C. 1984. "The Financial Structure." In David G. Lethbridge, ed., The Business Environment in Hong Kong, 2nd ed. Hong Kong: Oxford University Press.

Jao, Y. C. 1988a. Hong Kong's Banking System in Transition. Hong Kong: Chinese Bankers' Association.

Jao, Y. C. 1988b. "Intervention Replaces Arbitrage--The July Package of Monetary Measures: A Comment." Asian Monetary Monitor, v. 12, no. 6, Nov.-Dec., pp. 1-6.

Jessup, Paul F. 1967. The Theory and Practice of Nonpar Banking. Evanston, Illinois: Northwestern University Press.

Jevons, H. Stanley. 1922. Money, Banking and Exchange in India. Simla: Superintendent, Government Central Press.

Jevons, W[illiam] S[tanley]. [1875] 1889. Money and the Mechanism of Exchange. New York: D. Appleton and Co.

Joplin, Thomas. [1823] 1970. Outlines of a System of Political Economy. New York: Augustus M. Kelley.

Jucker-Fleetwood, Erin E. 1960. "The Monetary and Financial Position in Ghana and Nigeria." Basle: Basle Centre for Economic and Financial Research. Series A, no. 29.

Jucker-Fleetwood, Erin E. 1961. "Monetary and Financial Problems of Certain New Countries in Africa." Schweitzerische Zeitschrift für Volkswirtschaft und Statistik, v. 97, no. 1, Mar., pp. 1-22.

Jucker-Fleetwood, Erin E. 1964. Money and Finance in Africa: The Experience of Ghana, Morocco, the Rhodesias and Nyasaland, Sudan and Tunisia from the Establishment of Their Central Banks Until 1962. London: George Allen and Unwin.

Kattan, Jack Nicola. 1976. "Financial Institutions, Money and Prices in Jordan, 1950-74." Ph.D. dissertation, University of Georgia.

Katz, Samuel I. 1956. "Development and Stability in Central and West Africa: A Study in Colonial Monetary Institutions." Social and Economic Studies, v. 5, pp. 281-94.

Kaufman, George G. 1991. "Lender of Last Resort: A Contemporary Perspective." Journal of Financial Services Research, v. 5, no. 2, Oct., pp. 95-110.

Kemmerer, Edwin W[alter]. 1904. "A Gold Standard for the Straits Settlements." Political Science Quarterly, v. 19, no. 4, Dec., pp. 636-49.

Kemmerer, Edwin W[alter]. 1916. Modern Currency Reforms: A History and Discussion of Recent Currency Reforms in India, Porto Rico, Philippine Islands, Straits Settlements and Mexico. New York: Macmillan Co.

Kennan, George. 1967. The Decision to Intervene. New York: Ahteneum.

Keynes, John Maynard. [1913a] 1971. Indian Currency and Finance. In The Collected Writings of John Maynard Keynes,

v. 1. London: Macmillan.

Keynes, John Maynard. [1913b] 1971. [Review of] "Departmental Committee on Matters Affecting Currency of the British West African Colonies and Protectorates. Report [Cd. 6426] 1912; Minutes of Evidence [Cd. 6427] 1912." Economic Journal, v. 23, no 89, March, pp. 146-7. Reprinted in The Collected Writings of John Maynard Keynes, v. 11, pp. 383-4.

Keynes, John Maynard. 1971. Activities 1906-1914: Cambridge and India. The Collected Writings of John Maynard Keynes, v. 15. London: Macmillan.

Khadduri, Majid. 1963. Modern Libya. Baltimore: Johns Hopkins Press.

Khatkhate, Deena R., and Brock K. Short. 1980. "Monetary and Central Banking Problems of Mini States." World Development, v. 8, no. 12, Dec., pp. 1017-25.

Khouja, M W., and P. G. Sadler. The Economy of Kuwait: Development and Role in International Finance. London: Macmillan.

Kimei, Charles Stephen. 1987. Tanzania's Financial Experience in the Post-War Period. Stockholm: Almqvist and Wicksell International.

Kimmich, Christopher M. 1968. The Free City: Danzig and German Foreign Policy, 1919-1934. New Haven: Yale University Press.

King, Frank H[enry] H[aviland]. 1953. The Monetary System of Hong Kong. With a Chapter on the Monetary System of Macao. Hong Kong: K. Weiss.

King, Frank H[enry] H[aviland]. 1955. "Sterling Balances and the Colonial Monetary Systems." Economic Journal, v. 65, no. 260, Dec., pp. 719-21.

King, Frank H[enry] H[aviland]. 1957. Money in British East Asia. London: HMSO.

King, Frank H[enry] H[aviland]. 1958. "Notes on Malayan Monetary Problems." Malayan Economic Review, v. 3, no. 1, April.

King, Frank H[enry] H[aviland]. 1979. Asian Policy, History and Development: Selected Essays. Hong Kong: Centre of Asian

Studies, University of Hong Kong.

King, Frank H[enry] H[aviland]. 1983. Eastern Banking: Essays in the History of the Hongkong and Shanghai Banking Corporation. London: Athlone Press.

King, Frank H[enry] H[aviland]. 1987-1991. The History of the Hongkong and Shanghai Banking Corporation, 4 v. Cambridge: Cambridge University Press.

Konikoff, A. 1946. Transjordan: An Economic Survey. Jerusalem: Economic Research Institute of the Jewish Agency for Palestine.

Kratz, Joachim W. 1966. "The East African Currency Board." International Monetary Fund Staff Papers, v. 13, no. 2, July, pp. 229-55.

Krause, Chester L., and Clifford Mishler. 1990. Standard Catalog of World Coins, 1991 edition. Ed. by Colin R. Bruce II. Iola, Wis.: Krause Publications.

Kroszner, Randall. 1990. "Banking in Hong Kong: Regulation, Stability, and the Role of Money Market Mutual Funds." Asian Monetary Monitor, v. 14, no. 4, July-Aug., pp. 16-36.

Kuhn, W. E. 1970. "Growth Without a Central Bank: Peculiarities of the Liberian Case." Nebraska Journal of Economics, v. 9, no. 3, Summer, pp. 37-52.

Kydland, Finn E., and Edward C. Prescott. 1977. "Rules Rather Than Discretion: The Inconsistency of Optimal Plans." Journal of Political Economy, v. 85, no. 3, June, pp. 473-91.

Laidler, David E. 1987. "British Monetary Orthodoxy in the 1870s." Oxford Economic Papers, v. 19, no. 3, Feb., pp. 34-55.

Larravide, Alvaro E. 1970. "Monetary Discipline and Growth--The Case of Panama." Finance and Development, v. 7, no. 2, June, pp. 44-50.

Latter, A. R. 1984. "Some Issues Associated with the New Exchange Rate Regime." Hong Kong Economic Papers, v. 15, pp. 125-8.

Lee, Sheng-Yi. 1974. The Monetary and Banking Development of Malaysia and Singapore. Singapore: Singapore University Press.

Lee, Sheng-Yi. 1986. The Monetary and Banking Development of Singapore, rev. ed. Singapore: Singapore University Press.

Lee, S[heng-]Y[i], and Y. C. Jao. 1982. Financial Structure and Monetary Policy in Southeast Asia. London: Macmillan.

Leighton-Boyce, J. 1964. "The British Eastern Exchange Banks: An Outline of the Factors Affecting Their Business up to 1914." In C. D[onald] Cowan, ed., The Economic Development of Southeast Asia. New York: Praeger.

Letiche, J. M. 1974. "Dependent Monetary Systems and Economic Development: The Case of Sterling East Africa." In Willy Sellekaerts, ed., Economic Development and Planning: Essays in Honour of Jan Tinbergen. London: Macmillan.

Lim, Chong-Yah. 1969. Money and Monetary Policy. Singapore: Eastern Universities Press.

Lin, Tzong-Biau. 1970. Das monetäre System und das Verhalten des Angebotes an und der Nachfrage nach Geld in Hong Kong. Freiburg: Eberhard Albert Verlag.

Lin, T[zong] B[iau]. 1971. Monetary Behaviour Under the Sterling Exchange Standard: Hong Kong as a Case Study. Hong Kong: Economic Research Centre, Chinese University of Hong Kong.

Lomoro, George M. 1965. "Monetary Expansion in East African Development." East African Institute of Social Research Conference Papers No. 62, January. Kampala: East African Institute of Social Research.

Loxley, John. 1965. "Sterling Reserves and the Fiduciary Issue in East Africa." EDRP Working Paper no. 90. Kampala: Makerere Institute of Social Research.

Loxley, John. 1966. "The Development of the Monetary and Financial System of the East African Currency Area 1950-1964." Ph.D. dissertation, University of Leeds.

Loxley, John. 1967. Financial Intermediaries and Their Role in East Africa. Makerere Institute of Social Research Conference Papers, January. Kampala: Makerere Institute of Social Research.

Loynes, J[ohn] B[arraclough de]. 1957. Report on the

Establishment of a Nigerian Central Bank, the Introduction of a Nigerian Currency and Other Associated Matters. Lagos: Federal Government Printer.

Loynes, John B[arraclough de]. 1960. "From Currency Board to Central Bank." East African Economics Review, v. 7, no. 2, Dec., pp. 57-66.

Loynes, J[ohn] B[arraclough de]. 1961. Report on the Future of the Currencies of Sierra Leone and the Gambia. Freetown, Sierra Leone: Government Printer.

Loynes, J[ohn] B[arraclough de]. 1962. The West African Currency Board 1912-1962. London: West African Currency Board.

Loynes, J[ohn] B[arraclough de]. 1963. The Currency of South Arabia. London: Thomas de la Rue and Co.

Lucas, Robert E., Jr. 1972. "Expectations and the Neutrality of Money." Journal of Economic Theory, v. 4, no. 2, Apr., pp. 103-24.

Luckett, Dudley G. 1987. Monetary Policy in Fiji. Suva, Fiji: Institute of Pacific Studies, University of the South Pacific.

Luk, Yim Fai. 1986. "The Monetary System and Banking Structure." In Joseph Y. S. Cheng, ed., Hong Kong in Transition. Hong Kong: Oxford University Press.

Luk, Yim Fai. 1989. "Money and Prices without a Central Bank: The Case of Hong Kong, 1974-1983." Ph.D. dissertation, Cornell University.

Luthringer, George Francis. 1934. The Gold-Exchange Standard in the Philippines. Princeton: Princeton University Press.

Mackenzie, Compton. 1954. Realms of Silver: One Hundred Years of Banking in the East. London: Routledge and Kegan Paul.

Mansfield, Charles. 1968. "Monetary Evolution in the Caribbean." Finance and Development, v. 5, no. 4, Dec., pp. 40-7.

Mars, J. 1948. "The Monetary and Banking System of Nigeria." In Margery Perham, ed., Mining, Commerce, and Finance in Nigeria, v. 2 of Economics of a Tropical Dependency. London:

Faber and Faber.

Marto, Michel Isa. 1974. "A Money Supply Model: Jordan." Jordan: Central Bank of Jordan. Also Ph.D. dissertation, University of Southern California, 1970.

Marzouk, G. A. 1958. "The Economic Background of the Currency Reform in the Sudan." Middle East Economic Papers, v. 5, pp. 93-114.

Masters, J. Henry. 1972. "Banking in Bermuda Prior to 1914." Bermuda Historical Quarterly, v. 29, no. 1, Spring, pp. 130-6.

Mauritius Commercial Bank Limited. 1963. The Mauritius Commercial Bank Limited, 1838-1963. Port Louis, Mauritius: Mauritius Commercial Bank Ltd.

Maynard, Geoffrey. 1970. "The Economic Irrelevance of Monetary Independence: The Case of Liberia." Journal of Development Studies, v. 6, no. 2, Jan., pp. 111-132.

McClellan, A. Wendall A. 1975. Money and Banking in the East Caribbean Currency Area. Mona, Jamaica: University of the West Indies, Institute of Social and Economic Research.

McKinnon, Ronald I. 1973. Money and Capital in Economic Development. Washington: Brookings Institution.

McLeod, Alexander [N.] 1976. "The British Currency-Board System--Successes and Shortcomings." The Banker, v. 125, no. 589, Mar., pp. 247-52.

McWilliam, M. D. 1959. "Is There a Case for an East African Central Bank?" East African Economics Review, v. 5, Jan., pp. 58-68.

Mead, Donald C[arlton]. 1963. "Monetary Analysis in an Underdeveloped Economy: A Case Study of Three East African Territories." Yale Economic Essays, v. 3, no. 1, Spring, pp. 57-103.

Meenan, James [Francis]. 1970. The Irish Economy Since 1922. Liverpool: Liverpool University Press.

Meltzer, Allan. 1991. "Inflation and Money in Brazil." Unpublished manuscript, World Bank, Washington.

Menton, B. P. 1947. "The Relations Between the English and

Irish Banking Systems with Special Reference to the Adjustment of the Balance of Payments Between the Countries 1929-1939." Ph.D. dissertation, University of London, 1947.

Menzes, Victor. 1984. "Beyond the Peg." Hong Kong Economic Papers, v. 15, pp. 129-31.

Michalelis, Dolf. 1986. "One Hundred Years of Banking and Currency in Palestine." In Paul Uselding, ed. Research in Economic History, v. 10. Greenwich, Ct.: JAI Press.

Mikesell, R. F. 1945. "Financial Problems of the Middle East." Journal of Political Economy, v. 53, no. 2, June, pp. 164-77.

Mikesell, R. F. 1948. "Sterling Currencies of the Middle East." Middle East Journal, v. 2, no. 2, Apr., pp. 160-74.

Mill, John Stuart. [1871] 1937. Principles of Political Economy with Some of Their Applications to Social Philosophy, ed. W. J. Ashley. London: Longmans, Green and Co.

Mints, Lloyd W. 1945. A History of Banking Theory in Great Britain and the United States. Chicago: University of Chicago Press.

Mitchell, B[rian] R. 1982. International Historical Statistics: Africa and Asia. New York: New York University Press.

Mládek, J. V. 1964. "Evolution of African Currencies. Part II: The Sterling Area and Unattached Currencies." Finance and Development, v. 1, no. 3, Dec., pp. 184-91.

Moreno, Ramon. 1986. "Monetary Control Without a Central Bank: The Case of Hong Kong." Federal Reserve Bank of San Francisco Economic Review, no. 2, Spring, pp. 17-37.

Moynihan, Maurice. 1975. Currency and Central Banking in Ireland 1922-1960. Dublin: Gill and Macmillan in association with the Central Bank of Ireland.

Na'man, Issa Fakhoury. 1974. An Analytical Study of Jordan's Balance of Payments, 1950-1968. Amman: Central Bank of Jordan.

Narsey, Wadan Lal. 1988. "A Reinterpretation of the History and Theory of Colonial Currency Systems." Ph.D. dissertation, University of Sussex.

Nelson, William Evan. 1984. "The Imperial Administration of Currency and British Banking in the Straits Settlements, 1867-1908." Ph.D. dissertation, Duke University.

Neurisse, André. 1987. Le franc CFA. Paris: Librairie Générale de Droit et de Jurisprudence.

Nevin, Edward. 1961. Capital Funds in Underdeveloped Countries. New York: St. Martin's Press.

Newlyn, W[alter] T[essier]. 1966. "Money Markets in East Africa." Journal of Modern African Studies, v. 4, no. 4, Dec., pp. 471-8.

Newlyn, W[alter] T[essier]. 1967. Money in an African Context. Nairobi: Oxford University Press.

Newlyn, W[alter] T[essier]. 1968. "An African Monetary Perspective." In Whittlesley and Wilson 1968.

Newlyn, W[alter] T[essier]. 1969. "Monetary Analysis and Policy in Financially Dependent Economies." In Ian G. Stewart, ed., Economic Development and Structural Change. Edinburgh: Edinburgh University Press.

Newlyn, W[alter] T[essier], and D[avid] C. Rowan. 1954. Money and Banking in British Colonial Africa: A Study of the Monetary and Banking Systems of Eight British African Territories. Oxford: Clarendon Press.

Niculescu, B. M. 1954. "Sterling Balances and the Colonial Currency System: A Comment." Economic Journal, v. 54, no. 255, Sept., pp. 618-19.

Nolan, Patrick. 1926. A Monetary History of Ireland. London: P. S. King and Son.

Nwankwo, G. K. 1980. The Nigerian Financial System. London: Macmillan.

Ofonagoro, Walter I. 1979. "From Traditional to British Currency in Southern Nigeria: Analysis of a Currency Revolution, 1880-1948." Journal of Economic History, v. 39, no. 3, Sept., pp. 623-654.

Okelo-Obong, George Samuel. 1974. "Kenya's Financial Development: An Analysis from East African Currency Board to Central Banking, 1919-1971." Ph.D. dissertation, University of Nebraska-Lincoln.

Olakanpo, J. O. W. 1961. "Monetary Management in Dependent Economies." Economica (New Series), v. 28, no. 112, Nov., pp. 395-408.

Olakanpo, J. O. W. 1962. "The Loynes Report and Banking in Sierra Leone." Banker's Magazine (London), no. 1420, July, pp. 19-27.

Olarra Jiménez, Rafael. 1968. Evolución monetaria argentina. Buenos Aires: Editorial Universitaria de Buenos Aires.

Onoh, J. K. 1982. Money and Banking in Africa. New York: Longman.

Ottensooser, Robert David. 1955. The Palestine Pound and the Israeli Pound: Transition from a Colonial to an Independent Currency. Geneva: Librairie E. Droz.

Ow, Chwee-Huay. 1985. "The Currency Board Monetary System--The Case of Singapore and Hong Kong." Ph.D. dissertation, Johns Hopkins University.

Paton, G. D. 1948a. Report on Banking in the Gold Coast. Accra: Government Printer.

Paton, G. D. 1948b. Report on Banking in Nigeria. Lagos: Government Printer.

Pauw, Ernest-Josef. 1969. Das Bankwesen in Ostafrika. Munich: Weltforum.

Peach, William N. 1961. "The Currency Problem in [North] Yemen and Recommendations for its Solution." Washington: International Cooperation Administration, Jan. 17, mimeograph.

Penn World Table 5 (computer disk).

Pennington, James. 1963. The Economic Writings of James Pennington, ed. R[ichard] S[idney] Sayers. London: London School of Economics and Political Science.

Persson, Torsten, and Guido Tabellini. 1990. Policy, Credibility and Politics. Chur, Switzerland: Harwood Academic Publishers.

Pick, Franz, and Rene Sedillot. 1971. All the Monies of the World. Brooklyn, New York: Pick Publishing Co.

- Pick's Currency Yearbook. Brooklyn, New York: Pick Publishing Co.
- Pim, Alan. 1948. "Public Finance." In Perham 1948.
- Pim, Alan. [1940] 1970. The Financial and Economic History of the African Tropical Territories. New York: Argosy-Antiquarian, Ltd.
- Political and Economic Planning. 1958. "The Debate on Sterling." Planning, 14 April, pp. 70-87.
- Prindl, Andreas Robert. 1964. "The West African Currency Board: An Analysis of a Colonial Monetary System." Ph.D. dissertation, University of Kentucky.
- Purcal, J., ed. 1967. The Monetary System of Singapore and Malaysia: Implications of the Split Currency. Singapore: Singapore University Press.
- Quigley, Neil C. 1989. "The Bank of Nova Scotia in the Caribbean, 1889-1940." Business History Review, v. 63, no. 3, Winter, pp. 797-838.
- Ramsaran, Ramesh F. 1984. The Monetary and Financial System of the Bahamas: Growth, Structure and Operation. Mona, Jamaica: Institute of Social and Economic Research, University of the West Indies.
- Rennell Rodd, Francis James. 1948. British Military Administration in Occupied Territories in Africa During the Years 1941-47. London: HMSO.
- Rhodes, Benjamin D. 1988. The Anglo-American Winter War with Russia, 1918-1919: A Diplomatic and Military Tragicomedy. New York: Greenwood Press.
- Ricardo, David. 1951. The Works and Correspondence of David Ricardo, 10 v., ed. Piero Sraffa with M[aurice] H. Dobb. Cambridge: Cambridge University Press for Royal Economic Society.
- Robbins, Lionel. 1958. Robert Torrens and the Evolution of Classical Economics. London: Macmillan.
- Rogers, Kerry A., and Carol Cantrell. 1989. Paper Money of Fiji. [Dallas]: International Bank Note Society Press.
- Roman, A. 1976. British Overseas Banking in the Developing

Countries: The Past, Present and the Future. Madras: Simma Enterprises and Printers.

Ronall, Joachim O. 1970. "Banking Developments in Kuwayt." Middle East Journal, v. 24, no. 1, Winter, pp. 87-90.

Rothbard, Murray N[ewton]. 1962. "The Case for a 100 Percent Gold Dollar." In Leland B. Yeager, ed., In Search of a Monetary Constitution. Cambridge, Massachusetts: Harvard University Press.

Rothermund, Dietmar. 1970. "An Aspect of the Monetary Policy of British Imperialism." Indian Economic and Social History Review, v. 7, no. 1, March, pp. 91-107.

Rowan, D[avid] C. 1951. "The Native Banking Boom in Nigeria." The Banker, v. 97, no. 309, Oct., pp. 244-9.

Rowan, D[avid] C. 1952a. "Banking in Nigeria: A Study in Colonial Financial Evolution." Review of the Banca Nazionale del Lavoro, v. 5, no. 22, July-Sept., pp. 158-75.

Rowan, D[avid] C. 1952b. "Banking Adaptation in the Gold Coast: A Critique of the Recent Report by Sir Cecil Trevor, C.I.E." South African Journal of Economics, v. 20, no. 4, Dec., pp. 345-65.

Rowan, D[avid] C. 1953. "Central Banking in the Commonwealth." Review of the Banca Nazionale del Lavoro, v. 6, no. 25, Apr.-June, pp. 130-42.

Rowan, D[avid] C. 1954a. "The Monetary Problems of a Dependent Economy." Review of the Banca Nazionale del Lavoro, v. 7, no. 31, Dec., pp. 200-13.

Rowan, D[avid] C. 1954b. "The Origins of the West African Currency Board." South African Journal of Economics, v. 22, no. 4, Dec., pp. 421-8.

Sakhaf, Moustafa. 1957. "The Creation of the National Bank of Libya." L'Egypte contemporaine, v. 48, no. 287, Jan., pp. 1-25.

Sattlehak, Günter. 1979. Struktur des Bankwesens in Hongkong. Frankfurt am Main: Knapp.

Sayers, R[ichard] S[idney], ed. 1952. Banking in the British Commonwealth. London: Oxford University Press.

Schuler, Kurt. 1989a. "The Currency System of Macau." Asian Monetary Monitor, v. 13, no. 4, July-Aug., pp. 1-11.

Schuler, Kurt. 1989b. "A Brief History of Hong Kong Monetary Standards." Asian Monetary Monitor, v. 13, no. 5, Sept.-Oct., pp. 11-29.

Schuler, Kurt. 1992. "The World History of Free Banking: An Overview." In Dowd 1992.

Schwartz, Anna J. 1987. "Banking School, Currency School, Free Banking School." In John Eatwell, Murray Milgate, and Peter Newman, eds., The New Palgrave Dictionary of Economics, v. 1, pp. 182-6. London: Macmillan.

Scott, Robert Haney. 1984. Saving Hong Kong's Dollar. Hong Kong: University Publisher and Printer.

Seers, Dudley, and C. R. Ross. 1952. Report on Financial and Physical Problems of Development in the Gold Coast. Accra: Office of the Government Statistician.

Selgin, George A[nthony]. 1988a. "A Free Banking Approach to Reforming Hong Kong's Monetary System." Asian Monetary Monitor, v. 12, no. 1, Jan.-Feb., pp. 14-24.

Selgin, George A[nthony]. 1988b. The Theory of Free Banking: Money Supply Under Competitive Note Issue. Totowa, New Jersey: Rowmand and Littlefield.

Sen, S[atyendranath] N. 1952, 1961. Central Banking in Undeveloped Money Markets, 1st ed., 3rd ed. Calcutta: Bookland Private Ltd.

Shah, Parth. 1988. "The Decline of the Hong Kong Dollar in 1983: Devaluation or Depreciation?" Asian Monetary Monitor, v. 12, no. 6, Nov.-Dec., pp. 13-22.

Shannon, H. A. 1950. "The Sterling Balances of the Sterling Area, 1939-1949." Economic Journal, v. 60, no. 239, Sept., pp. 531-51.

Shannon, H. A. 1951. "Evolution of the Colonial Sterling Exchange Standard." International Monetary Fund Staff Papers, v. 1, no. 3, Apr., pp. 334-354.

Shannon, H. A. 1952. "The Modern Colonial Sterling Exchange Standard." International Monetary Fund Staff Papers, v. 2, no. 2, Apr., pp. 318-362.

Shaw, Edward S. 1973. Financial Deepening in Economic Development. New York: Oxford University Press.

Shenoy, B[ellikott] R[aghunath]. 1941. Ceylon Currency and Banking. London: Longmans, Green and Co.

Sherwood, P. W. 1959. "The Watson-Caine Report on the Establishment of a Central Bank in Malaya." Malayan Economic Review, v. 2, no. 1, April, pp. 23-34.

Short, Brock Keane. 1970. "Monetary Aspects of the Currency Board and Commercial Banks in Malaya and Singapore, 1951-1966." Ph.D. dissertation, Cornell University.

Shortt, Adam. 1986. Adam Shortt's History of Canadian Currency and Banking 1600-1880. Toronto: Canadian Bankers' Association. Originally published in the Journal of the Canadian Bankers' Association, 1896 to 1925.

Siemienski, Z. 1957. The Sudan Currency Board. Khartoum: Sudan Ministry of Finance and Economics, Economics Section.

Simons, Henry. 1934. A Positive Program for Laissez Faire. Chicago: University of Chicago Press.

Singh, Supriya. 1984. Bank Negara Malaysia: The First 25 Years. Kuala Lumpur: Bank Negara Indonesia.

Skully, Michael T. 1984. Financial Institutions and Markets in Southeast Asia: A Study of Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand. New York: St. Martin's Press.

Smith, Vera C[onstance]. [1936] 1990. The Rationale of Central Banking and the Free Banking Alternative. Indianapolis: Liberty Classics.

Smith, Hadley E., ed. 1966. Readings on Economic Development and Administration. Oxford: Oxford University Press.

South China Morning Post (Hong Kong).

Sowellem, R. A. 1967. Towards Financial Independence in a Developing Economy: An Analysis of the Monetary Experience of the Federation of Rhodesia and Nyasaland, 1952-63. London: Allen and Unwin.

Spalding, W. F. 1924. Eastern Exchange, Currency and Finance. London: Isaac Pitman.

Spring-Rice, D[ominick]. 1919. "The North Russian Currency." Economic Journal, v. 29, no. 115, Sept., pp. 280-9.

Stammer, David W. 1968. "Money and Finance in Hong Kong." Ph.D. dissertation, Australian National University.

The Statesman's Year-Book. London.

Strange, Ian J. 1983. The Falkland Islands, 3rd ed. Newton Abbott, England: David and Charles.

Strange, Susan. 1971. Sterling and British Policy: A Political Study of an International Currency in Decline. London: Oxford University Press.

Summers, Robert, and Alan Heston. 1991. "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950-1988." Quarterly Journal of Economics, v. 106, no. 2, May, pp. 327-68.

Tan, Chwee Huat. 1978. Financial Institutions in Singapore. Singapore: Singapore University Press.

Tan, Chwee Huat. 1985. Financial Markets and Institutions in Singapore. Singapore: Singapore University Press.

Thomas, C[live] Y[olande]. 1965. Monetary and Financial Arrangements in a Dependent Economy--A Study of British Guiana, 1945-1962. Mona, Jamaica: Institute of Social and Economic Research, University of the West Indies.

Thomas, C[live] Y[olande]. 1972. The Structure, Performance, and Prospects of Central Banking in the Caribbean. Mona, Jamaica: Institute of Social and Economic Research, University of the West Indies.

Tom, C. F. Joseph. 1964a. "Monetary Standard, Entrepot Trade, and Prices: The Hong Kong Experience." Hong Kong Economic Papers no. 3, December.

Tom, C. F. Joseph. 1964b. The Entrepot Trade and the Monetary Standards of Hong Kong, 1842-1941. Hong Kong: K. Weiss.

Traynor, Dean E. 1949. International Monetary and Financial Conferences in the Interwar Period. Washington: Catholic University of America Press.

Treiptel, R. J. 1936. British Banks and the London Money Market. London: Jonathan Cape.

Trevor, Cecil. 1951. Report on Banking Conditions in the

Gold Coast and on the Question of Setting Up a National Bank.  
Accra: Government Printing Department.

Tun Wai, U. 1949. "The Theory and Practice of Money, Credit and Banking in Burma." Ph.D. dissertation, Yale University.

Tun Wai, U. 1953. Burma's Currency and Credit. Bombay: Orient Longmans.

Tun Wai, U. 1962. Burmese Currency and Credit, rev. ed. Bombay: Orient Longmans.

United West Africa Co., Ltd. Statistical and Economic Review. 1951. "The West African Currency Board." September, pp. 1-18.

United West Africa Co., Ltd. Statistical and Economic Review (London). 1955. "A Fiduciary Issue of West African Currency." 16 September, pp. 1-21.

Universidad de Buenos Aires. 1937. Facultad de Ciencias Economicas. Instituto de Economia Bancaria. La economia bancaria argentina al traves de sus indices mas significativas en el periodo 1901 a 1935. Buenos Aires: Imprenta de la Universidad [de Buenos Aires].

Vieira, Dorival Texeira. [1947] 1981. Evolucao do sistema monetaria brasileiro. Sao Paulo: Instituto de Pesquisas Econômicas.

Walt, D. Cameron, ed. 1984. British Documents on Foreign Affairs: Reports and Papers from the Foreign Office Confidential Print. Part II, From the First to the Second World War. Series A, The Soviet Union, 1917-1939, v.1-2. [Lanham, Maryland]: University Press of America.

Walters, Alan A. 1987. "Currency Boards." In John Eatwell, Murray Milgate and Peter Newman, eds., The New Palgrave: A Dictionary of Economics, v. 1, pp. 740-2. London: Macmillan.

Walters, Alan A. 1991. "A Hard Ruble for Boris." London Evening Standard, November 22.

Walters, Alan A. 1992. "Should Australia Have a Currency Board?" In Des Moore, ed., Can Monetary Policy Be Made to Work? Papers Presented at the IPA Monetary Policy Conference. Jolimont, Australia: Institute of Public Affairs, Economic Policy Unit.

Walters, Alan A., and Steve H. Hanke. 1992 (forthcoming). "Currency Boards." In John Eatwell, Murray Milgate and Peter Newman, eds., The New Palgrave Money and Finance, v. 1. London: Macmillan.

Wapensky, Basil A. 1968. "Banking and Finance in Sierra Leone--A Developing Economy." Georgia State College, Bureau of Business and Economic Research, School of Business Administration, Research Paper No. 43. Atlanta: Bureau of Business and Economic Research, Georgia State College.

Wall Street Journal.

Watson, G. M., and Caine, Sydney. 1956. Report on the Establishment of a Central Bank in Malaya. Kuala Lumpur: Government Printer.

West, John F. 1972. Faroe: The Emergence of a Nation. London: C. Hurst and Co.

White, Lawrence H[enry]. 1984. Free Banking in Britain: Theory, Experience, and Debate 1800-1845. Cambridge: Cambridge University Press.

Williams, David. 1968. "The Evolution of the Sterling System." In C[harles] R[aymond] Whittlesey and J. S. G. Wilson, eds., Essays in Money and Banking in Honor of R. S. Sayers. London: Oxford University Press.

Willis, H[enry] P[arker], and B[enjamin] H[aggott] Beckhart, eds. 1930. Foreign Banking Systems. New York: Henry Holt and Co.

Wilson, James. 1847, 1859. Capital, Currency, and Banking, 1st ed., 2nd ed. London: The Economist.

Wilson, P. A. 1957. "Money in Malaya." Malayan Economic Review, v. 2, no. 2, Oct.

World Currency Yearbook. Brooklyn, New York: International Currency Analysis, Inc.

World Development Report 1991: The Challenge of Development. Washington: World Bank.

Wright, Kenneth M. 1954a. "Dollar Pooling in the Sterling Area, 1939-52." American Economic Review, v. 44, no. 4, pp. 559-76.

Wright, Kenneth M. 1954b. "The Sterling Area Dollar Pool." Ph.D. dissertation, Columbia University.

Wright, Kenneth M. 1955. "Dollar Pooling in the Sterling Area." American Economic Review, v. 45, no. 4, Sept., pp. 658-61.

Wyeth, John. 1979. A History of the Belize Board of Commissioners of Currency (1894-1976): Belizean Economic History. Belize City: Belize Institute for Social Research and Action, St. John's College. (Journal of Belizean Affairs, no. 8.)

Yeager, Leland B., and associates. 1981. Experiences with Stopping Inflation. Washington: American Enterprise Institute for Public Policy Research.

Zulu, Justin B., and N. A. Mujumdar. 1970. Money, Banking and Economic Development in Zambia. Lusaka: Bank of Zambia.

Zupnick, Elliott. 1955. "The Sterling Area's Central Pooling System Re-examined." Quarterly Journal of Economics, v. 69, no. 1, Feb., pp. 71-84.

Zwanenberg, R. M. A., and Anne King. 1975. An Economic History of Kenya and Uganda 1800-1970. London: Macmillan.

## APPENDIX. CURRENCY BOARD EPISODES

Country (current name) [colonial power], year independent	Years	Reserve ratio and assets	Exchange rate, exchange spread
Abu Dhabi [UK], 1971	1966-1973	100+% gold and foreign exchange	1 Bahrain dinar = 17s. 6d. stg
Aden and Aden protectorate (part of Yemen) [UK], 1967	1951-1972	100%* stg 1942-65; 100+% stg after first 2.5 million dinars 1965-1972	20 East African shillings = £1 stg, ±1/2% 1942-1965; 1 South Arabian/South Yemen dinar = £1 stg, ±3/4% 1965-1972
Argentina	1902-1914, 1927-1929	100% gold after first 293 million pesos	1 peso = 0.63870849 g gold, no spread
Bahamas [UK], 1973	1916-1974	100+% stg	Bahamas £1 = £1 stg, 1916-1966; Bahamas \$1 = US\$0.98 1966-1970; Bahamas \$1 = US\$1 1970-1974
Bahrain [UK], 1971	1965-1973	100+% foreign exchange	1 Bahrain dinar = 17s. 6d. stg
Barbados [UK], 1966	1937?-1973	100+% stg 1937?-1951; 110% stg 1951-1973	(Barbados) West Indies \$4.80 = £1 stg 1937?-1951; West Indies/ East Caribbean \$4.80 = £1 stg, +3/8% and -7/16% 1940-1973
Bermuda [UK]	1915-present	110+% stg 1915-1970; 115% US\$ 1970-present	Bermuda £1 = £1 stg 1915-1970; Bermuda \$1 = US\$1 1970-present
British Guiana (Guyana) [UK], 1966	1937-1965	100% stg 1937-1951; 100% stg + 10% Guiana (West Indies) \$ 1951?-1965	(Guiana) West Indies \$4.80 = £1 stg, ±1% 1937-1951; West Indies \$4.80 = £1 stg, +3/8% and -7/16% 1951-1965

British Honduras (Belize) [UK], 1981	1894-1981?	67% gold + 33% stg and US\$ = 110% 1894-1939; 110% stg and US\$ 1939-1958; 100% stg after first Belize \$350,000- \$1 million = 110% 1967-1981?	Belize \$1 = US\$1 1894-1949; Belize \$4.00 = £1 stg, 1949-1974; Belize \$2 = US\$1 1974- 1981?
British Solomon Islands (Solomon Islands) [UK], 1978	1930s?- 1940s	100+% Australian £ and stg?	Solomon Islands £1 = Australian £1
British Somaliland (part of Somalia) [UK], 1960	1942-1961	100% stg*	20 East African shillings = £1 stg, ±1/2%
Brunei [UK], 1983	1952-1973	110% stg 1952- 1967; 100% gold and foreign exchange 1967- 1973	Malay \$1 = 2s. 4d. stg, ±1/8% 1952- 1967; Brunei \$1 = 2s. 4d. stg 1967- 1973
Burma [UK], 1948	1947-1952	100% stg	15 Burmese rupees = £1 stg, ± 9/32%
Cameroons (part of Cameroon and Nigeria) [UK], 1959	1916-1959	110% stg	West African £1 = £1 stg, ±1/2%

Cayman Islands [UK]	1933-1961, 1972-present	100% stg 1933-1961; 100% US\$ 1972-present	used Jamaican currency to 1972 (see Jamaica); US\$1 = Cayman \$0.83 1972-present
Ceylon (Sri Lanka) [UK], 1948	1884-1950	33-50% coin + 50-67% stg and rupees = 110% 1884-1917; 110% stg and rupees 1917-1950	1 Ceylon rupee = 1 Indian rupee, no spread
Cyprus [UK], 1960	1928-1964	110% stg	Cyprus £1 = £1 stg
Danzig (Gdansk, Poland)	1923-1924	100% stg	25 gulden = £1 stg
Dubai [UK], 1971	1966-1973	100% gold and foreign exchange	1 Qatar/Dubai riyal = 0.16621g gold
Eritrea [Italy, Ethiopia], 1993	1942-1945	100%* stg	20 East African shillings = £1 stg, ±1/2%
Ethiopia	1942-1945	100%* stg	20 East African shillings = £1 stg, ±1/2%
Falkland Islands [UK]	1899-present	100+% stg	Falkland £1 = £1 stg
Faroe Islands (part of Denmark)	1940-present	100% stg 1940-1949; 100% Danish kroner 1949-present	22.40 Faroese kroner = £1 stg, no spread 1940-1949; 1 Faroese krone = 1 Danish krone, no spread 1949-present
Fiji [UK], 1970	1913-1975	100+% stg	Fiji £1 = £1 stg, 1913-1933; Fiji £1.11 = £1 stg 1933-1967; Fiji £1 = £1 stg 1967-1969; Fiji \$2 = £1 stg 1969-1975?

Gambia [UK], 1965	1913-1971	110% stg 1913-1964; 100% foreign exchange 1964-1971	West African £1 = £1 stg, ±1/2% 1913-1964; Gambia £1 = £1 stg, ±1/2%? 1964-1971
Gibraltar [UK]	1927-present	100+% stg	Gibraltar £1 = £1 stg
Gold Coast (Ghana) [UK], 1957	1913-1958	110% stg	West African £1 = £1 stg, ±1/2%
Hong Kong [UK]	1935-1941, 1945-1974, 1983-present	105% stg 1935-1941, 1945-1972; 105% US\$ 1983-present	managed float, HK\$15.36-16.45 = £1 stg 1935-1939; HK\$16 = £1 stg, +0% and -1.17% 1935-1941, 1945-1967; HK\$14.55 = £1 stg, no spread 1967-1972; HK\$5.65 = US\$1, ±2-1/4%** 1972-1973; HK\$5.085 = US\$1, ±2-1/4%** 1973-1974; HK\$7.80 = US\$1, no spread 1983-present
Iraq [UK], 1932	1931-1949	100+% stg	1 Iraqi dinar = £1 stg, ±1/2%?
Ireland [UK], 1921	1928-1943	100% stg after first Irish £6 million	Irish £1 = £1 stg, no spread
Italian Somaliland (part of Somalia) [Italy], 1960	1941-1959	100%* stg 1941-1950; 100% foreign exchange and gold 1950-1959	20 East African shillings = £1 stg, ±1/2% 1941-1950; 20 somali = £1 stg 1950-1959
Jamaica [UK], 1962	1933-1961	100% stg 1933-1953?; 70% stg + 30% Jamaican £ 1953?-1961	Jamaican £1 = £1 stg, +7/16% and -1/2%

Kenya [UK], 1963	1897-1966	100%* stg	20 East African shillings = £1 stg, ±1/2%
Kuwait [UK], 1961	1961-1969	min. 50% gold + max. 50% US\$ and stg = 100%	1 Kuwaiti dinar = £1 stg
Leeward Islands (Anguilla, Antigua and Barbuda, St Kitts and Nevis, Montserrat) [UK], not all independent	1935-1983	110% stg 1951-1964; 70% stg + 30% West Indies \$ = 110% 1964-1968; 100% stg + some West Indies \$ = 110+% 1968-1971; 90% stg + 10% East Caribbean \$ = 110% 1971-1974; 100% foreign exchange + some East Caribbean \$ = 110+% 1974-1983	used Trinidad currency 1935-1951 (see Trinidad); West Indies/East Caribbean \$4.80 = £1 stg, +3/8% and -7/16% 1951-1976; East Caribbean \$2.70 = US\$1 1976-1983
Liberia	1913-1944		used West African currency (see Nigeria)
Libya [UK, France], 1951	1950-1956	100% stg	Libyan £1 = £1 stg, ±1/4%
Malaya (part of Malaysia) [UK], 1963	1899-1942, 1946-1967	110% stg	used Straits Settlement (Singapore) currency to 1939 (see Singapore); Malay \$1 = 2s. 4d. stg, ±1/8% 1939-1942, 1946-1967
Maldives Islands (Maldives) [UK], 1965	1849?-1967		used Indian and Mauritius currency (see Mauritius)
Malta [UK], 1964	1949-1965?	100+% stg	Maltese £1 = £1 stg

Mauritius [UK], 1964	1849-1967	33-50% coin + 50-67% Mauritius rupees and stg = 100% 1849-1865; = 110% 1865- 1934; 110% stg 1934-1967	1 Mauritius rupee = 1 Indian rupee 1849-1934; 15 Mauritius rupees = £1 stg, ±1/2% 1934-1967
New Zealand [UK], 1907	1850-1856	min. 25% coin + max. 75% stg = 100%	New Zealand £1 = £1 stg
Nigeria [UK], 1960	1913-1959	110% stg	West African £1 = £1 stg, ±1/2%
North Borneo (part of Malaysia) [UK], 1963	1881?- 1942, 1946-1967	110% stg	Borneo \$1 = Spanish \$1 1881- 1906 (may have been a currency board); Borneo \$1 = 2s. 4d. stg 1906-1952 (currency board for part or all of period); Malay \$1 = 2s. 4d. stg, ±1/8% 1939-1942, 1946-1967
North Russia (part of Russia)	1918-1920	75% stg + 25% rubles	40 rubles = £1 stg, ±1%
Northern Rhodesia (Zambia) [UK], 1964	1940-1956	110% stg 1940- 1942; 100% stg + 10% Rhodesian £ 1942-1947; min. 50% stg + max. 60% Rhodesian £ = 110% 1947-1956	Rhodesian £1 = £1 stg, ±1/4%
Nyasaland (Malawi) [UK], 1966	1940-1956	110% stg 1940- 1942; 100% stg + 10% Rhodesian £ 1942-1947; min. 50% stg+ max. 60% Rhodesian £ = 110% 1947-1956	Rhodesian £1 = £1 stg, ±1/4%
Oman	1970-1974	100+% stg	1 rial Omani = £1 stg

Palestine (Israel) [UK], 1948	1927-1948 (1927- 1951 in Gaza Strip)	110% stg	Palestine £1 = £1 stg, ±1/8%
Panama	1904- 1931?	100% silver coin + 15% US\$ = 100% of gold value	1 balboa = US\$1
Philippines [USA], 1946	1903- 1918, 1923- 1942, 1945-1948	100% silver coin + 15-25% US\$ = 100% of gold value 1903-1908, 1923-1942, 1945- 1948; 100% silver coin + 17.5% US\$ + 17.5% pesos = 100% of gold value 1908-1918	2 pesos = US\$1, ±3/8% (cheques) or ±3/4% (telegrams)
Qatar [UK], 1971	1966-1973	100% gold and foreign exchange	1 Qatar/Dubai riyal = 0.16621g gold
St Helena [UK]	1970s	100+% stg	St Helena £1 = £1 stg
Sarawak (part of Malaysia) [UK], 1963	1927- 1942, 1946-1967	110% stg	Sarawak \$1 = 2s. 4d. stg 1927- 1952; Malay \$1 = 2s. 4d. stg, ±1/8% 1952-1967
Seychelles [UK], 1976	1849- 1966?	100+% stg 1934- 1966?	used Mauritius currency to 1936 (see Mauritius); 1 Seychelles rupee = 1s. 6d. stg, ±1/2%? 1936- 1966?
Sierra Leone [UK], 1961	1913-1964	110% stg	West African £1 = £1 stg, ±1/2%

Singapore [UK], 1967	1899-1942, 1946-1973	50-67% coin (incl. at least 10% silver) + 33-50% Indian rupees and stg*** = 105% 1899-1923; 110% stg 1923-1942, 1946-1967; 100% gold and foreign exchange 1967-1973	managed floating 1899-1906; Straits \$1 = 2s. 4d. stg, $\pm 1\frac{1}{8}\%$ and $-7\frac{7}{8}\%$ 1906-1939; Malay \$1 = 2s. 4d. stg, $\pm 1\frac{1}{8}\%$ 1939-1942, 1946-1967; Singapore \$1 = 2s. 8-7/10d. stg 1967-1973
Southern Rhodesia (Zimbabwe) [UK], 1965	1940-1956	110% stg 1940-1942; 100% stg + 10% Rhodesian £ 1942-1947; min. 50% stg + max. 60% Rhodesian £ = 110% 1947-1956	Rhodesian £1 = £1 stg, $\pm 1\frac{1}{4}\%$
Sudan [Egypt, UK], 1956	1957-1960	50% stg + 50% Sudanese £	Sudanese £ = £1 6d. stg
Swaziland [UK], 1968	1974-1986	100% South African rands	1 langeni = 1 South African rand, no spread
Tanganyika (Tanzania) [UK], 1961	1920-1966	100%* stg	20 East African shillings = £1 stg, $\pm 1\frac{1}{2}\%$
Togoland (part of Ghana) [UK], 1957	1914-1958	110% stg	West African £1 = £1 stg, $\pm 1\frac{1}{2}\%$
Tonga [UK], 1970	1936-1974	100+% stg and Australian £/\$?	Tonga £1 = Australian £1, $\pm 1\frac{3}{4}\%$ (cheques) or $\pm 2\frac{1}{2}\%$ (telegrams) 1936-1966; 1 pa'anga = Australian \$1 1966-1974

Transjordan (Jordan) [UK], 1946	1927-1964	110% stg	Palestine £1 = £1 stg, $\pm 1/8\%$ 1927-1948; 1 Jordanian dinar = £1 stg, $\pm 1/8\%$ 1948-1964
Trinidad and Tobago [UK], 1962	1935-1964	100+% stg	(Trinidad) West Indies \$4.80 = £1 stg 1935-1951; West Indies \$4.80 = £1 stg, $+3/8\%$ and $-7/16\%$ 1951-1964
Uganda [UK], 1962	1919-1966	100% stg*	20 East African shillings = £1 stg, $\pm 1/2\%$
Western Samoa [New Zealand], 1962	1920-1973?	100% New Zealand £/\$?	Western Samoa £1 = New Zealand £1 1920-1967; 0.8076 tala = New Zealand \$1 1967-1973?
Windward Islands (Grenada, St Vincent and the Grenadines, St Lucia, Dominica) [UK], 1974-1979	1935-1983	110% stg 1951-1964; 70% stg + 30% West Indies \$ = 110% 1964-1968; 100% stg + some West Indies \$ = 110+% 1968-1971; 90% stg + 10% East Caribbean \$ = 110% 1971-1974; 100% foreign exchange + some East Caribbean \$ = 110+% 1974-1983	used Trinidad currency 1935-1951 (see Trinidad); West Indies/East Caribbean \$4.80 = £1 stg, $+3/8\%$ and $-7/16\%$ 1951-1976; East Caribbean \$2.70 = US\$1 1976-1983
Yemen Arab Republic (part of Yemen)	1964-1971	100%+ stg	3 Yemeni rials = £1 stg
Zanzibar (Tanzania) [UK], 1961	1936-1966	100%* stg	20 East African shillings = £1 stg, $\pm 1/2\%$

Quasi currency boards: India 1899-1914 (see Chapter 3), Argentina 1991-present.

Cases requiring further investigation: Botswana, Guernsey, Jersey, Lesotho 1980-1982, Luxembourg, Nicaragua circa 1914, St. Helena late 1970s, Solomon Islands recently.

#### KEY

##### Column 1 (Country, etc.)

(UK), for example, indicates that the country was a British colony, mandate, or former colony.

##### Column 3 (Reserve ratio and assets)

A reserve ratio of "100+%" means that the ratio was 100% to 110%, although I could not find information on the precise ratio.

Arithmetic of the form "67% gold+33% stg. and US\$ = 110%" means that the reserve ratio was 110%, divided in the proportion 67% gold to 33% sterling and U.S. dollars.

"Stg." means assets in currencies in the sterling area, excluding domestic currency. Most sterling assets were held in sterling itself.

\*The East African Currency Board did not actually hold 100 percent reserves until 1950.

\*\*The Singapore currency board held 8 percent or so assets in Straits dollars until 1936.

##### Column 4

During the Bretton Woods era many currencies were officially defined in terms of gold but actually linked to a foreign currency. In such cases the table lists the reserve currency rather than gold as the basis of the exchange rate. The composition of reserves and the exchange spreads varied during the lives of some currency boards. The table lists the most characteristic values for reserves and exchange spreads. Exchange spreads listed are for banks and other large foreign exchange dealers. The public often faced wider exchange spreads.

The following currency boards operated in more than one territory:

West African Currency Board--British Cameroon, Gambia, Gold Coast, Nigeria, Sierra Leone, Togoland.

East African Currency Board--Aden, British Somaliland, Eritrea, Ethiopia, Italian Somaliland, Kenya, Tanganyika, Uganda, Zanzibar.

Southern Rhodesian (later Central African) Currency Board--Northern Rhodesia, Nyasaland, Southern Rhodesia.

Board of Commissioners of Currency, Malaya and British North Borneo--Brunei, Malaya, North Borneo, Sarawak, Singapore.

Palestine Currency Board--Gaza Strip, Palestine, Transjordan.

Board of Commissioners of Currency, British Caribbean Territories (Eastern Group) (later East Caribbean Currency Authority)--Barbados, British Guiana, Leeward Islands (Antigua and Barbuda, St. Kitts and Nevis, Montserrat), Trinidad and Tobago, Windward Islands (Grenada, St. Vincent and the Grenadines, St. Lucia, and Dominica).

Bahrain Currency Board--Abu Dhabi, Bahrain.

Qatar/Dubai Currency Board--Dubai, Qatar.

Other boards operated in one territory only, although their notes sometimes circulated in nearby territories. Liberia, for example, used West African currency until 1944 because it had no official currency.

Main sources: Currency board reports; British colonial reports; Caine 1948-9; Pick and Sedillot 1971; Pick's Currency Yearbook; World Currency Yearbook; Shannon 1952; The Statesman's Year-Book.

## Vita

Kurt A. Schuler, an American citizen, was born on March 27, 1960 in Milwaukee, Wisconsin. He graduated from William Horlick High School in Racine, Wisconsin in 1977, and received a Bachelor of Arts degree from St. John's College in Annapolis, Maryland in 1981. In 1989 he was a summer fellow at G.T. Management (Asia) Ltd. in Hong Kong. There he worked for John Greenwood, who guided Hong Kong back to the currency board system in 1983.