

# **CURRENCY BOARDS FOR EASTERN EUROPE**

by

**Steve H. Hanke and Kurt Schuler**

**Steve H. Hanke** is Professor of Applied Economics at The Johns Hopkins University in Baltimore and Chief Economist at Friedberg Commodity Management, Inc. in Toronto. He also serves as the Advisor to the President of Deloitte Ross Tohmatsu International/Eastern Europe in Brussels. He has advised senior government officials in Albania and Yugoslavia.

**Kurt Schuler** is a graduate student in economics and holds the George Edward Durell Assistantship at George Mason University in Fairfax, Virginia. He has been a Summer Fellow at G.T. Management in Hong Kong, where he worked with John Greenwood, who designed Hong Kong's currency board system.

---

**This is an expanded version of a presentation by Steve Hanke to a delegation of legislators from the Russian Republic, sponsored by The Heritage Foundation, on June 20, 1991, at The Johns Hopkins University, Baltimore, Maryland.**

**ISSN 0272-1155. © 1991 by The Heritage Foundation.**

## **TABLE OF CONTENTS**

<b>Chapter 1. Monetary Reform and the Development of a Market Economy . . . . .</b>	<b>1</b>
<b>Chapter 2. What Is a Currency Board? . . . . .</b>	<b>5</b>
<b>Chapter 3. How a Currency Board Works . . . . .</b>	<b>7</b>
<b>Chapter 4. Central Banking . . . . .</b>	<b>16</b>
<b>Chapter 5. Advantages of a Currency Board Over a Central Bank . . . . .</b>	<b>19</b>
<b>Chapter 6. How to Establish a Currency Board . . . . .</b>	<b>22</b>
<b>Chapter 7. How to Operate a Currency Board . . . . .</b>	<b>27</b>
<b>Chapter 8. How to Protect the Currency Board . . . . .</b>	<b>30</b>
<b>Chapter 9. Summary and Conclusion . . . . .</b>	<b>32</b>
<b>Annex I: A Model Currency Board Law . . . . .</b>	<b>33</b>
<b>Annex II: Alleged Disadvantages of Currency Boards . . . . .</b>	<b>35</b>
<b>Bibliography . . . . .</b>	<b>37</b>

## CHAPTER 1

# MONETARY REFORM AND THE DEVELOPMENT OF A MARKET ECONOMY

Eastern Europe and the former Soviet Union (which we shall simply call the USSR) are struggling to throw off the shackles of socialism and to embrace capitalism. To do so successfully, they must rid themselves of their unsound currencies and establish stable, convertible currencies. The "new" currencies should be convertible into one of the major international hard currencies.

A sound currency, which is vital for a well-functioning market economy, serves as a satisfactory store of value, medium of exchange, and unit of account. An unsound currency does not fulfill any of those functions. An unsound currency is not a reliable store of value because inflation makes its value highly unpredictable. As a result, people save by hoarding bricks, timbers, food, and other commodities, which retain value better than money and other financial assets. Although commodity hoarding slows economic growth, it is rational for people in nations with unstable currencies. U.S. dollars and other stable currencies also serve as substitute stores of value in nations with unstable currencies. For example, individuals and enterprises in the USSR probably hold over \$10 billion of foreign currency, which is more than the real value of the ruble money supply. "Dollarization" is costly. It requires Soviet citizens to give up real goods and services to obtain bits of paper that Western central banks print at almost no cost, generating a perverse form of foreign aid that flows from the USSR to Western central banks.

An unsound currency is not a good medium of exchange. The outside world refuses to accept it. That impedes foreign investment and trade, and hence competition and economic growth. Nor is an unsound currency a good unit of account. Inflation distorts prices and makes business calculation more difficult. Without a good unit of account, it is impossible to make meaningful accounting calculations or to write contracts. In sum, then, an unsound currency prevents important elements of a market economy from working.

Eastern Europe and the USSR have primitive financial systems that cannot intermediate efficiently between savers and investors because their currencies are unstable and inconvertible. The status of their currencies also explains why they have limited trade with the outside world. As long as Eastern Europe and the USSR have unsound currencies, they will be unable to transform themselves into market economies.

A sound, convertible currency allows people to carry out decentralized planning, which is more efficient than central planning. In nations with so-called internally convertible currencies, all that is usually required to buy goods domestically is to have currency to pay a domestic seller. Internal convertibility implies that it is not necessary to obtain authorization from any central planner to buy or sell goods that are available inside the country. The exchange of goods is much more extensive, rapid, and efficient where internal convertibility exists, as in the United States, Germany, and Poland, than where it does not, as in Albania and the USSR.

The foreign trade counterpart of internal convertibility is external convertibility—the ability to convert as much domestic currency into foreign currency as one wishes, at market rates rather than at much higher or lower official rates. External convertibility can be unlimited, as in the major Western countries, or it can be limited, as in Czechoslovakia and Poland at present. Czechoslovakia and Poland allow most current account purchases, in which people buy foreign goods for import, but they prohibit many capital

account transactions, in which people buy foreign financial assets. Current account convertibility exposes domestic producers to foreign competition and helps introduce the structure of prices that prevails in world markets. That induces a nation to specialize in making the goods it is best at producing and then trade abroad for other goods, which increases wealth all around. Capital account convertibility helps attract foreign investment, because unless foreigners can repatriate profits they will be reluctant to invest. Foreign capital investment can offset a large current account deficit and speed the introduction of urgently needed foreign goods to modernize the economy.

The ability to purchase both domestic and foreign goods readily is what makes Western currencies fully convertible "hard" currencies, and what makes them so highly prized in Eastern Europe and the USSR. To reap the full benefits of participating in world markets, Eastern Europe and the USSR themselves need to establish fully convertible currencies. Their present monetary systems are obstacles to a market economy. Inflation is in mid double digits or higher throughout the region. In the USSR, inflation is projected to surpass 200 percent this year. Even in Poland, which has allowed most formerly subsidized prices to rise to market levels and has linked the zloty to the U.S. dollar, inflation remains above 40 percent per year.

Inflation will remain high, even in nations that follow Poland's course, because central banks in the region have no credibility. They have long histories of bowing to political pressures for inflation. For instance, the USSR has had government currency issue since 1768, and a central bank since 1860. In all that time it has had a fully convertible currency for only 35 years, the last year being 1914. All East European central banks, except in the Baltic nations and Albania, caused hyperinflations in the 1920s, and some caused hyperinflations again in the late 1940s. The new central banks established in various former Soviet republics do not have the handicap of bad past performance to undermine their credibility, but they face other problems. So far, none has announced any definite plan for keeping its currency stable. Also, the general experience of central banks in developing nations suggests that both the established central banks and the new central banks will face ferocious political pressures for inflation. For the 99 nations that the World Bank classifies as low-and middle-income, average annual inflation was 16.7 percent from 1965 to 1980 and 53.7 percent from 1980 to 1989.

This poor performance explains why Paul Volcker, the former chairman of the U.S. Federal Reserve System, has indicated that he has little faith that central banks in Eastern Europe and the USSR can achieve full convertibility. Addressing central bankers in Jackson Hole, Wyoming last year, Mr. Volcker notes that markets developed long before central banks, and stressed that Eastern Europe and the USSR might actually retard their transition to markets by relying on central banks.<sup>1</sup> Central banks are essentially not market institutions, which is why Marx and Engels said in the *Communist Manifesto* that one of the steps for achieving communism was "Centralization of credit in the hands of the state, by means of a national bank with state capital and an exclusive monopoly."<sup>2</sup>

To gain credibility, central banks in Eastern Europe and the USSR must painstakingly establish good track records. The lack of credibility of official promises has already led people throughout the region to conduct their own unofficial monetary reform. They have dollarized local economies. To the extent that dollars and other hard currencies are unavailable, some transactions are even taking place in barter, because barter is the only way for people to prevent domestic currency inflation from robbing them of their savings. The shift to barter is particularly disruptive in the USSR, where it is choking trade among

---

1 Volker 1990.

2 Marx and Engels (1848) 1948, p. 30.

republics. Making national currencies stable and convertible would revive trade among republics and among East European nations.

The problem of credibility has locked central banks and the public into a game that has no winners. Central bank promises to maintain currency stability, even by means of fixed exchange rates, are not credible. Prices will continue to rise quickly because workers will base their wage demands on established central banks' dismal past performance, or on well-founded skepticism of new central banks' promises of good behavior. State-owned enterprises and government ministries will likewise continue their free-spending ways, because they will correctly expect that the government will rescue them by forcing the central bank to print money, as has so often happened before. Workers and enterprises will anticipate that this "soft budget constraint" will continue, and they will behave accordingly.

If central banks in Eastern Europe and the USSR miraculously do maintain currency stability, the consequences could almost be worse than under continued inflation. Because the central banks lack credibility, people will remain skeptical of them for years. To gain credibility, the central banks will have to keep their currencies overvalued and keep real (inflation-adjusted) interest rates high. That may plunge national economies even deeper into depression. In such depressions, the export sector will suffer more than other sectors. That is what has happened in Yugoslavia, whose December 1989 currency reform was not completely credible. People correctly anticipated that the National Bank of Yugoslavia would not maintain the original fixed exchange rate, so real interest rates have exceeded 30 percent per year because the rates contained a large devaluation risk premium. A credible monetary reform that has *no* devaluation risk can keep real interest rates in single digits (for the least risky loans), as it is in the Western industrial nations, and hence can save Eastern Europe and the USSR much pain.

Eastern Europe and the USSR could make their currencies convertible by maintaining floating exchange rates rather than fixed rates. But though floating exchange rates balance supply and demand for domestic currency against foreign currency, they do not restrain central banks' powers to create credit. Instead, they are likely to lead to South American-style hyperinflations. Domestic political pressure groups representing the old order favor renewed inflation rather than stable money and prices. As inflation mounts, prices become increasingly unreliable indicators for guiding economic activity and the transition to a market economy becomes even more difficult because a market economy needs fairly stable prices to work well.

To have stable currencies, Eastern Europe and the USSR need to remove monetary policy from political influence. They need to give their monetary reforms instant credibility, to avoid the dangers of continuing inflation on the one hand and depression on the other hand. The best way to do so is to strip their central banks of currency issuing functions, and to establish *currency boards*, whose only job will be to issue convertible currencies according to strictly defined rules. Currency boards are explicitly designed to maintain a fixed exchange rate. Currency boards are easy to establish and operate, and they have *always* been able to maintain fixed-rate currency convertibility, even during the most trying times.

Currency boards would quickly establish hard domestic currencies and instill monetary confidence. As a result, economic agents would alter their expectations. If the U.S. dollar or the German mark were used as a currency board's reserve currency, workers could not raise wages and enterprises could not increase prices much beyond their rates of increase in the United States or Germany unless they achieved corresponding gains in productivity or quality. If governments in Eastern Europe and the USSR established secure property rights and removed barriers to foreign investment, interest rates would also be close to American or German levels. Under the currency board system, East European governments would have to finance themselves exclusively by taxation and borrowing, not by inflation, because a currency board cannot be an agent of government finance.

Linking domestic currencies to foreign currencies in Eastern Europe and the USSR would not subject the region to foreign political domination, as some people think. Rather, it would restore an element of national dignity by giving the region the sound currencies it now lacks. By establishing domestic currencies that are as sound as the foreign currencies to which they are linked, currency boards offer a way for domestic currency to become attractive as a store of value and to displace foreign currency from circulation. That would stop the perverse form of foreign aid that now flows from the region to Western central banks.

The cost of establishing 100 percent reserves against domestic currency and sufficient fractional reserves against deposits is surprisingly low in Eastern Europe and the USSR. At present market exchange rates, the real value of domestic currency and deposits throughout the region is small. The hard-currency reserves necessary to establish currency boards range from about \$70 million for Albania to perhaps \$6 billion for Poland and the USSR. Alternative estimates that claim currency boards would cost many times more are based on flawed assumptions, as we shall explain in Chapter 6.

Currency boards are essential to wider fiscal and economic reforms. With a stable monetary environment, Eastern Europe and the USSR would be able to successfully take the next steps towards a market economy.

This essay explains what a currency board is. It describes the difference between how money is supplied in a currency board system and in a central banking system. It demonstrates why the currency board system is superior to a central banking system. It also details how to establish and operate a currency board—including how to obtain the foreign currency for the board's reserves—and how to insulate the board from political pressure.



## CHAPTER 2

### WHAT IS A CURRENCY BOARD?

A currency board is an institution that issues notes and coins convertible into a foreign "reserve" currency<sup>3</sup> at a fixed rate and on demand. It does not accept deposits. As reserves, a currency board holds high-quality, interest-bearing securities denominated in the reserve currency. A currency board's reserves are equal to 100 percent or slightly more of its notes and coins in circulation, as set by law. (Commercial banks in a currency board system need not hold 100 percent reserves in reserve-currency assets, however.) The board generates profits (seigniorage) from the difference between the interest earned on the securities<sup>4</sup> that it holds and the expense of maintaining its note and coin circulation. It remits to its owner (historically, the government) all profits beyond what it needs to cover its expenses and to maintain its reserves at the level set by law. The currency board has no discretion in monetary policy; market forces alone determine the money supply.

As an introduction, let us briefly examine the main characteristics of a currency board. We shall discuss them in more detail later.

**Convertibility:** The currency board system assures that the currency will be convertible at a fixed rate. No currency board has ever had problems maintaining fixed-rate convertibility. The currency boards of Burma and North Russia even maintained fixed-rate convertibility in the midst of civil war. The currency boards of British colonies maintained convertibility during the Great Depression and (where not overrun by enemy armies) during World War II.

**Reserves:** A currency board's reserves are adequate to ensure that, even if all holders of notes and coins want to convert them into the reserve currency, the board will be able to do so. Currency boards have usually held reserves of 105 or 110 percent of liabilities, so that they would have a margin of protection in case the interest-earning securities that they held lost value. If a nation used the U.S. dollar or the German mark as its reserve currency, for instance, its own currency would remain as good as the dollar or the mark. Chapter 6 will discuss how to acquire the necessary reserves.

**Seigniorage:** Unlike securities or most bank deposits, notes and coins do not pay interest. Hence, notes and coins are like an interest-free loan from the people who hold them to the issuer. The issuer's profit equals the interest earned on reserves minus the expense of putting the notes and coins into circulation. In addition, if the notes and coins are destroyed, the issuer's net worth increases because his liabilities fall but his assets do not.

Under a currency board system, the domestic currency is as sound as the foreign reserve currency. The only economic difference between using a domestic currency issued by a board as legal tender, instead of a foreign currency, is that the seigniorage generated by a currency board issue is captured domestically; whereas, if a foreign currency is used as legal tender, the foreign issuer captures the seigniorage. The domestic seigniorage generated by a currency board can be significant. Expenses incurred by currency boards are usually about 1 percent of assets per annum. Profit rates are equal, therefore, to the in-

---

3 It is also possible to use a basket of currencies or gold as the reserve asset, as a few boards have done.

4 Or, for a currency board whose reserve asset is gold, interest on loans of physical gold. A well-organized market for such loans exists in London.

terest rate earned on assets minus 1 percent. Conservatively, that rate should be at least 4 percent per annum.

In addition to seigniorage, the use of a domestic currency board issue as legal tender, rather than a foreign currency, generates another domestic advantage: national pride is enhanced.

**Monetary policy:** By design, a currency board has no discretionary powers. Its monetary policy is completely automatic, consisting only in exchanging its notes and coins for the foreign reserve currency at a fixed rate. Since a currency board's role is strictly circumscribed, it is less likely than other monetary systems to suffer political pressures to engage in economically unsound policies.

Over sixty countries have had currency boards during this century. Most of them have been British colonies or former colonies. However, there have also been currency boards elsewhere, including two cases in Eastern Europe. A Russian currency board existed in the northern region occupied by the British and other Allies in 1918 and 1919. It issued a ruble currency having a fixed exchange rate with the British pound sterling. The free city of Danzig had a currency board from 1922 to 1923. The Danzig board too maintained a fixed exchange rate with sterling. Both East European currency boards were extremely successful during their brief lives. The North Russian board maintained convertibility in the midst of a civil war, and the Danzig board maintained convertibility despite a deep economic depression caused by the slump in Germany, its chief trading partner.<sup>5</sup>

Despite the success of currency boards, only a few currency board-style monetary systems exist today, most notably in Hong Kong and (in greatly modified form) in Singapore. Most other countries that once had currency boards replaced them with central banks. These changes were made for political, not economic, reasons. Politicians saw central banking as a way of manipulating the money supply to their own advantage. Since abandoning the currency board system, many of those countries have experienced inflation and economic stagnation. Hong Kong and Singapore, on the other hand, have been two of the world's most rapidly growing economies, despite their lack of natural resources. Moreover, they have realized relatively low rates of inflation.



---

5 Hanke and Schuler, 1990,1991.



## CHAPTER 3

### HOW A CURRENCY BOARD WORKS

The currency board system relies entirely on market forces to determine the amount of notes and coins that the board supplies, and also to determine the amount of deposits and other components of the broader money supply that banks and other financial institutions supply. The central bank of the reserve-currency country determines the supply of reserves in the whole currency area, including the currency board country. Competition among commercial banks determines the distribution of the reserves, including the proportion of the total that becomes the foreign-currency reserve of the currency board country. The currency board has no role in determining the supply of reserves, because its 100 percent reserve requirement makes it merely a sort of warehouse for reserves. Since a board cannot influence the amount of reserves, it cannot influence the total supply of credit. This stands in contrast to central banks, which frequently expand or contract the amount of reserves available to commercial banks in efforts to influence the supply of bank credit. However, the supply of notes and coins is elastic, because, as we shall explain, the currency board country can acquire reserves from the reserve-currency country.

As under a gold standard, or gold exchange standard, in a currency board system the amount of credit that banks can create (and hence the total money supply) is limited by their ability to acquire and keep reserves sufficient to support that amount of credit. This does not mean that credit is scarcer or carries higher real interest rates than in a central banking system; indeed, Hong Kong and Singapore are major centers of ample and efficient finance. It merely prevents a currency board system from experiencing inflation as high as is possible under the average floating exchange rate central banking system in a developing country. Under a currency board system, the currency board country stands in a similar relation to the reserve-currency country as, say, California does to the rest of the United States.

Commercial banks are middlemen between lenders (depositors) and borrowers (people who spend bank loans). A bank cannot for long grant more credit to borrowers than depositors wish to grant to it. If a bank grants excessive credit, the borrowers will spend it (for instance, by writing checks), and more funds will flow out of the bank than flow into the bank from checks written on other banks. To prevent this sort of mistake from resulting in bankruptcy, a bank needs to hold reserves. The reserves protect it from the consequences of its occasional mistakes.

The ultimate reserves in a currency board system are holdings of the foreign reserve currency. The only way to acquire new reserves, obviously, is to obtain currency from the reserve-currency country, which in its simplest form requires running a balance-of-payments surplus. Under certain simplifying assumptions that we make for the sake of clarity (see box), changes in the balance of payments change the

#### BALANCE-OF-PAYMENTS ASSUMPTIONS

- 1) Bank deposits are convertible into currency board notes at a fixed rate.
- 2) The ratio of notes and coins to the broader money supply (the currency-deposit ratio) is constant.
- 3) Income and money holdings move in the same direction.
- 4) There is no international branch banking between the currency board country and the reserve-currency country.
- 5) All balance-of-payments occur in the current account; the capital account did not change.
- 6) No binding minimum reserve ratios or other special bank regulations exist.
- 7) People do not hold stocks of foreign reserve currency nor do they use it in domestic transactions.

**Note:**As we shall explain later, only Assumption 1 is necessary for the analysis of currency boards. The other assumptions can be dropped. However, the analysis becomes more complicated then. See Ow 1985 and Walters 1987.

total domestic money supply in the same direction. A balance-of-payments surplus increases the total domestic money supply. A balance-of-payments deficit, on the other hand, decreases the total domestic money supply. Later we shall explain how under less simple, more realistic assumptions, investment inflows can enable the domestic money supply even if there is a balance-of-payments deficit. (Recall that the balance of payments is the value of exports minus the value of imports. Recall also that the domestic money supply is made up of the currency board's notes and coins in the public's hands plus commercial bank deposits.)

The easiest way to illustrate the linkage between changes in the balance of payments and the domestic money supply under a currency board system is with a combination of flow and "T-account" diagrams. The flow diagrams depict a chain of events, whereas the T accounts depict simplified balance sheets for the relevant agents under a currency board system (see Figures 1, 2, and 3).<sup>6</sup> A typical currency board's T account looks like this:

**Figure 1**

**CURRENCY BOARD**

Assets	Liabilities
Foreign-currency securities	Notes and coins Net worth

A typical commercial bank's T account in a currency board system looks like this:

**Figure 2**

**COMMERCIAL BANKS**

Assets	Liabilities
Currency board notes & coins (reserves) Loans and investments	Public's deposits Stockholders' equity

The T account of the public as a whole (meaning all of the financial sector except the currency board and the commercial banks) looks like this:

**Figure 3**

**PUBLIC**

Assets	Liabilities
Deposits at banks Currency board notes & coins	Loans from banks Net worth

The total money supply is the left-hand (asset) side of the public's T account.

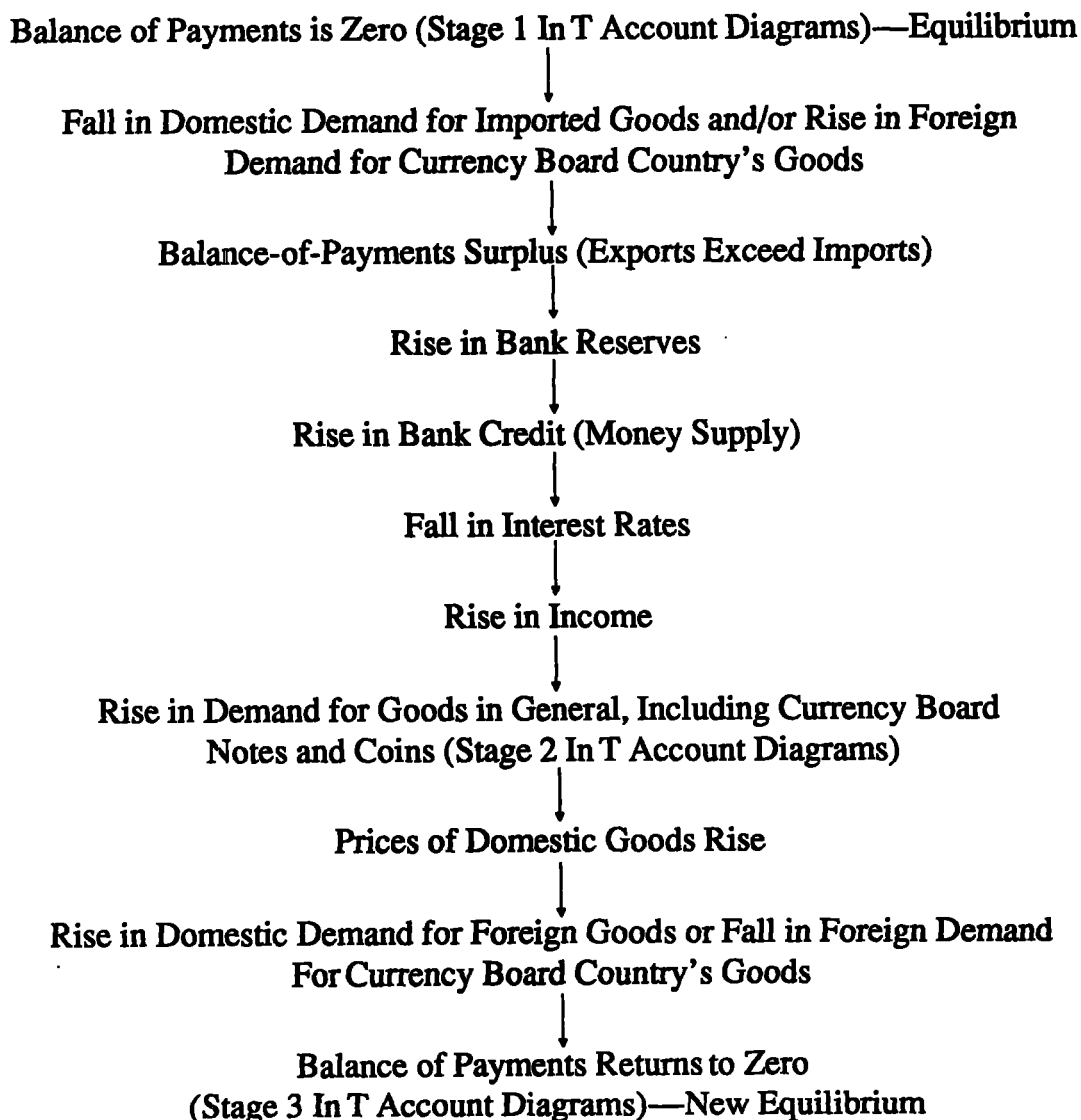
---

<sup>6</sup> The account that follows draws heavily on Greenwood 1981 and 1983a.

We begin our analysis with a flow diagram (Figure 4). To start, the balance of payments is in balance and exports equal imports. We then put the system in motion by generating a balance-of-payments surplus. That surplus works its way through a currency board system in the sequence depicted in Figure 4. Notice that the currency board plays an explicit role in the chain of events depicted in Figure 4 only at the stage labeled “rise in demand for goods in general, including currency board notes and coins.”

To look at this stage in more detail, and to clarify the relationship between commercial banks and the currency board in the chain of events, we use T accounts. We use some hypothetical numbers to illustrate what happens. Let stage 1 (the starting point) be a situation where the balance of payments is zero—an equilibrium. For the sake of simplicity, we ignore net worth in the currency board’s T account, stockholders’ equity in commercial banks’ T accounts, and loans from banks and net worth in the public’s T account, assuming that they are zero. We assume that the banks have a desired deposit-to-reserve ratio of 50:1, which maximizes their risk-adjusted profits, and that the public has a desired deposit-to-currency (notes and coins) ratio of 10:1 (see Figure 5) which maximizes their convenience. For the sake of illustration, let us call the currency of the currency board country the ruble.

**Figure 4**



**Figure 5**

**CURRENCY BOARD—STAGE 1**

Assets		Liabilities
Foreign-currency securities	600	Notes and coins 600

**COMMERCIAL BANKS—STAGE 1**

Assets		Liabilities
Currency board notes & coins (reserves)	100	Public's deposits 5000
Loans and investments	4900	

**PUBLIC—STAGE 1**

Assets		Liabilities
Deposits at banks	5000	
Currency board notes & coins	500	

TOTAL MONEY SUPPLY = 5000+500 = 5500

BANKS' DEPOSIT-TO-RESERVE RATIO = 5000:100 = 50:1 (Equilibrium)

PUBLIC'S DEPOSIT-TO-CURRENCY RATIO = 5000:500 = 10:1 (Equilibrium)

Now let there be a balance-of-payments surplus of 12 rubles, in the form of foreign currency that the public deposits in local banks (see Figure 6). Since we assume, for the sake of simplicity, that banks hold all reserves in the form of currency board notes and coins, the banks exchange the foreign currency at the currency board for domestic currency. (They exchange the reserve currency at the fixed exchange rate, and other currencies at prevailing market rates.) The board's assets and liabilities become 12 rubles more than in Stage 1. The banks' reserves become 12 rubles more than in Stage 1, and the public's deposit holdings become 12 rubles more than in Stage 1. In addition, the money supply is 12 rubles more than in Stage 1. This is Stage 2.

**Figure 6**

**CURRENCY BOARD—STAGE 2**

Assets		Liabilities
Foreign-currency securities	612	Notes and coins 612

**COMMERCIAL BANKS—STAGE 2**

Assets		Liabilities
Currency board notes & coins (reserves)	112	Public's deposits 5012
Loans and investments	4900	

**PUBLIC—STAGE 2**

Assets		Liabilities
Deposits at banks	5012	
Currency board notes & coins	500	

TOTAL MONEY SUPPLY = 5012+500 = 5512 (expansion = 12)  
 BANKS' DEPOSIT-TO-RESERVE RATIO = 5012:112 = 44.75:1 (Disequilibrium)  
 PUBLIC'S DEPOSIT-TO-CURRENCY RATIO = 5012:500 = 10.024:1 (Disequilibrium)

Notice that banks' deposit-to-reserve ratio is 44.75:1 (Stage 2), which is less than their desired (Stage 1) ratio of 50:1. Notice also that the public's deposit-to-currency ratio is 10.024:1 (Stage 2), which is more than their desired (Stage 1) ratio of 10:1. That means that banks will expand their loans, and the public will expand its holdings of currency, to restore the original Stage 1 ratios. In Stage 3, they do so, achieving a new equilibrium, with the money supply 110 rubles more than in Stage 1 (see Figure 7).

**Figure 7**

**CURRENCY BOARD—STAGE 3**

Assets		Liabilities
Foreign-currency securities	612	Notes and coins 612

**COMMERCIAL BANKS—STAGE 3**

Assets		Liabilities
Currency board notes & coins (reserves)	102	Public's deposits 5100
Loans and investments	4998	

**PUBLIC—STAGE 3**

Assets		Liabilities
Deposits at banks	5100	
Currency board notes & coins	510	

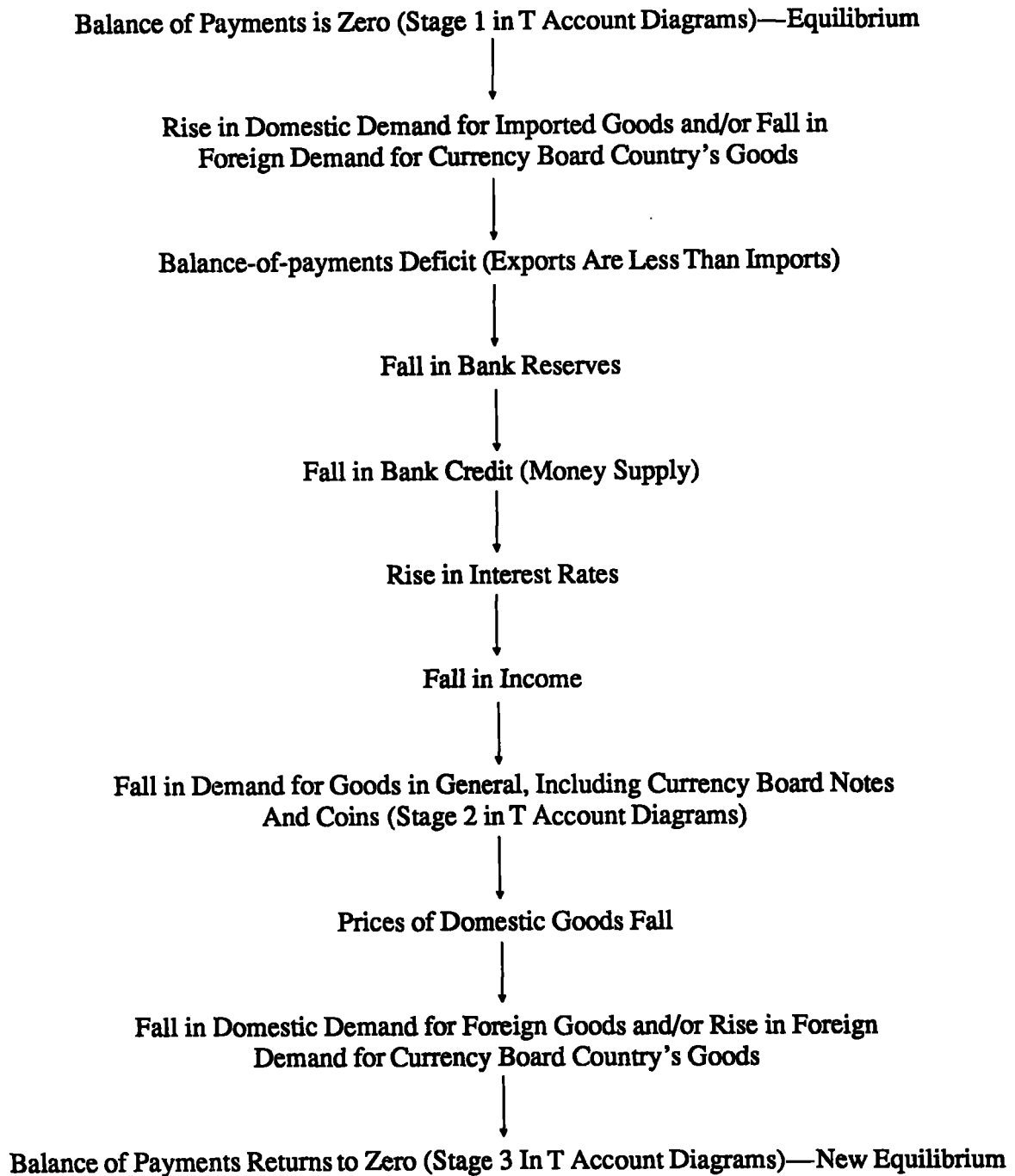
TOTAL MONEY SUPPLY = 5100 + 510 = 5610 (expansion = 110)  
 BANKS' DEPOSIT-TO-RESERVE RATIO = 5100:102 = 50:1 (Equilibrium)  
 PUBLIC'S DEPOSIT-TO-CURRENCY RATIO = 5100:510 = 10:1 (Equilibrium)

As the T accounts illustrate, banks' efforts to reattain their desired deposit-to-reserve ratio, and the public's efforts to reattain its desired deposit-to-currency ratio, move the currency board system back to equilibrium when a balance-of-payments surplus occurs. The currency board responds to their actions

“automatically” by virtue of its 100 percent reserve ratio and its fixed exchange rate with the foreign reserve currency.

When there is a balance-of-payments *deficit*, the money supply process works as follows:

**Figure 8**



Starting from an equilibrium in Stage 1 again, the T accounts are (see Figure 9):

**Figure 9**

**CURRENCY BOARD—STAGE 1**

Assets		Liabilities	
Foreign-currency securities	600	Notes and coins	600

**COMMERCIAL BANKS—STAGE 1**

Assets		Liabilities	
Currency board notes & coins (reserves)	100	Public's deposits	5000
Loans and investments	4900		

**PUBLIC—STAGE 1**

Assets		Liabilities	
Deposits at banks	5000		
Currency board notes & coins	500		

**TOTAL MONEY SUPPLY = 5000+500 = 5500**

**BANKS' DEPOSIT-TO-RESERVE RATIO = 5000:100 = 50:1 (Equilibrium)**

**PUBLIC'S DEPOSIT-TO-CURRENCY RATIO = 5000:500 = 10:1 (Equilibrium)**

Now let there be a balance-of-payments deficit of 12 rubles. The public pays foreigners 12 rubles more for goods than foreigners pay the public. Foreigners will only accept payment in foreign currency, and the currency board has all the foreign currency in the financial system, so people convert 12 rubles of its notes and coins into foreign currency. They do so by withdrawing 12 rubles from their bank deposit accounts as currency board notes. Consequently, the banks' reserves become 12 rubles less than in Stage 1. People exchange the notes for foreign currency at the currency board's fixed rate, so the board's assets and liabilities become 12 rubles less than in Stage 1. This is Stage 2 (see Figure 10):

**Figure 10**

**CURRENCY BOARD—STAGE 2**

Assets		Liabilities	
Foreign-currency securities	588	Notes and coins	588

**COMMERCIAL BANKS—STAGE 2**

Assets		Liabilities	
Currency board notes & coins (reserves)	88	Public's deposits	4988
Loans and investments	4900		

## PUBLIC—STAGE 2

Assets		Liabilities
Deposits at banks	4988	
Currency board notes & coins	500	

TOTAL MONEY SUPPLY =  $4988+500 = 5488$  (contraction = 12)

BANKS' DEPOSIT-TO-RESERVE RATIO =  $4988:88 = 56.68:1$  (Disequilibrium)

PUBLIC'S DEPOSIT-TO-CURRENCY RATIO =  $5988:500 = 9.976:1$  (Disequilibrium)

Notice that banks' deposit-to-reserve ratio is 56.68:1 (Stage 2), which is more than their desired (Stage 1) ratio of 50:1. Notice also that the public's deposit-to-currency ratio is 9.976:1 (Stage 2), which is less than its desired (Stage 1) ratio of 10:1. That means that banks will contract their loans, and the public will contract its holdings of currency, to restore the original Stage 1 ratios. In Stage 3, they do so, achieving a new equilibrium, with the money supply 110 rubles less than in Stage 1 (see Figure 11):

**Figure 11**

### CURRENCY BOARD—STAGE 3

Assets		Liabilities
Foreign-currency securities	588	Notes and coins 588

### COMMERCIAL BANKS—STAGE 3

Assets		Liabilities
Currency board notes & coins (reserves)	98	Public's deposits 4900
Loans and investments	4802	

### PUBLIC—STAGE 3

Assets		Liabilities
Deposits at banks	4900	
Currency board notes & coins	490	

TOTAL MONEY SUPPLY =  $4900+490 = 5390$  (contraction = 110)

BANKS' DEPOSIT-TO-RESERVE RATIO =  $4900:98 = 50:1$  (Equilibrium)

PUBLIC'S DEPOSIT-TO-CURRENCY RATIO =  $4900:490 = 10:1$  (Equilibrium)

As in the case of a balance-of-payments surplus, banks' attempts to reattain their desired deposit-to-reserve ratio, and the public's efforts to reattain its desired deposit-to-currency ratio, move the currency board system back to equilibrium when a balance-of-payments deficit occurs.

There are two important points to notice about the adjustment process in a currency board system. The first is that market forces rather than central bank action set it in motion; it is completely "automatic," as far as the currency board is concerned. The second point is that, because the exchange rate is fixed, arbi-



trage occurs entirely through changes in the quantity of money, interest rates, and the balance of payments, rather than through the exchange rate. In that respect, the currency board system is like the gold standard or the gold exchange standard. The fixed exchange rate between the currency board currency and the reserve currency should make goods arbitrage between the two countries very tight, if the impediments to trade between them are small. The overall rate of price changes, as reflected in wholesale price indexes, should not differ greatly between the two countries. Interest rates also should be roughly the same in both countries, unless there are real factors such as taxes or perceived risks<sup>7</sup> that make lending costlier in one country. The experience of currency board countries bears this out. In Hong Kong, for instance, interest rates and the prices of Hong Kong goods made for export have closely tracked those of the United States since Hong Kong linked its currency to the U.S. dollar in 1983.

The foregoing treatment of the mechanics of currency board money supply was simplified by some assumptions that we made (see box, page 7). If we drop all assumptions except that currency board notes and coins exchange against bank deposits at a fixed rate, the connection between the balance of payments and the money supply becomes less direct. It is even possible for the changes in money supply under a currency board system to move opposite from balance-of-payment changes. However, that is perfectly acceptable. There is no reason why the money supply in a modern fractional-reserve banking system should have a rigid relation with the balance of payments, if other factors simultaneously move the money supply in the other direction. Hong Kong and Singapore experienced balance-of-payments deficits for decades at a time, yet their domestic money supplies steadily increased because they were attracting large inflows of foreign investment.

The many additional factors that can complicate analysis should not obscure the important point: market forces of profit and loss determine and limit money supply expansion in the currency board country. As long as it is more profitable to invest funds in the currency board country than elsewhere (after taking into account inflation, exchange-rate risk, and transactions fees), banks in the currency board country will expand their loans. They will be able to do so because foreign investment is flowing in, bringing additional reserves to the banking system. When banks have expanded their loans to such an extent that additional loans would be less profitable than investing the funds abroad, they will not make such loans, and so the money supply will cease expanding. If it becomes more profitable to invest funds abroad than in the currency board country, the currency board country will lose reserves, banks will have to contract their loans to preserve their solvency, and so the money supply will contract. The currency board's role in all this is entirely passive: all it does is to convert notes and coins into and out of the reserve currency as the public and banks demand.



---

7 These include the risk that a balance of payments surplus or deficit will tempt the currency board country to set the exchange rate with the reserve currency at a different level. For example, after returning to the currency board system in 1983, Hong Kong's balance-of-payments surpluses with the U.S. prompted speculation that the Hong Kong government would revalue the Hong Kong dollar against the reserve currency, the U.S. dollar. When it became clear the Hong Kong government would not revalue, speculative pressure ceased and Hong Kong interest rates, which had fallen to low levels relative to U.S. rates, moved closer to U.S. dollar rates.

## CHAPTER 4

# CENTRAL BANKING

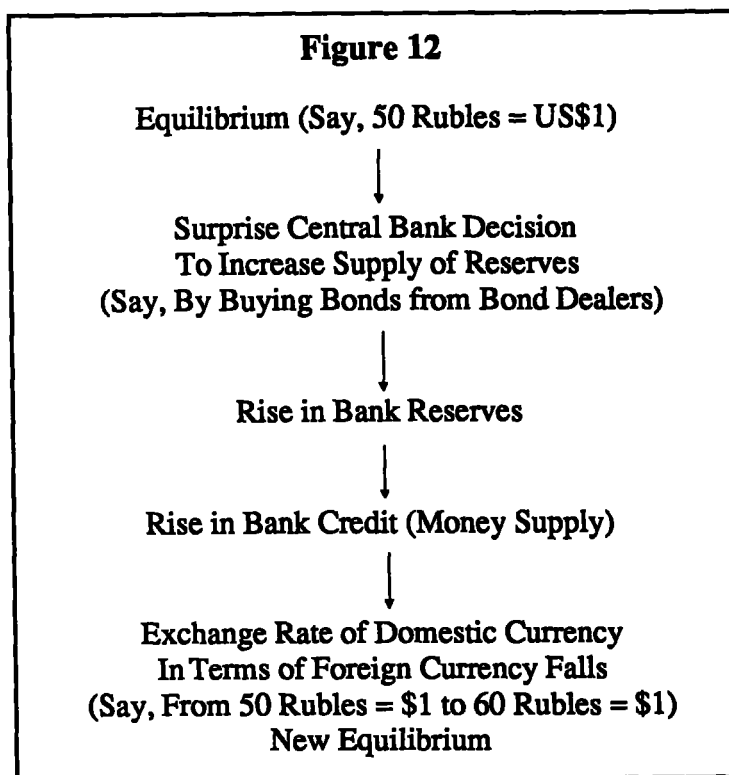
The essential difference between a currency board and a central bank is that a central bank does *not* work automatically. A central bank has discretionary power to influence the supply of money, and it not necessarily guided by considerations of monetary profit and loss. A currency board system is by nature a fixed exchange rate monetary system, while central banking is not. As we shall explain in the next chapter, the nature of central banking tends to drive central banking systems off of fixed exchange rates to floating exchange rates. Consequently, in this chapter, we compare a currency board to a floating-rate central bank, not to a central bank that maintains a fixed rate.

Central banks typically perform many other functions besides influencing the supply of money. They regulate commercial banks, serve as lenders of last resort to the banking system, give economic advice to the government, and clear checks. However, all these are secondary to their role in influencing the money supply. Only central banks control the supply of reserves in the banking system, whereas other government bodies can and do often perform the remaining central banking functions. For instance, in the United States, the Federal Reserve System shares regulatory powers with the Treasury Department, lender-of-last-resort powers with government deposit insurance agencies, economic advising powers with several other government bodies, and check clearing with commercial banks. We shall focus only on how central banks influence the money supply, so that we can contrast it with currency boards' role in the money supply process.

In a currency board system, the starting point in the chain of events in our example of a money supply *expansion* was a fall in the demand for imported goods in the currency board country. Changes in demand for imported goods originate in the market, as a result of changes in people's wants. In a central banking system, the starting point is a decision by the central bank to expand the supply of bank reserves. That is a *not* a decision that originates in the market. Indeed, the central bank can decide to act oppositely to what would happen under a currency board system.

Diagrammatically, the chain of events in the case of a surprise<sup>8</sup> money supply expansion under central banking looks like Figure 12.

To bring out more clearly the contrast with a currency board system, the diagram omits consideration of the effects of various lags. It assumes that nominal prices adjust very quickly, leaving real prices unchanged. The only effect



8 We consider only the case of surprise to avoid complications concerning expectations.

of the central bank's decision is a fall in the exchange rate. Under the more realistic assumption that some nominal prices do not change quickly, the central bank's action has real effects on the economy. Indeed, that is the purpose of discretionary central bank policy under floating exchange rates. In the sequence above, the likely effect of the central bank's action would be to lower the prices of domestic goods compared to foreign goods, causing a temporary export boom.

The public's T account looks the same in a central banking system as it does in a currency board system. However, the T account of the currency board (see Figure 13) looks different than the central bank's T account (Figure 14).

**Figure 13**  
**CURRENCY BOARD**

Assets	Liabilities
Foreign-currency securities	Notes and coins Net worth

**Figure 14**  
**CENTRAL BANK**

Assets	Liabilities
Foreign-currency securities Domestic securities	Notes and coins Deposits of commercial banks Net worth

In addition to holding foreign-currency-denominated securities as assets, as a currency board does, a central bank can also hold domestic-currency-denominated securities. In fact, many central banks, including those of the United States, Japan, and Germany, hold far more domestic securities than foreign securities. It is hypothetically possible for a central bank that does not intervene in foreign exchange markets to hold no foreign securities at all. Besides notes and coins and net worth, a central bank's liabilities also include deposits that commercial banks hold with it. Unlike currency boards, central banks accept deposits. Those deposits count as *reserves* for the commercial banks.

Commercial banks' T accounts in a currency board system are this:

**Figure 15**  
**COMMERCIAL BANKS—CURRENCY BOARD SYSTEM**

Assets	Liabilities
Currency board notes & coins (reserves) Loans and investments	Public's deposits Stockholders' equity

In a central banking system, the commercial banks' T accounts are this:

**Figure 16**

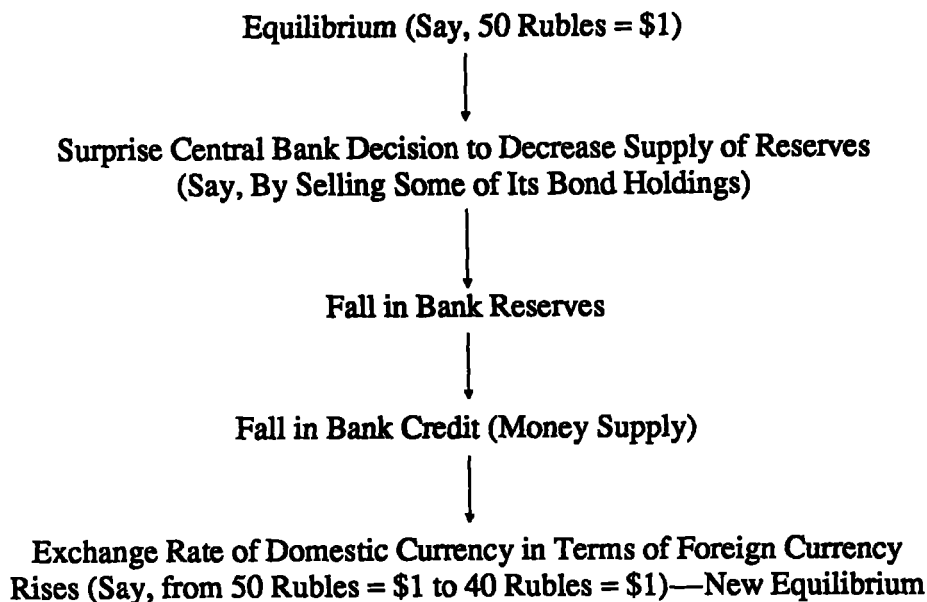
**COMMERCIAL BANKS—CENTRAL BANKING SYSTEM**

Assets	Liabilities
Central bank notes & coins (reserves)	Public's deposits
Deposits at central bank (reserves)	Stockholders' equity
Loans and investments	

Compared to the currency board system, there is the additional element of deposits at the central bank. However, in terms of T accounts, there is no important difference between (1) a balance-of-payments surplus for a fixed exchange rate, currency board system and (2) an increase in the supply of central bank credit for a floating exchange rate. (To understand why there is no important difference, imagine that the central bank does not have any commercial bank deposits, and that commercial banks hold all their reserves in the form of central bank notes and coins.) The wider implications for the economy, however, are extremely significant, as the next section will show.

The chain of events in the case of a money supply contraction under central banking looks like this :

**Figure 17**



Again, the diagram omits consideration of lags, and assumes that nominal prices adjust very quickly, leaving real prices unchanged. The only effect of the central bank's decision is a rise in the exchange rate. If some nominal prices do not change quickly, though, the likely effect of the central bank's actions will be a rise in the prices of domestic goods compared to foreign goods, causing a drop in exports.



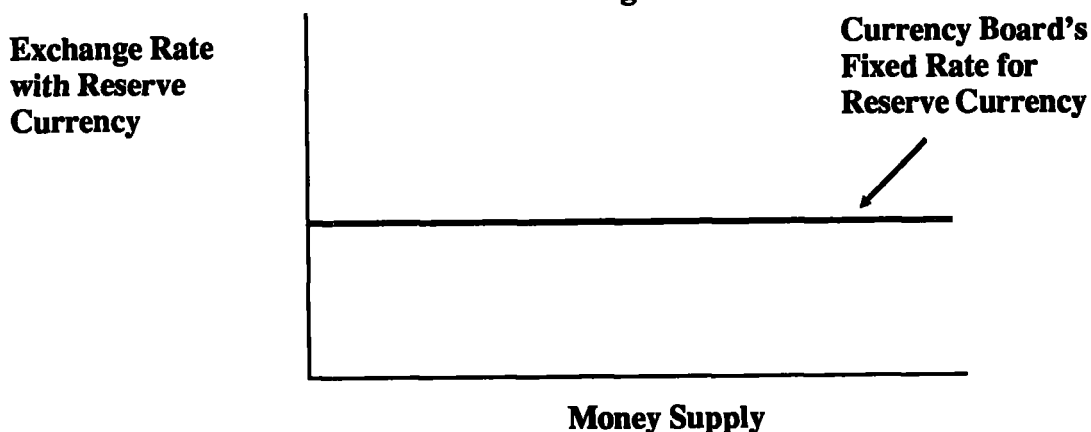
## CHAPTER 5

### ADVANTAGES OF A CURRENCY BOARD OVER A CENTRAL BANK

The key difference between a currency board system and a central banking system is that a currency board has no power to carry out a discretionary monetary policy. Two forces “pin down” the board’s action: a fixed exchange rate with a foreign reserve currency and a fixed (100 percent or more) reserve ratio. The board does not vary the exchange rate, nor does it alter the supply of bank reserves independently of changes in the balance of payments or in other market forces.

Diagrammatically, the range of values that the supply of reserves (and hence the broader money supply) can have in a currency board system is as in Figure 18. Note that a board’s supply function for its domestic currency issue is totally elastic at the fixed exchange rate. Hence, the quantity of the domestic currency in circulation will depend strictly on the demand for that currency.

Figure 18



The money supply picture also is as in Figure 18 when a central bank adheres to a fixed exchange rate. However, as we shall explain below, the nature of central banking tends to make central banks abandon fixed exchange rates in favor of floating exchange rates. In a floating exchange rate central banking system, *any* combination of the nominal exchange rate and the nominal quantity of money is potentially possible. That is so because, as the T accounts in the previous section illustrated, the central bank’s liabilities count as reserves for commercial banks. Commercial bank deposit credit expands or contracts as reserves expand or contract. In the examples in the previous section, which assumed that commercial banks desired a 50:1 ratio of deposits to reserves, their deposits changed by 50 rubles for each ruble that their reserves changed in the same direction. In a floating exchange rate system, the central bank does not pledge itself to maintain any particular exchange rate between a foreign currency (or gold) and its own currency. Potentially, the central bank can make the supply of commercial bank reserves whatever it wishes. Therefore, if the public wishes to hold a constant amount of bank deposits and central bank notes and coins, when adjusted for inflation or deflation, the exchange rate must adjust to keep the real supply of money constant. In a currency board system, in contrast, the exchange rate is fixed.

In our judgment and in the judgment of many other economists who have studied the question, a fixed exchange rate is better than a floating exchange rate for a developing country. A fixed exchange rate costlessly eliminates exchange rate risk with the reserve currency. Trade between the currency board

country and the reserve-currency country becomes easier than under floating rates because there is no need to allow for a risk premium in goods prices. People can make more exact price calculations for internationally traded goods. That enhances economic efficiency by making the lowest-cost producers within the common currency area those with the greatest natural advantages, not those temporarily benefiting from the distortions to the international price structure that large, sudden exchange rate fluctuations cause. A fixed exchange rate also enables entrepreneurs to apply to other problems talent that, in a floating rate system, they would apply to currency speculation.

Eliminating exchange rate risk also encourages foreign investment, particularly from the reserve-currency country. Investors know with certainty what exchange rate they will receive in terms of the reserve currency if they should want to repatriate profits in the future. By making it easy for them to exit the market, a fixed exchange rate is more likely than a floating rate to encourage them to enter the market. Under the currency board system, British colonies were very successful at attracting British capital to foster their economic development. Fixed exchange rates with the pound sterling and laws resembling those of Britain made investments in Kenya as secure as investments in the English county of Kent. British colonial banks aided the transfer of capital by linking London financial markets to their branch banking networks in the colonies. The colonial banks also helped speed economic growth by transferring the sophisticated banking techniques developed in Britain to areas where it otherwise would have taken generations to develop local banking expertise to such a pitch without outside help. Today many former British colonies, having discarded the currency board system, nationalized British banks, and reduced property rights, find themselves shut out of international capital markets.

Another advantage of a fixed exchange rate is that it enables the country that sets the fixed rate to “piggyback” on the reserve country’s financial markets. The currency of the country that sets the fixed rate is essentially a denomination of the reserve country’s currency. Accordingly, entrepreneurs in the country that sets the fixed rate can take their cues from the highly liquid, well-established markets in the reserve-currency country. Entering the reserve currency country’s markets directly becomes extremely easy. Financial markets in the United States or Western Europe offer facilities for interest-rate hedging, foreign exchange swaps, and many other transactions that will not be available on a similar scale in Eastern Europe for many years. Ready access to large foreign financial markets, with no foreign-exchange risk, speeds economic growth. Hong Kong, for instance, attracted enormous investment first from Britain and then from the United States because the Hong Kong dollar was linked to the pound sterling (and, under the Bretton Woods system, to the U.S. dollar indirectly), and since 1983 to the U.S. dollar.

Finally, a fixed exchange rate, if credible, becomes a feature of the economic landscape and ceases to be a subject of political contention. In particular, it enables the economy to avoid the vicious cycle of inflationary wage and price increases causing pressure on the central bank to depreciate the currency as a way of keeping wages internationally competitive. The cycle leads to a new round of wage increases as workers demand more money to keep pace with the price increases for imported goods, which depreciation was to blame for in the first place. In many developing nations today, the knowledge that the central bank will bow to pressure to depreciate the currency induces the vicious cycle of hyperinflation. A fixed exchange rate enforced by a currency board, on the other hand, is supremely credible. No currency board has ever abandoned its fixed exchange rate unless actually overrun by an enemy army. Even then, since currency boards held their assets abroad, they were able to shelter their assets; the problem was with their notes and coins, which invading armies usually tried to replace with inflationary occupation currency. A currency board stops hyperinflation cold because workers and employers know that if they want to stay in business, wages and prices must be competitive from the start. Since a currency board always has reserves of at least 100 percent in assets that it can readily liquidate, it is always able to defend the fixed exchange rate.

It is, of course, possible to *have* a central bank that offers a fixed exchange rate with a foreign currency. However, historical experience shows that it is not easy to *maintain* a fixed exchange rate in a central banking system. Central banks have a strong tendency to break their promises to maintain fixed exchange rates. Central bank incentives are such that, at least in the short run, central banks benefit more by breaking promises than by keeping them. There is an inherent conflict between a central bank's power to create or withdraw commercial bank reserves at will and a fixed exchange rate rule.<sup>9</sup> There is no such thing as a completely rule-bound central bank.<sup>10</sup> In the end, discretionary power has almost always overcome attempts to confine central bank policies with monetary rules.

The only central bank we are aware of that did not abandon the gold standard or impose capital controls during the Great Depression was that of Albania. More recently, the Bretton Woods system collapsed because the U.S. Federal Reserve and other central banks followed excessively expansionary monetary policies. The history of the two central banks for former French colonies in central and western Africa also illustrates the difficulty that central banks have in maintaining fixed exchange rates. The reason that the two multinational central banks exist, rather than each country having its own central bank, is to maintain a fixed exchange rate between the CFA franc and the French franc. These central banks have several times gone below their minimum statutory reserve ratio, which requires them to have French franc reserves of at least 25 percent of total liabilities. They have been able to maintain the fixed exchange rate with the French franc only because the French treasury has replenished their reserves at French taxpayer expense.

The history of former currency board countries also offers evidence of the natural tendency of central banks to break fixed exchange rates. For instance, the countries that formerly belonged to the East African and West African currency boards—Kenya, Uganda, Tanzania, Somalia, Yemen, Nigeria, Ghana, Gambia, and Sierra Leone—have all broken their fixed exchange rates, imposed capital controls, and had higher average rates of inflation than Britain (their former reserve-currency country) since they left the currency board system. From 1974 to 1983, Hong Kong abandoned the currency board system and experimented with a "free issue" system, an unusual arrangement that had neither a fixed exchange rate nor a monetary authority. Hong Kong returned to the currency board system in 1983 and since has experienced much more stable monetary growth rates and lower inflation than during the free issue period.

In short, then, a currency board is an almost foolproof institution because it cannot act as an independent disturbing element in the economy. Market forces call the currency board's tune. In contrast, a central bank has the power to destabilize the economy, and the history of central banks shows that they have often used that power, sometimes intentionally, but other times by mistake. A central bank run by saints, as long as they were not all-knowing saints, would still not work as well as a currency board system.



---

9 Economists have dubbed this problem "time consistency." See Kydland and Prescott 1977.

10 A central bank that maintains a fixed exchange rate with gold or a foreign currency and that keeps 100 percent gold or foreign-exchange reserve requirement for its note issue is not like a currency board, because it retains discretionary control of its deposit liabilities. Nor is a central bank like Argentina's at present a currency board. Argentina's central bank maintains a pegged exchange rate between its currency and the U.S. dollar, and it holds close to 100 percent reserves in dollar-denominated assets, but its commitment to the pegged rate is doubtful. Its history does not inspire confidence, which is why interest rates in local currency are about twice as high as rates in dollars.

## CHAPTER 6

### HOW TO ESTABLISH A CURRENCY BOARD

As past experience with currency boards in places as diverse as North Russia, Palestine, Danzig, and the Philippines indicates, it is fairly simple to replace a central bank with a currency board. Central bank functions that do not directly concern influencing the supply of money can be delegated to other government departments or to commercial banks. The central bank's deposit-creating powers can be abolished, its deposit liabilities can be separated from its note and coin liabilities, and then it can be converted into a currency board, issuing only notes and coins. We now present two step-by-step plans for establishing a currency board. The first assumes that a nation is replacing its central bank with a currency board. The second assumes that the central bank will continue to exist, and that the currency board will issue a parallel currency that has equivalent legal tender status with the central bank currency. The two currencies will not have a fixed exchange rate, though, unless the central bank also decides to peg its currency to the same reserve currency that the currency board uses.

If a nation replaces its central bank with a currency board, the steps are:

**(1) Delegate to other bodies all central banking functions that do not directly concern influencing the supply of money.** For instance, the finance ministry can take over the job of regulating bank practices and giving advice on monetary affairs. Commercial banks themselves can take over the cheque clearing system, as they do in Canada, where clearing is more efficient than in the largely government-run American clearing system. Commercial banks can also provide mutual deposit insurance protection, as they do in Germany and Switzerland.

**(2) Abolish the central bank's power to create credit.** This involves freezing the central bank's over-all deposit credits (although not necessarily each individual credit) at existing levels. It is possible for a government to run a budget deficit under a currency board system; the North Russian government did so, for instance. However, in a currency board system, the government cannot finance itself by inflation. If it runs a deficit, it must cut spending, borrow from the public, or raise taxes to close the gap. Government-owned banks or other enterprises that make losses must be sold, declared bankrupt, or subsidized out of tax revenue. Hence, a currency board system imposes a "hard budget constraint" on government finances.

**(3) Separate the central bank's commercial banking functions, if any, from its currency issue functions.** In Western banking systems, there is a sharp distinction between central banking and commercial banking. Central banks do not generally take deposits from or lend directly to the public. Corresponding to the distinction between central banking and commercial banking is a distinction between central bank-issued currency (which count as reserve assets for banks) and loans (which are assets, but are not reserves). In some East European nations, for instance Albania, there is no real distinction between reserves and other assets, because a single bank both issues currency and handles most commercial banking functions. The commercial banking functions should be spun off into one or more commercial banks independent of the central bank's currency issue department.

**(4) Make sure that commercial banks' existing reserves are adequate.** For nations whose banking systems lack the distinction between currency and other commercial bank assets, it will be necessary to give adequate reserves to the commercial banks created out of the central bank. Banks hold these reserves to guard against deficits in clearing with other banks, a need that exists whether or not legal re-



serve requirements exist. Once this step is completed, the commercial banks created out of the central bank should no longer be allowed to borrow from the central bank.

None of the British colonies and few of the other currency board systems of the past required banks to hold any particular minimum legal reserve. They left it up to banks to decide what reserve level was best. A currency board system does not need legal reserve requirements to work, and it would be unwise to impose such requirements.

After subtracting for legally required reserves, average reserves in Western banking systems rarely exceed 5 percent of deposit liabilities. In Eastern Europe and the USSR, higher reserves will probably be necessary because the condition of banking technology is primitive. We suggest 10 percent reserves as a rough guideline. Many banking systems in the region are in effect bankrupt because of years of mismanagement, and it will be necessary to restructure them. In the meantime, it is vital to commerce that the government not completely freeze bank deposits, because that would deprive firms of the most ready means for paying each other. Giving banks 10 percent reserves would allow them to allow deposit holders partial use of deposits.

An opposite type of problem can arise where the commercial banks are solvent. If legal reserve requirements are abolished in connection with instituting a currency board system, and all central bank notes and deposits are converted into currency board notes, there will be a one-time jump in bank credit. The jump may be quite large and may cause a big rise in prices. For instance, if the legal reserve requirement is 10 percent of liabilities, and commercial banks hold 20 percent reserves, their usable reserves are only 10 percent of liabilities. Assuming that 10 percent is their desired level of reserves, abolishing the reserve requirements would allow banks to grant twice as much credit as before ( $20\%/10\% = 2$ ), other things being equal. To avoid such problems, the government can neutralize ("sterilize") the legal reserves or some of the central bank notes; in other words, convert them into something other than reserves. They could be converted into government bonds, or even extinguished altogether.

**(5) Convert all remaining commercial bank reserves into currency board notes and coins or into foreign assets, as the commercial banks prefer.** With this step, the central bank's deposit liabilities will cease to exist.

**(6) Fix an exchange rate.** After the central bank's deposit liabilities cease to exist, all that remain of the central bank will be its note and coins issue and net worth (as liabilities), and its foreign exchange holdings (as its main assets). Its other assets and liabilities will have been given to commercial banks or the government, or will have been extinguished. The central bank should be given all government-owned foreign exchange that is not distributed to the commercial banks in step (4).

To convert what remains of the central bank into a currency board, the government must now fix an exchange rate with a reserve currency and, simultaneously, make sure that the foreign currency reserves for the note and coins issue equal 100 percent.

The exchange rate between the foreign reserve currency and the domestic currency must be appropriate. A rate that is too high will price exports out of world markets. A rate that is too low will make imports very expensive, inhibiting the ability of domestic industry to buy foreign capital goods for modernization. The best indication of an appropriate exchange rate is the free-market rate, which reflects unconstrained forces of supply and demand. Accordingly, if the economic situation permits some breathing room, the first step in *fixing* an exchange rate for economies in developing countries is to let exchange rates *float* for a time. At present, it is impossible to determine the equilibrium level of exchange rates because there are laws constraining supply and (especially) demand. To reveal the true supply and demand, foreign exchange rates should be unified and all foreign-exchange restrictions, including capi-

tal controls, should be removed. East European nations are already moving in that direction, but none has completely removed all foreign-exchange restrictions, and some, including the Soviet Union, have multiple exchange rates. Market forces will most accurately reveal themselves if foreign trade is also liberalized when exchange restrictions are removed. Interest-rate ceilings should also be abolished by this point.

At the time that exchange rates are allowed to float, the government should announce which foreign currency it intends to establish as the reserve currency and on what date it will fix the exchange rate. The logical choices for a reserve currency are the U.S. dollar or the German mark, the most widely used unofficial currencies and the most widely used currencies in international trade. The European Currency Unit (ECU) may also be worthy of consideration.

During the period of floating, the government can continue to deal in the foreign-exchange market, but it should not try to influence the market, which would defeat the float's purpose of revealing the free-market exchange rate. It could deal in foreign exchange passively at some suitable spread around the market rate. When the date to fix the exchange rate arrives, the government should fix the rate somewhere within the range of recent trading rates. Rate fixing is an art rather than a science, and it is best to err by making the rate too low (too cheap in terms of the reserve currency) rather than too high. It is better to start with a rate that produces a high balance-of-payments surplus than one that produces a balance-of-payments deficit crisis. (Of course, there is nothing wrong with running a balance-of-payments deficit if it is the result of a surge in foreign investment. What a nation wants to avoid is a situation where it not obtaining enough foreign exchange to pay its foreign-currency debts.) There is some latitude in setting an exchange rate, though, as other countries' experience with exchange-rate fixing shows. As long as the rate is approximately correct and people are confident that the government is committed to it, the economy will make minor adjustments towards equilibrium quickly.

Where drastic currency reform is necessary today rather than a few days or weeks from now, the exchange rate can be set at the existing black-market rate, or an average of commodity exchange rates, if the commodity rates are even less favorable to the domestic currency.

**(7) Ensure that foreign currency reserves equal 100 percent of note and coin circulation.** The currency board should begin with foreign currency reserves equal to 100 percent of its note and coin circulation. Allowing the board to operate with fractional reserves opens the way to discretionary monetary policy, like a central bank. The purpose of a currency board is to make monetary policy completely rule-bound. Having 100 percent reserves from the start is vital to ensuring the currency board's credibility as a politically independent body with no discretionary monetary policy.

The first source of foreign currency reserves are the existing reserves of the central bank and the government. If they are less than 100 percent of notes and coin circulation, the government could increase the reserve ratio by selling seized Communist Party property for domestic currency and not reissuing the currency or, equivalently, selling the property for foreign currency. If reserves are still less than 100 percent, it will be necessary to borrow the difference. It should be easy to borrow from international agencies, foreign central banks, or foreign commercial banks, because the board will be able to repay loans as long as it can either lend at higher interest rates than it borrows or has large enough unborrowed reserves. Even if the currency board has to pay a higher interest rate than it receives on its reserve assets, its unborrowed reserves will yield interest that it can use to pay the interest on its borrowed reserves. For instance, if the board has to borrow 50 percent of its reserves, has to pay interest of 8 percent, receives interest of only 7 percent, and has expenses of 1 percent of total reserves (borrowed plus unborrowed), its profits will be  $7\% - (50\% \times 8\%) - 1\% = 2\%$ , which leaves funds to pay the principal on the borrowed reserves.

Using present black-market exchange rates as the basis for calculation, the amount of reserve currency necessary for a currency board system ranges from about \$70 million in Albania to perhaps \$6 billion for Poland and the USSR. We assume 100 percent reserves for a currency board plus 10 percent reserves for commercial bank deposits. The real value of the domestic money supply is so small in Eastern Europe and the USSR because of inflation-driven currency depreciation.

Some economists have claimed that currency boards in Eastern Europe and the USSR would need reserves many times greater than our estimates. They wish to base exchange rates on their estimates of purchasing power parity rather than on actual market rates. For instance, one current (December 1991) estimate places the ruble's purchasing power parity at 8 rubles=\$1, versus a market rate of 100 rubles=\$1.<sup>11</sup> However, if Eastern Europe and the USSR are serious about establishing market economies, it is absurd to second-guess market exchange rates as a basis for setting a fixed rate, and it is especially absurd to second-guess market exchange rates by a factor of 10 or more. Purchasing power parity is a notoriously slippery, difficult to measure theoretical construct; market exchange rates are readily observable, actually existing magnitudes.

**(8) Transfer the commercial bank's remaining assets and liabilities to the new currency board and open the board for business.** At the moment that the government fixes the exchange rate with the reserve currency, the central bank should officially become a currency board. By then the central bank will have none of its other former functions, so all that remains is to bring into force a statute detailing its functions and responsibilities. Annex I below is a model statute based on typical features of past currency boards in Hong Kong, British West Africa, Burma, Libya, and elsewhere.

The alternative to replacing the central bank with a currency board is to establish a currency board as the issuer of a parallel currency. It may be more politically feasible to establish a parallel currency than to directly threaten the entrenched interests that favor keeping the central bank. In a parallel-currency system, the central bank can continue to function with its existing staff and its existing assets; nothing need be taken away from it to give to the currency board. The two currencies will not have a fixed exchange rate, though, unless the central bank also decides to peg its currency to the same reserve currency that the currency board uses. The currency board's notes and coins should be given equivalent legal tender status with those of the central bank. A parallel currency will give the central bank the choice of ceasing to depreciate its currency or withering away as people switch to using the currency board's currency. Contrary to what one might expect, government revenue from seigniorage under a parallel currency system might well *increase*. A currency board would give East European nations the chance to capture some seigniorage that it is now losing to foreign central banks that issue hard currencies.

How can the currency board get started in such circumstances, though? There must be an incentive for people to exchange their foreign currency for the board's currency. The solution is to offer a small premium on foreign currency for a short period during which the board exchanges its currency for foreign currency, but not the reverse. For instance, after announcing a choice of reserve currency and an exchange rate with that currency, during a one-week period the board can offer to pay a premium of 2 percent on all hard currency offered to it by citizens of that country. (It could accept other hard currencies besides the reserve currency, then exchange them for reserve-currency assets.) To prevent arbitrageurs from using its offer for pure speculative gain, the board could announce that it retains the right to revoke the premium at its discretion. After the offer expires, the board would cease paying a premium and

---

11 *The Wall Street Journal*, December 6, 1991, p. A9; cf. Williamson 1991, p. 428.

would also be open to make exchanges from its currency into the reserve currency. As long as there is some confidence in the board, it will easily be able to recoup the expense of the premium within a short time, from the interest it earns on reserve-currency assets. The board should secure a loan starts to make sure that its reserves are 100 percent of liabilities from the start, but soon its interest income will enable it to repay the loan. Because the board is a separate body from the central bank, and because it keeps 100 percent reserve-currency assets, it should enjoy greater public confidence than typical past parallel-currency reforms, where the central bank has issued both currencies. The next two sections offer suggestions for further measures to ensure that the board remains worthy of public confidence.

A special type of parallel issue may occur in former Soviet republics that chose to establish currency boards. To smooth the transition from the ruble to a new currency, and to preserve trade links with other former Soviet republics, they may wish to introduce their currency alongside the ruble, which is a foreign currency for them. They could proceed according to the plan we just sketched for a parallel currency, which assumes that the currency board has no hard-currency reserves at the start. Alternatively, if they do have hard currency reserves (as the Baltic states now do), they could establish a fixed rate with a reserve currency and bring the new currency into circulation by distributing it free to the population. Each person or household could receive new currency according to some formula. The currency board should not distribute more currency than the value of its hard-currency reserves.

The new currency will have a floating exchange rate against the ruble. People should be permitted to exchange one currency for the other without restrictions. Allowing unhindered exchange will enable people who want the new currency to acquire it, if they are willing to pay the market exchange rate. The two currencies will circulate side by side for awhile. Prices will be quoted and payments will be made in either currency depending on the parties involved. People will keep bank accounts in the new currency and in rubles. (There should be a legal separation between deposits and loans made after the monetary reform and those made before it, so that the ruble liabilities that banks acquired under socialism do not become claims against new local-currency assets in bankruptcy settlements.) If the ruble continues to depreciate, the voluntary activity of market participants will probably drive it out of circulation because it will be inferior to the new currency. There is no need for the government to speed or slow the transition artificially. However, it would be prudent for the government not to accept rubles in payment of taxes should the ruble continue to be an unstable, inconvertible currency.



## CHAPTER 7

### HOW TO OPERATE A CURRENCY BOARD

A currency board is simple to operate. Past currency boards have usually had staffs of 10 or fewer people. They have been able to achieve economies of staff by contracting some clerical and investment functions to outside parties. We now describe how to run a currency board.

**Exchange policy:** The currency board's business is to stand ready to exchange its notes and coins on demand at a fixed rate into or from the reserve currency. It need not actually accept or pay reserve currency notes and coins. Indeed, to hold a large stock of reserve currency notes and coins would reduce its profits, because the board would not be able to invest those funds in interest-bearing securities. Hence, the currency board should not serve as a supplier of reserve currency notes to the public. It should leave that to the commercial banks. It should accept and pay in the reserve currency only by check or by electronic funds transfer.

**Clientele:** The public as well as banks should be able to deal directly with the currency board. Some British colonial currency boards dealt only with banks, as a way of reducing their need for staff. However, it seems unnecessary and unjust to discriminate against the public in that way. Most people will exchange currency through banks in any case. That was the experience of the West African Currency Board when it switched from dealing with banks only to dealing with the public also. Accepting transactions from the public introduces a form of competition with banks, and ensures that their fees for exchanging into the reserve currency will be low, thus making the link between the two currencies tighter.

**Lower and upper limits to exchanges:** To reduce their handling costs, many currency boards did not exchange sums below a certain minimum. For British colonial currency boards, the limit was usually £1,000 for small boards such as those of Jamaica and Barbados or £10,000 for larger ones such as the West African Currency Board. The minimums prevented most members of the public from doing business with the currency board individually, which reduced the boards' need for clerks to handle transactions. However, the minimums were low enough not to be a significant barrier to banks that wanted to do business with the currency board, or to private foreign-exchange dealers. The public was still able to exchange small sums of currency board notes and coins for foreign currency through the banks.

There should be no upper limit to the amount of the reserve currency or of its own notes and coins in circulation that the currency board accepts for exchange. No past currency board has ever had an upper limit to exchanges, because that would defeat the full convertibility into and out of the reserve currency that is the purpose of the currency board system.

**Commissions:** Some currency boards have charged commissions of 1/8 percent to 1 percent for every transaction. (The North Russian board, for instance, charged a fee of 1 percent.) Other boards had a scale of commissions, and charged lower commissions or even zero commissions for large transactions. If, as we suggested, the board has a minimum for transactions, it should not charge any commission. Commissions would bring little income to the board. Furthermore, commissions loosen the link to the reserve currency, especially for swaps with short maturities, and they introduce the effects of floating rates, though only within a narrow range. A few boards, most notably the East African Currency Board towards the end of its existence, deliberately manipulated commission rates to influence exchange flows. Since the purpose of a currency board is to maintain a fixed exchange rate, thereby costlessly eliminating exchange-rate risk, there is no point in erecting barriers to switching between its currency and the re-

serve currency. The social benefits of not having commissions far outweigh the benefits to the board of having commissions.

**Offices:** The currency board should have a main office in the capital city (which is also the chief financial center in all East European countries), and perhaps branch offices or agents in other large cities. The main office will do most of the business, because it will be located where banks do the greatest volume of clearing. The role of the branch offices or agents will be mainly to serve as places for safekeeping currency. It is not necessary to have actual branches. Instead, a commercial bank could act as the currency board's agent, as the Bank of British West Africa did for the West African Currency Board.

**Management:** The currency board should have a small board of directors—a typical size for past currency boards was five directors—to oversee the board's managers. The powers of the board of directors and of the managers will be quite limited; they will have no influence over monetary policy like that of central bankers. To make the board of directors as independent from political pressures as it can be, directors should have staggered terms. Furthermore, a majority of directors should be foreign nationals, appointed by foreign private financial institutions. We will return to this proposal later.

**Staff:** The board's staff will perform two functions: exchanging notes and coins for the reserve currency, and investing its assets in high-grade securities denominated in the reserve currency. The exchange work will require only a small staff of bank tellers. The investment work will require some expert financial traders, but since the board will follow rather routine, conservative investment practices, its expenses should be smaller than those of commercial banks with portfolios of similar size. Where local expertise to manage the portfolio is lacking, the board could entrust the investment work to one or more suitable foreign banks, for instance, a major Swiss bank.

**Reserves—composition:** The board should hold its reserves in high-quality assets denominated in the reserve currency only.<sup>12</sup> It should not hold assets denominated in local currency, because that would open the way to central banking-type operations. Specifically, bank reserves could be changed by changing the proportion of local currency assets to foreign currency assets held by the board. Allowing the board to hold assets denominated in local currency was one of the steps that pushed the East African and Southern Rhodesia currency boards, among others, along the road to becoming full-fledged central banks.

Besides opening the way for central banking, holding local-currency assets can also be dangerous, as the experience of the North Russian currency board shows. The North Russian board had a policy of holding 25 percent of its reserves in local government bonds. When Bolshevik armies routed the North Russian government, it of course defaulted on its bonds. The British government, the main holder of notes, lost about 15.5 million rubles as a result. That all the board's assets should be denominated in the reserve currency does not mean that the board can only buy securities issued in the reserve-currency country. The huge growth in Eurocurrency markets in recent years has led many governments and companies to issue securities denominated in foreign currencies. To prevent the currency board from becoming entangled in the politics of domestic government finance, though, a board should not be allowed to hold domestic government securities.

**Reserves—maturities:** It may be desirable to specify in the currency board's charter or by-laws what types of assets it may invest in and what the maximum maturity may be. Likely candidates are the reserve country's government bonds, high-quality corporate commercial paper, and Eurocurrency loans.

---

12 We discuss a possible exception to this rule in the next chapter.

The average maturity of the board's investment portfolio should be short. Long-term fixed-rate bonds swing widely in value as interest rates change. Some of the British colonial currency boards that invested heavily in long-term bonds suffered large losses when pound sterling interest rates rose sharply during times of high inflation or speculation that Britain would devalue the pound sterling.

British colonial currency boards often divided their investments into a "liquid reserve" and an "investment reserve." The liquid reserve, consisting of securities that had maturities of less than two years, was typically about 30 percent of total reserves. The investment reserve, consisting of securities with longer maturities, was the rest of the total reserves, equivalent to an estimate of the public's minimum, "hard-core" demand for a board's notes and coins. Because interest rates and hence security values are more volatile today than they were during the heyday of currency boards in the first half of the century, the liquid reserves should probably be at least 30 percent today. Past currency boards had to hold securities with long maturities to obtain high interest rates. But since the collapse of the Bretton Woods monetary system, short-term securities also have paid high rates.

**Expenses:** Judging from the experience of past currency boards, expenses, excluding any loan repayments the board may have to make, should average no more than 1 percent of total assets, and may be as low on average as 0.5 percent of total assets. The main expense will be printing notes and minting coins. Salaries will be the next greatest expense, and rent, utilities, and remaining costs will be small.

**Profits:** The board's profits will be the difference between the interest it earns on its foreign currency reserve assets and its expenses, including repaying any loans it initially received. After the board repays any initial loans, it should accumulate a reserve of 10 percent to protect it against capital losses on securities holdings, as most British colonial boards did. It should pay all profits into the reserve until the reserve is full, and in the future do likewise should the reserve ever fall below 10 percent. All profits beyond that should revert to the board's owner.



## CHAPTER 8

### HOW TO PROTECT THE CURRENCY BOARD

Although the currency board system was a great economic success earlier in this century, currency boards exist today only in a few of the more than sixty places that once had them. The most notable examples of currency board systems today are Hong Kong and Singapore. The reason that boards elsewhere disappeared was that they lacked the political independence to prevent them from being changed into central banks. Suspicion that a new currency board might be reconverted into a central bank would undermine foreign willingness to invest in the country, defeating one of the main advantages of convertibility. Therefore, in this section we propose ways of preventing new currency boards from suffering the fate that befell most old boards. Our proposals can be summarized as *commitment*, *credibility*, and *competition*. They are complementary; any one could be implemented separately or along with the others.

The board can *commit* itself to buy and sell forward exchange at the fixed rate. Macau's central bank makes forward markets in the Macanese pataca against Macau's reserve currency, the Hong Kong dollar. Offering forward exchange increase the pataca's attractiveness relative to the Hong Kong dollar, which has much larger and more liquid private markets than the pataca in forward exchange against third currencies. A currency board could increase the attractiveness of its currency relative to the reserve currency by similar practices. (The board should limit its forward exchange transactions if inflation in the reserve currency country becomes high and a switch of reserve currencies becomes desirable, as we discuss below.)

The government can improve the board's *credibility* by insulating it from any possible attempts at government manipulation. One way to do so would be to have some of the currency board's board of directors be foreign nationals, chosen by institutions in their home countries, as we suggested above. For example, only three of the eight directors of the Libyan Currency Board were Libyan nationals; the rest were British, French, Italian, and Egyptian nationals chosen by their respective governments. A majority of directors for an East European currency board could be, for instance, top managers from large West European, American, or Japanese banks.

Another way of improving the board's *credibility* would be to incorporate it in a safe-haven country such as Switzerland, and to make clear that the board's assets belong to the board itself. The East African and West African boards actually had their headquarters in London for much of their existence. <sup>13</sup>

*Competition* will improve the currency board's incentive to maintain the fixed exchange rate. Forced-tender laws, which compel people to accept payment in local currency, should be abolished. People should be able to make contracts in and to use any currency that they find mutually agreeable. In particular, reserve currency notes and coins should be allowed to circulate alongside the currency board's notes and coins. The board's currency could be made interchangeable with the reserve currency by redenominating (*not* revaluing) the local currency so that the exchange rate is 1-to-1.

To subject the currency board itself to direct competition, banks could be allowed to issue circulating notes to compete with the board's notes. Like the board's notes, bank notes would be convertible into the reserve currency at the fixed exchange rate. Hence, the board's notes and bank notes would be like

---

13 The currency board could even be auctioned to the private sector, either for a fixed term or permanently. As Harold Demsetz (1968) has argued with respect to utilities, private sector bidders should be willing to pay just enough to exhaust any monopoly profits the board might accumulate.



different brands of traveller's checks circulating alongside one another. What brands were most widely used would depend on what brands best satisfied consumers' needs, as is now the case with traveller's checks.<sup>14</sup> There are many historical precedents for such an arrangement. In the British Caribbean colonies, banks issued notes not subject to any special reserve requirements. Bank notes competed with currency board notes until the 1950s, when local governments outlawed bank note issue to gain more seigniorage revenue for themselves. In Hong Kong today, the currency board itself issues no notes. Rather, it holds the 105 percent U.S. dollar reserves that the two note-issuing banks must deposit against their Hong Kong dollar note issues. In Scotland, three local banks issue notes against 100 percent reserves that they hold at the Bank of England. Going further back in time, over sixty countries had competitive note issue in the 19th early 20th centuries, with generally good results (Dowd [forthcoming]).

Besides their lack of complete political independence, past currency boards also had one other widespread flaw, which however did not first become apparent until the late 1940s. The flaw was that they had no systematic procedure for untying their own currency from the foreign reserve currency when the foreign reserve currency became unsatisfactory. British colonies devalued their currencies with the British pound sterling in 1949, 1967, and 1971, because their currency board systems were dedicated to maintaining fixed exchange rates with the pound. Devaluation hurt them by raising the cost of the foreign goods that they needed for their economic development, such as the food that Hong Kong imported from China. The British pound's chronic weakness led Hong Kong, Singapore, Brunei, and the East Caribbean Currency Board to switch from the pound to the U.S. dollar as their reserve currency in the 1970s.

There is nothing objectionable in itself about switching reserve currencies. In fact, it is a necessity if the reserve currency becomes too unstable, because otherwise the currency board country will suffer the reserve-currency country's monetary problems. If the board has the power to switch reserve currencies, though, the procedure should be carefully specified, rather than being a somewhat arbitrary government decision as was the case with the Hong Kong and other currency boards.

We suggest that, for example, the board not be allowed to change the reserve currency unless annualized inflation in the reserve-currency country, as measured by the wholesale price index, falls outside the range of -5 percent to 25 percent for more than two years, or -10 percent to 50 percent for more than six months. If inflation exceeds that range, the board must either devalue or revalue its currency in terms of the reserve currency by no more than the amount of the reserve country inflation rate for the period just specified (two years or six months), or choose a new, less volatile reserve currency and fix the exchange rate at the rate then prevailing between that currency and the original reserve currency. The board's profits and the 10 percent reserve that we have proposed it hold in addition to its 100 percent reserves will help cushion any losses from switching reserve currencies.

It may also be advisable to write a similar provision into the currency board's constitution allowing it to reset the exchange rate with the reserve currency if the reserve currency appreciates or depreciates too rapidly against a basket of foreign currencies representing other countries important in the currency board country's foreign trade, even if inflation rates in the reserve-currency country stay within acceptable limits. The general point we wish to stress here it is best to have predetermined procedures, known to the public, for handling such difficulties, rather than to respond to them in the rather capricious way that some past currency boards have done.



---

14 For an explanation of economic forces that govern competitive note issue, see Selgin 1988b.

## CHAPTER 9

### SUMMARY AND CONCLUSION

Currency boards are a tried and true method of ensuring convertibility into a foreign currency at a fixed rate. They have worked well in a wide range of countries, sometimes under conditions even more difficult than those that developing countries face today. They are simple to establish and to operate. They offer a shortcut through the problems that face a central bank trying to establish convertibility. Currency boards exist today in Hong Kong and Singapore, two of the highest-growth economies in the world since World War II. Developing nations would do well to introduce currency boards as part of their own strategy for achieving rapid economic growth. To summarize our earlier discussion of the steps for replacing a central bank with a currency board, they are:

- (1) Delegate to other bodies all central banking functions that do not directly concern influencing the supply of money.**
- (2) Abolish the central bank's power to create credit.**
- (3) Separate the central bank's commercial banking functions, if any, from its currency issue functions.**
- (4) Make sure that commercial banks' existing reserves are adequate.**
- (5) Convert all remaining commercial bank reserves into currency board notes and coins or into foreign assets, as the commercial banks prefer.**
- (6) Fix an exchange rate.**
- (7) Ensure that foreign currency reserves equal 100 percent of note and coin circulation.**
- (8) Transfer the central bank's remaining assets and liabilities to the new currency board and open the board for business.**

If instead the currency board comes into existence as a parallel issuer alongside the central bank, the steps are even simpler, to wit:

- (1) Announce a choice of reserve currency and exchange rate.**
- (2a) Offer a small premium for all foreign hard currency for a short period, during which the board only makes exchanges from foreign currency into its currency. Alternatively,**
- (2b) If the board has hard-currency reserves, distribute to the population currency board notes and coins equal in value to the reserves.**
- (3) Cease offering the premium and begin two-way exchange with the reserve currency only, at the fixed rate. The currency board currency will have a floating rate against the central bank currency.**

In addition to those procedures that are detailed in the model currency board law in Annex I, some important rules of thumb for operating a currency board are:

- (1) Expenses should average no more than 1 percent of total assets.**
- (2) Liquid reserves (securities with maturities of two years or less) should be 30 percent or more of the total.**
- (3) It may be necessary for the board to have branch offices or agents.**



## ANNEX I

### A MODEL CURRENCY BOARD LAW

The following model currency board law has many features that existed in the laws of boards in West Africa, Hong Kong, the British Caribbean, Libya, Burma, and elsewhere.

#### CURRENCY BOARD LAW

1. The [*name of country*] Currency Board is hereby created. The Currency Board's purpose is to issue notes and coins, and to maintain them at a fixed exchange rate as specified in paragraph 6.

2. The Currency Board shall have its legal seat in Switzerland.

3. a. The Currency Board shall be governed by a board of five directors. Two directors, including the chairman, shall be persons chosen by the government of [*name of country*]. One director shall be a German national chosen by the Deutsche Bank, one director shall be an American national chosen by the Morgan Guaranty Trust, and one director shall be a Japanese national chosen by the Dai-Ichi Kangyo Bank.

b. A quorum shall consist of four members of the board of directors, including the two chosen by the government of [*name of country*]. The board of directors may meet at the board's legal seat and such other locations as it designates. Decisions shall be by majority vote, except as specified in paragraph 15.

c. The first chairman and the first other member of the board of directors chosen by the government of [*name of country*] shall serve terms of five years and one year, respectively. The first German national shall serve a term of two years. The first American national shall serve a term of three years. The first Japanese national shall serve a term of four years. Later members of the board of directors shall serve terms of five years. They may not be re-elected. Should a director resign or die, the appropriate organization as specified in paragraph 1(a) shall choose a successor to fill the remainder of the term.

4. The board of directors shall have the power to hire and dismiss the Currency Board's staff, and to fix salaries for itself and for the staff.

5. The Currency Board shall assume responsibility for the notes and coins formerly issued by the central bank of [*name of country*].

6. The currency with which the fixed exchange rate is maintained is hereafter called the reserve currency. Initially, the reserve currency shall be the [*U.S. dollar, for instance*] and the fixed exchange rate shall be [*\$1 = 50 rubles, for instance*].

7. The Currency Board may set a minimum size for transactions, not to exceed 100,000 units of the reserve currency. It may adjust this size upwards in the same proportion as increases in the wholesale price index of the reserve-currency country. The Currency Board may not charge any commission for transactions of the minimum size or larger.

8. The Currency Board shall begin business with assets equal to at least 100 percent of its notes and coins in circulation. It shall hold these assets in investment-grade securities payable only in the reserve currency. The Currency Board shall not hold any securities issued by the national or local governments of [*name of country*], or in enterprises owned by those governments.

9. The Currency Board shall pay all net profits into a reserve fund until its unborrowed reserves equal 110 percent of its notes and coins in circulation. It shall remit all net profits beyond those necessary to maintain 110 percent reserves to the government of [*name of country*]. The distribution of profits shall occur annually.

10. The Currency Board's head office shall be at [*name of country's capital*]. The Currency Board may establish branches or appoint agents in such other cities as it sees fit.

11. The Currency Board shall publish a financial statement, attested by the directors, quarterly or more often. The statement shall appraise the Currency Board's securities holdings at their market value.

12. The Currency Board may issue notes and coins in such denominations as it sees fit.

13. Should the change in the wholesale price index in the reserve-currency country fall outside the range of -5 percent to 25 percent for more than two years, or -10 percent to 50 percent for more than six months, within 60 days the Currency Board must either:

a. Devalue (if the index's change is negative) or revalue (if the index's change is positive) its currency in terms of the reserve currency by no more than the amount of index's change over the period specified above, or

b. choose a new reserve currency and fix the exchange rate at the rate then prevailing between that currency and the original reserve currency.

14. If the Currency Board chooses to do 13(b), within one year it must convert all its reserve assets into securities payable in the new reserve currency.

15. The Currency Board may not be dissolved or its assets transferred to a successor organization except by unanimous vote of the board of directors.



## ANNEX II

### ALLEGED DISADVANTAGES OF CURRENCY BOARDS

In the 1950s and 1960s, certain economists claimed that currency boards had disadvantages compared to central banking. More recent theories have refuted or diminished the significance of their criticisms, but since no recent published refutation exists, we briefly consider the criticisms here.<sup>15</sup>

Critics claimed that the currency board system leaves no room for discretionary monetary policy, that it makes the money supply operate in a deflationary manner in a growing economy, and that the 100 per cent foreign-currency reserve requirement deprives a currency board economy of real resources that are available in a system with a fractional-reserve central bank.

The short reply to the claim a currency board allows no room for discretionary monetary policy is that it is true. The purpose of a currency board is to have an automatic monetary policy rather than a discretionary one. Economists are far more skeptical than they were in the 1950s and 1960s about the ability of discretionary monetary policy to influence economic growth favorably. The "rational expectations" school has alerted economists to the insight that whatever systematic policy central bankers can carry out, other people can anticipate and, by their profit-seeking activity, try to offset.

A related criticism of discretionary monetary policy, associated mainly with the "Austrian" school of economic thought, is that it is a form of central planning, subject to the same difficulties as, say, central planning of agricultural output. Central planning suppresses certain price signals that, in an unhampered market, would reveal information to those who know how to interpret them correctly. In the monetary system, the most important of such signals are changes to banks' reserves. Changes in the balance of payments or in the public's holdings of notes and coins set in motion the changes to bank reserves and, through them, to the money supply, interest rates, and income that we explained in the previous section. Discretionary policy, to be worthy of the name, must try to fight the economy's adjustment towards a new equilibrium. By doing so, however, it merely makes adjustment more prolonged and costly.<sup>16</sup>

The claim that the money supply operate in a deflationary manner in a growing currency board economy is correct under certain stringent assumptions, but has little practical significance. Under the assumptions about a currency board system that we discussed in Chapter 3 (see box, page 7), a rise in the demand to hold notes and coins requires a balance-of-payments surplus to produce the additional reserves to exchange with the currency board. As an economy grows, then, it must generate continual balance-of-payments surpluses for the supply of notes and coin to expand as quickly as the demand. Continual surpluses are unlikely, implying that in periods of balance or deficit, the supply of notes and coins grows more slowly than the demand, resulting in a fall in prices. The fall would not occur if the notes and coins were liabilities of a central bank committed to a fixed exchange rate, because it holds only fractional reserves. (The converse, which critics of currency boards never stated, is that in a declining currency board economy, money supply is *inflationary*.)

The simplifying assumptions rarely, if ever, hold. A growing economy in a poor country, such as most currency board countries have been, generally has large capital inflows that balance its current account

---

15 The best statements of criticisms are Analyst 1953, Hazelwood 1954, Nevin 1961 and Basu 1971. For refutations, see Greaves 1953 and especially Ow 1985.

16 Selgin 1988b makes this argument.

deficits. Furthermore, with international branch banking, banks are able to pool their reserves between the reserve-currency country and the currency board country, so that they may be able to offset much of the effect of balance-of-payments changes between the two countries (and, by extension, among all the countries where they have branches). An international bank's overall reserves are the same whether a given deposit is held by a customer in the reserve-currency country or by a customer in the currency board country.

Currency board economies seem to have had little experience of deflation caused by increases in the demand for notes and coins. The only example that we are aware of occurred in Hong Kong in early 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 gifts of money. 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.<sup>17</sup>

The final major criticism of the currency board system is that the 100 percent foreign-currency reserve requirement deprives a currency board economy of real resources that are available in a fractional-reserve system. Economists who investigated the matter in the 1950s claimed that 30 percent to 50 percent of currency boards' reserves were surplus, since there was an irreducible minimum of notes and coins that people held, which would never return to the boards for redemption. Surplus reserves, then, are a cost of the currency board system, since they could be used to buy imports, increasing the real goods available in the economy.

There is, first, a question whether these estimates are accurate.<sup>18</sup> Leaving that aside, though, let us consider the nature of the alleged cost. Once spent, surplus reserves are gone, and they yield no interest. Currency board reserves, on the other hand, pay interest because the board invests them in foreign-currency assets. The stream of future interest payments has a present-value equivalent. It is the difference between the surplus reserves and the present-value equivalent of the interest payments on them that is the true cost of a currency board system as compared to a fractional-reserve system. Alternatively, it is possible to calculate the interest on the surplus reserves that would be paid if they were lent domestically, and to compare that with the currency board's interest from foreign-currency assets. Only if the present value of the goods that could be imported is markedly greater than the present value of the currency board's interest income (that is, domestic interest rates are markedly higher than foreign interest rates for comparable loans) is the currency board system costlier than a fractional-reserve system.

Even so, the currency board system may well be less costly than fractional-reserve central banking if we take a broader view. The currency board system offers a degree of credibility and predictability that central banking has difficulty matching. Consequently, the currency board system is more likely than central banking to encourage investment, especially foreign investment, and to result in sustained economic growth.



---

17 Selgin 1988a.

18 See Birnbaum 1957.

## BIBLIOGRAPHY

- "Analyst." 1953. "Currency and Banking in Jamaica." *Social and Economic Studies*, v. 1, pp. 41-53.
- Basu, S. K. 1971. *A Review of Current Banking Theory and Practice*. Calcutta: Macmillan.
- 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.
- Blowers, G. A., and McLeod, A. N. 1952. "Currency Unification in Libya." *International Monetary Fund Staff Papers*, v. 2, no. 3, Nov., pp. 439-67.
- Chalmers, Robert C. 1893. *A History of Currency in the British Colonies*. London: Eyre and Spottiswode for HMSO.
- Clauson, G. L. M. 1944. "The British Colonial Currency System." *Economic Journal*, v. 54, no. 213, April, pp. 1-25.
- Collyns, Charles. 1983. *Alternatives to the Central Bank in the Developing World*. Occasional paper no. 20. Washington: International Monetary Fund.
- Demsetz, Harold. 1968. "Why Regulate Utilities?" *Journal of Law and Economics*, v. 11, no. 1, April, pp. 55-65.
- Dowd, Kevin, ed. Forthcoming. *The Experience of Free Banking*. London: Routledge.
- Edo, Michael E. 1975. "Currency and Banking Legislation in the Arabian Peninsula." *International Monetary Fund Staff Papers*, v. 22, no. 2, July, pp. 510-38.
- Greaves, Ida C. 1953a. *Colonial Monetary Conditions*. London: HMSO.
- [Greenwood, John G.] 1981. "Time to Blow the Whistle." *Asian Monetary Monitor (Hong Kong)*, v. 5, no. 4, July-Aug., pp. 15-33.
- Greenwood, John G. 1983a. "How to Rescue the HK\$: Three Practical Proposals." *Asian Monetary Monitor (Hong Kong)*, v. 7, no. 5, Sept.-Oct., pp. 11-39.
- Greenwood, John G. 1983b. "The Stabilisation of the Hong Kong Dollar." *Asian Monetary Monitor (Hong Kong)*, v. 7, no. 6, Nov.-Dec., pp. 9-37.
- Greenwood, John G. 1984. "Why the HK\$/US\$ Linked Rate System Should Not Be Changed." *Asian Monetary Monitor (Hong Kong)*, v. 8, no. 6, Nov.-Dec.
- Greenwood, John G., and Gressel, Daniel L. 1988. "How to Tighten Up the Linked Rate Mechanism." *Asian Monetary Monitor (Hong Kong)*, v. 12, no. 1, Jan.-Feb., pp. 2-13.
- Gressel, Daniel. 1989. "Soviet Macroeconomic Imbalances During Perestroika." Unpublished manuscript, GT Capital Management, San Francisco.
- Hanke, Steve H., and Schuler, Kurt. 1990. "Keynes and Currency Reform: Some Lessons for Eastern Europe." *Journal of Economic Growth*, v. 4, no. 2, pp. 10-16.
- Hanke, Steve H., and Schuler, Kurt. 1991. "Ruble Reform: A Lesson from Keynes." *Cato Journal*, v.10, no. 3, pp. 655-66.
- Hanke, Steve, and Walters, Alan A. 1990. "Reform Begins with a Currency Board." *Financial Times*, February 21, p.17.

- Hanke, Steve H., and Walters, Alan A. 1991. *Capital Markets and Development*. San Francisco: Institute for Contemporary Studies Press.
- Hazlewood, Arthur. 1954b. "The Economics of Colonial Monetary Arrangements." *Social and Economic Studies*, v. 3, nos. 3-4, Dec., pp. 291-315.
- Hetzel, Robert. 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.
- International Monetary Fund. 1990. *International Financial Statistics Yearbook 1990*. Washington: International Monetary Fund.
- King, Frank H. H. 1957. *Money in British East Asia*. London: HMSO.
- Kratz, Joachim W. 1966. "The East African Currency Board." *International Monetary Fund Staff Papers*, v. 13, no. 2, July, pp. 229-55.
- 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. 473-92.
- Loynes, J. B. 1962. *The West African Currency Board 1912-1962*. London: West African Currency Board.
- Marx, Karl, and Friedrich Engels. (1848) 1948. *The Communist Manifesto*. New York: International Publishers.
- Nelson, William Evan. 1984. "The Imperial Administration of Currency and British Banking in the Straits Settlements, 1867-1908." Ph.D. dissertation, Duke University.
- Nevin, Edward. 1961. *Capital Funds in Underdeveloped Countries*. New York: St. Martin's Press.
- Newlyn, W. T., and Rowan, D. C. 1954. *Money and Banking in British Colonial Africa*. Oxford: Clarendon Press.
- Ow, Chwee Huay. 1985. "The Currency Board Monetary System—The Case of Singapore and Hong Kong." Ph.D. dissertation, The Johns Hopkins University.
- Selgin, George A. 1988a. "A Free Banking Approach to Reforming Hong Kong's Monetary System." *Asian Monetary Monitor (Hong Kong)*, v. 12, no. 1, Jan.-Feb., pp. 14-24.
- Selgin, George A. 1988b. *The Theory of Free Banking: Money Supply Under Competitive Note Issue*. Totowa, N.J.: Rowman and Littlefield.
- 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.
- Volcker, Paul. 1990. "The Role of Central Banks." In *Central Banking Issues in Emerging Market Economies: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*. Kansas City: Federal Reserve Bank of Kansas City.
- 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.
- Williamson, John, ed. 1991. *Currency Convertibility in Eastern Europe*. Washington, D.C.: Institute for International Economics.

