

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Competing Currencies: Back to the Future?

by Ben Craig

Sometimes, an emerging or rapidly changing currency experiences a period in which it competes with a second currency as a medium of exchange. The competing currencies are not like quarters and dollar bills, where the relative price is fixed, or like checks and dollar bills, where the unit of account is always the same. During an episode of dual currencies, prices are often denominated in each currency, and the relative price of an item fluctuates as the advantages offered by a particular currency change.

In Colonial America, wampum and silver competed for more than 100 years, until wampum "inflation" required a prohibitive number of beads to purchase even small household items. During the American Civil War, greenbacks and gold certificates were both used for many years without either currency becoming dominant. In modern-day Russia, U.S. dollars—not rubles—are used in many domestic transactions.

The outcomes of these three episodes are of more than historical interest. Although U.S. dollars in cash and checking accounts are still the primary means of conducting financial transactions in the United States, credit cards, "smart cards," and new electronic forms of money are expected to become increasingly competitive.

These episodes also offer a unique opportunity to study what is important about money in its use as a medium of exchange. Specifically, they allow us to focus on 1) the qualities of a commodity that enable it to become a dominant currency, 2) the route by which a nationally mandated paper currency becomes acceptable as a medium of exchange, and 3) the way in which competition between currencies sustains the exchange value of a fiat currency by restricting the actions available to the monetary authority. But first, it is necessary to look at what makes money valuable in exchange.

■ Why Money?

In a barter economy (without money), potential buyers of a particular good must search for potential sellers of a good they want. These potential sellers must, in turn, want the good offered by the buyer. Searching for this double coincidence of wants takes time, and time is costly.¹ The purpose of a non-commodity money in such an economy is to allow a trade to occur in those more common instances where only one of the traders has a good the other trader desires. If I, the seller of a good, believe that money will be acceptable to someone else who has a good that I desire, then I will be willing to accept money in trade for my good. Future acceptability is the key to whether I am willing to accept money in a current transaction.

Most financial transactions in the United States are still conducted using U.S. dollars in cash and checking accounts, but new technology has spawned an array of competitors, including credit cards, "smart cards," and e-cash. Although little theoretical evidence exists on the potential effects of this growing competition, historical evidence on currencies that have traded side by side—including wampum and silver, greenbacks and gold certificates, and rubles and dollars—could help guide monetary policy if electronic forms of money continue to gain ground.

Current acceptability of a currency depends on two conditions. First, there must be enough of it in the locality to sustain local transactions. Otherwise, the would-be buyer/seller would have to find a money trader, impairing the role of money in reducing search time. Second, the currency's future purchasing power (and acceptability) must not degrade too quickly. The American Colonial period offers a good example. During these years, many commodity currencies competed for the role of money, but because none of them satisfied both conditions, no one currency quickly won out.

■ Wampum and Silver

The Colonial period produced a wide variety of currencies that fluctuated freely in their relative prices and that were used extensively in domestic transactions. The international currencies of trade—silver and gold coin—were in short supply in the colonies. As a result, most exchanges occurred through barter, but substitutes for silver rapidly emerged.

Perhaps the most important of these substitutes in the earliest Colonial years, especially in New England, was wampum, the chief currency of the Northeast Woodland tribes. The standard unit of wampum was a string of shell beads made from a clam that flourished in eastern Long Island and Narragansett Bay. Massachusetts declared wampum legal tender in 1643. In New York, wampum remained legal tender until 1701, and on the frontier, it was used until the early 1800s. The monetary conditions of the time are illustrated in the following journal entry of a Boston schoolmistress, Madam Knight, who wrote from New Haven in 1704 (in the spelling of the original):

The traders ... Rate their Goods according to the time and spetia they pay in: viz Pay, mony, pay as mony, and trusting. Pay is Grain, Pork, Beef, etc. at the prices sett by the General Court that year; mony is pieces of Eight, Ryalls, or Boston or Bay shillings also Wampom, viz. Indian beads which serves for change....

Now, when the buyer comes to ask for a comodity, sometimes before the merchant answers that he has it, he says, is Your pay redy? Perhaps the Chap Reply's Yes: what do You pay in? say's the merchant. The buyer having answered, then the price is set; as suppose he wants a six-penny knife, in pay it is 12d — in pay as money eight pence, and hard money its own price, viz. 6d. It seems a very Intricate way of trade and what Lex Mercatoria [the English merchant law] had not thought of.²

Wampum production was limited during early Colonial times by the amount of labor required to make a shell bead under native techniques. With the introduction of European tools and manufacturing processes, production expanded drastically. The resulting wampum inflation—more than 50 strings of beads were required to purchase a single beaver fur by the late seventeenth century—reduced the commodity's value as a medium of exchange. As a result, its use in the colonies died out.³

A decline in the purchasing power of commodity monies also caused the demise of the commodity currencies used in other colonies. For example, tobacco, which was used as a medium of exchange in Virginia, fell rapidly in quality until it could no longer serve that purpose. As a medium of exchange, only the *quantity* of tobacco mattered, and thus Gresham's law—that bad money drives out good—caused more low-quality than high-quality tobacco to be produced. The resulting inflation reduced tobacco's use not only as a medium of exchange, but also as a commodity in a colony where it was the primary good produced.

"Fiat money" refers to that commodity (or token) declared by the government as acceptable in the settlement of claims and the payment of taxes. One reason for the popularity of fiat money is that its value becomes transparent to everyone.⁴ With commodity money, some people can recognize its intrinsic value (as opposed to its exchange value) better than others. When a participant in a trade

does not perceive the money's intrinsic value, he rationally assumes that it must be of the worst quality. The other trader thus has an incentive to make sure that the commodity is of the worst quality, since no benefit would derive from offering a better-quality good. Hence, bad commodity money drives out the good commodity.

The outcome of the competition between wampum and silver was not a foregone conclusion. Wampum was a more familiar currency on the frontier. Further, silver was not permitted to be coined in the colonies and could not be exported from England because of mercantile legislation. Foreign coins, scarce and unfamiliar on the frontier, were used, but traders found them difficult to evaluate.

In the case of wampum, new production technologies reduced its future acceptability as a medium of exchange. By contrast, technical limitations on the production of silver prevented an oversupply, which helped ensure its future acceptability. Moreover, coinage of silver added transparency of value. By 1800, enough familiar coins were available in the colonies to effectively drive out all of the other commodities used in domestic exchange.

■ Greenbacks and Gold

A second episode in our history when two currencies were traded side by side at changing prices was the Greenback Era of 1862–1879. Gold certificates, backed by the government's promise to pay in gold, competed with legal tender notes, which were backed only by an unspecified understanding that they might be fully convertible to gold at some future date.⁵

The first use of legal tender notes (greenbacks) in the United States, in April 1862, resulted from the enormous cost of the Civil War and from the federal government's inability to convert its currency to gold. Greenbacks were a debt of the U.S. government, redeemable in gold at a future unspecified date. The greenback experiment was an important innovation in money, as greenbacks were the first notes backed only by themselves.

**FIGURE 1 PRICE AND VOLATILITY OF GREENBACKS
(in gold)**



a. Defined as the difference between the high and low price over each year.

SOURCE: Wesley C. Mitchell, *Gold, Prices, and Wages under the Greenback Standard*. Berkeley: University of California Press, 1908.

They became the major medium of exchange during these years, partly because they were more common than gold.

The drawback of fiat paper money lies in the incentive provided by seigniorage, the revenue gained from its production (because the money's nominal value exceeds the cost of production). Since producers of money—whether counterfeiters or governments—collect seigniorage revenue, the temptation exists to inflate the currency and reduce its exchange value.

Inflation during the Greenback Era was controlled, in part, by congressional limits on the number of greenbacks in circulation and by the understanding that the currency would be made fully convertible to gold when the government could make the exchange. The price of the greenback in gold, the international currency of trade, was established in several large currency markets and was traded freely, usually without much government intervention.

Figure 1 shows the price of a greenback dollar (denominated in dollars backed by gold) on the dominant New York gold market. Although greenbacks initially sold for gold at a discount, reaching an average monthly low of 50 cents in April 1864, they appreciated strongly over the next few years and accounted for more than 75 percent of the total U.S. currency stock by 1867. Much of the remaining currency consisted of gold certificates. Both greenbacks and gold certificates were widely used in domestic exchange. Thus, prices were quoted in the two currencies until Congress legislated a phased convertibility, which was completed in 1879.

As the date of full convertibility became more certain, the price of the greenback behaved like an option price on convertibility.⁶ As is evident in figure 1, the volatility of the price diminished as market expectations concerning full convertibility in 1879 were fulfilled.

Convertibility to gold was the mechanism by which the U.S. government maintained the credibility of its promise

not to continue reaping seigniorage revenues by inflating the currency and reducing its value. The convertibility factor continued to be a useful source of credibility not only for the United States, but for many other countries as well. It was not dropped by our government until 1932.⁷

In the case of the Greenback Era, competition between the currencies was maintained for two reasons: there were more greenbacks than gold certificates in circulation (because the government lacked sufficient gold reserves), and people were willing to accept greenbacks because of the promise that they would be fully convertible to gold.

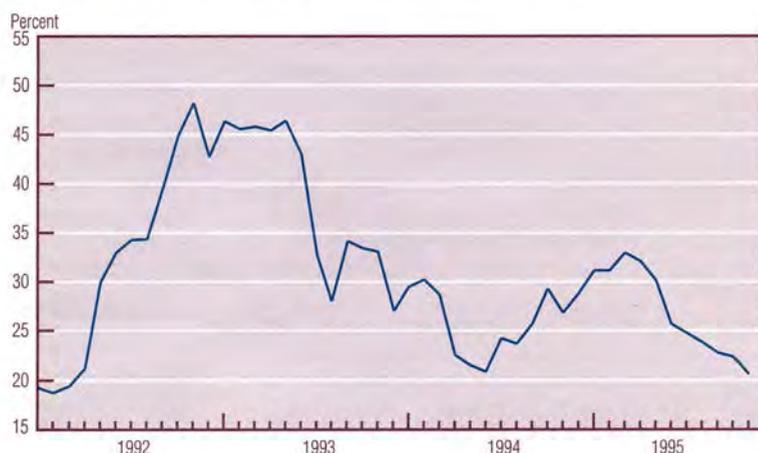
The lesson here is that competition from the gold certificates forced the government to adopt policies that maintained the value of the greenback. Neither gold certificates nor greenbacks drove the other currency out of circulation. Because the government maintained the credibility of the greenback by making it fully convertible to gold, the two currencies in effect became a single currency.

■ Rubles and U.S. Dollars in Modern-day Russia

Without the credibility of convertibility to specie, a country may have an incentive to inflate its currency in order to provide seigniorage revenues, especially if it legislates monopoly privileges for its fiat currency. Indeed, the history of nonconvertible fiat currencies is often a history of inflation. With greater freedom of international trade, however, a competing foreign currency may provide the discipline that keeps the domestic fiat currency sound. This is well illustrated in the case of modern-day Russia, where a rapidly inflating local currency lost some of its medium of exchange privileges in the modern era of flexible exchange rates.

When the Russian Republic was formed in 1991, the Russian central bank did not adopt the discipline that would have

FIGURE 2 SHARE OF FOREIGN CURRENCY IN THE TOTAL RUSSIAN MONEY STOCK^a



a. Defined as foreign currency deposits as a share of domestic broad money plus foreign currency deposits.
SOURCE: International Monetary Fund.

been provided by pegging the ruble to a fixed rate of exchange. Users of the currency did not have the well-defined avenue of opposition that might have been provided by a more mature democracy. Further, the central government's authority to collect taxes was degraded by widespread noncompliance and a lack of enforcement. Russian tax revenues fell more than 15 percent in real terms from 1992 to 1993. How did the Russian central bank respond to this fiscal debacle? By printing more money.

The inflation that followed in the domestic ruble was extreme. Prices rose 9,400 percent in 1993 alone. However, in order to increase foreign-trade opportunities, the Russians had legislated convertibility of the ruble in 1986.⁸ The result was that by 1993, many domestic exchanges were being accomplished not in Russian rubles but in American dollars.

Figure 2 shows the relative size of Russia's foreign currency deposits compared to its total domestic money stock over the 1992–1995 period. Clearly, foreign currency (primarily the U.S. dollar) has played a large but changing role in the nation's economy.

Whether the dollar or the ruble is used in Russian domestic trades depends on the currency's acceptability in future trades. People may trade either with a highly inflating currency, the ruble, or with a black-market currency, the dollar. Trading in dollars is illegal, and a dollar trader faces a penalty if caught.

In order to eliminate the dollar/ruble dual-currency system, the Russian central bank needs to inflate the ruble less, which will lower the acceptability of the dollar and drive it out of circulation.⁹ This message seems to have been received by the Russian monetary authorities. The inflation rate of the ruble has been trending down since 1994, and the use of the dollar in domestic transactions has decreased. Against the competition provided by a stable foreign currency, the costs of inflation were considered too high relative to the benefits provided by the increase in seigniorage revenues.

The lesson here is an important one. Two currencies were able to compete in Russia because each offered certain advantages. The ruble was needed for official transactions, including payment of taxes. The dollar, however, provided an exchange medium that was sure to maintain its future acceptability. The ruble became dominant in domestic exchanges only when the monetary authority initiated a policy of lower inflation. The competing foreign currency provided an outside discipline to make the monetary authority more responsive to the users of its domestic currency.

■ Whither Money?

Currently, the Federal Reserve is concerned about new exchange media that might provide competition to the Federal Reserve note. Changing technology continues to generate potential competitors. Most Americans would not leave on an extended trip without a credit card. Smart cards, plastic cards with electronic hardware added to upgrade their security, are being used in France as a cash substitute, and many believe they will soon be used extensively here. The Internet will also offer new ways of handling exchanges.¹⁰

We do not have a wide body of theoretical literature with which to analyze the effect of the potential competition offered by these new instruments. However, the three historical episodes described above may offer a lesson. Competing currencies force the monetary authority to concentrate its attention on maintaining the value of the fiat currency. To the extent that policymakers fail to do this, a competing currency may provide a necessary discipline.

■ Footnotes

1. For a formalized look at the exchange role of money, see Shouyong Shi, "Money and Prices: A Model of Search and Bargaining," *Journal of Economic Theory*, vol. 67, no. 2 (December 1995), pp. 467–96. See also Alberto Trejos and Randall Wright, "Search, Bargaining, Money, and Prices," *Journal of Political Economy*, vol. 103, no. 1 (February 1995), pp. 118–41.

2. See Albert Bushnell Hart, ed., *American History Told by Contemporaries*, vol. 2, p. 288, quoted in Arthur Nussbaum, *A History of the Dollar*, New York: Columbia University Press, 1957, p. 13.

3. A second reason wampum was discouraged is that it was produced and used by native tribes rather than by the Colonial authorities. When Massachusetts required taxes to be paid in silver in 1661, this was probably due more to a native policy (or lack thereof) than to the difficulty of using wampum in exchange.

4. For a complete discussion of the advantages of fiat money over commodity money, see Armen Alchian, "Why Money?" *Journal of Money, Credit and Banking*, vol. 9, no. 1, part 2 (February 1977), pp. 133–40.

5. Although silver was also used during this period, for simplicity, I will refer to metallic currency as gold.

6. In this case, accepting a greenback in exchange was like accepting the option to convert it to gold after convertibility was established. See Charles Calomiris, "Greenback Resumption and Silver Risk: The Economics and Politics of Monetary Regime Change in the United States, 1862–1900," in Michael Bordo and Forrest Capie, eds., *Monetary Regimes in Transition*, New York: Cambridge University Press, 1994, pp. 86–132.

7. For international transactions, convertibility was maintained until 1971.

8. Prior to 1986, Soviets had two currencies: a trade ruble, which was backed by a commodity, and a domestic ruble, which was not convertible to the trade ruble. Over the years, there were several episodes in which the communists backed the domestic ruble with gold to give it credibility. Starting in 1986, the domestic ruble was permitted to be used in international transactions, and it had an exchange rate in terms of foreign currencies.

9. For a new theory on dual currencies, see Elizabeth Soller and Christopher J. Waller, "Dual Currencies in a Search Model of Money," Indiana University, unpublished manuscript, July 1996.

10. Most discussions of how these alternative media will operate assume that the dollar will be the unit of account. This is not an inevitable conclusion, however.

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The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

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