

---

# FRBSF WEEKLY LETTER

April 15, 1988

## A Cashless Society?

For years analysts have been predicting that the U.S. will become a cashless society in which most payments will be made electronically. Such predictions might seem reasonable in light of rapid advances in computer and telecommunications technology and the growth of electronic funds transfers.

However, less technologically sophisticated means of payments stubbornly refuse to go away. Most individuals still rely primarily on checks, cash, and credit cards to make payments. A fully electronic payment system apparently remains a far distant development. In fact, trends in cash usage and holdings suggest that cold, hard cash is becoming an even *more* popular means of payment. This *Letter* examines trends in the use of cash, checks, and electronic payments to assess the likely evolution of the payment system over the next few years.

### Means of payment

In the U.S., *households'* primary means of payment (in dollar volume) are checks, followed by cash (currency and coin), and then credit cards. According to a 1984 Federal Reserve survey, 57 percent of a typical family's expenditures are made by check, a surprisingly large 36 percent are made by cash, and the remaining 7 percent are made by credit card. Very few households make payments via electronic wire transfers.

Detailed data on trends in the use of various means of payments are not readily available. However, trends in the Federal Reserve's provision of various payments services may give a useful indication of underlying trends. The Federal Reserve is a major provider of check clearing services, electronic funds transfers, and cash services. Trends in both dollar volumes and numbers of items processed suggest that although electronic payments are growing, traditional means of making payments are well entrenched.

In terms of dollar volume, electronic wire transfers are by far the most important type of payments processed by the Fed. Over \$142 trillion

dollars were transferred over the Federal Reserve's electronic transfer system in 1987, more than twelve times the dollar volume transferred by check. Most of these transactions occurred among large corporations, depositories, and financial companies. Moreover, electronic transfers mainly involved federal funds trades and securities purchases and sales, not purchases and sales of final goods and services. Individual electronic transfers tended to be large, averaging \$2.7 million each. Thus, the *number* of these "wholesale" electronic transfers was minuscule in relation to the total check volume processed by the Federal Reserve.

The growth in electronic transfers has been rapid, with a 62 percent increase in dollar value and a 39 percent increase in transfer volume between 1983 and 1987. In contrast, checks grew only 16 percent in dollar value and 16 percent in volume over the same period. Thus, electronic transfers apparently are gaining in popularity over checks. But checks still handle over 300 times the number of payments that electronic transfers do, so it is unlikely that electronic funds transfers will displace checks as the most popular mode of payment anytime soon.

### Cash still is king

It is not surprising that electronic funds transfers are used for large-dollar transfers and that they have become increasingly popular, but it is surprising how popular currency still is. In fact, contrary to predictions of a cashless society, currency is becoming increasingly popular as a means of payment.

The dollar volume of currency outstanding in the hands of the public has been growing for a long time. In keeping with this trend, currency grew from \$148 billion in 1983 to \$200 billion in 1987, a 35 percent increase. Moreover, currency's share of the Fed's M1 monetary aggregate — a measure of transaction balances — declined only slightly from 27 percent in 1977 to 26.5 percent in 1987, even though interest-earning NOW and Super-NOW checking accounts for individuals were introduced during

# FRBSF

this period. In theory, the introduction of such accounts should have increased the popularity of checking accounts and reduced the attractiveness of cash balances. Interest-paying checking accounts, in fact, have been very popular (over 35 percent of households had them by 1985), but their popularity did not diminish that of currency. Rather, they attracted funds mainly from non-interest bearing checking accounts and other interest bearing accounts.

## **Federal Reserve cash processing**

Another sign of the growing popularity of cash as a means of payment is the rapid growth in the volume of currency and coin processed by the Federal Reserve. As part of their central bank services, the 12 regional Federal Reserve Banks and their branches count, sort, store, and ensure that the quality of currency in circulation is maintained. Banks can deposit excess or unfit currency at a Federal Reserve Bank or branch and can withdraw sorted, fit currency from their reserve accounts upon request. Typically, the total volume of cash withdrawals from reserve accounts follows deposit volume fairly closely over time, but withdrawals run slightly higher than deposits as a result of the growing volume of cash held by the public. (New currency is printed by the Bureau of Engraving and Printing.)

The volume of currency received by all Federal Reserve Banks has been growing rapidly for some time. During the 1983-1987 period, unit volume increased 47 percent and dollar volume 52 percent — approximately triple the corresponding percentage increases for check volumes and in line with the percentage increases in electronic transfer volumes. Moreover, the 1986-87 growth rate in unit volume was about 9.5 percent, considerably greater than the 6.6 percent average annual growth rate since 1974.

In 1987, the Federal Reserve System processed about 17 billion notes of various denominations, representing a dollar value of more than \$216 billion. Thus, slightly more than the entire dollar volume of currency outstanding (\$200 billion) circulates through the Federal Reserve during a typical year.

These figures understate the extent to which cash is used as a means of payment, however. According to the 1984 Federal Reserve survey, only 15 percent of all currency (or about \$30

billion in 1987), is held for transaction purposes by domestic residents. (The rest is held outside the U.S., or possibly within the U.S. in hoards for illegal purposes.) Apparently, each dollar held by a U.S. resident for transaction purposes circulated through the Federal Reserve System several times, probably after being used in several transactions. Thus, the \$30 billion held domestically for transaction purposes probably supports transactions valued at several times the \$216 billion that the Fed receives annually in currency deposits. In view of these estimates, the cashless society is far from reality.

## **Reasons for cash's popularity**

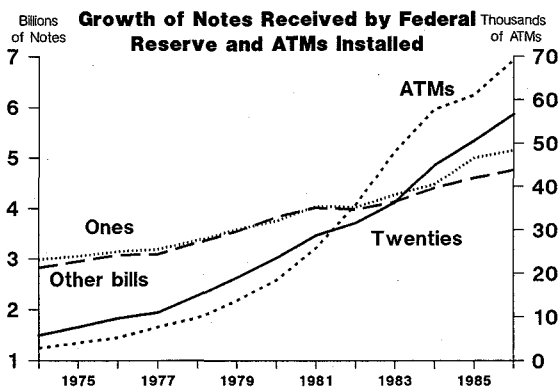
There are several reasons why cash as a means of payment is likely to remain popular. There are even some reasons why it is likely to become *more* popular. For one thing, cash is a convenient means of payment, especially for small purchases. It takes much less time to make a cash payment than it does to make a check or credit card payment, and cash is more widely acceptable. The time involved in making a transaction is a very real cost, which increases with the value of alternative uses of an individual's time. These values have increased along with real wages and the proportion of the population employed. As a result, convenience has become a more important determinant of the choice of method of payment.

Another reason for using currency is that cash transactions are anonymous, making them widely used in illegal transactions or for tax evasion. In fact, several economists have relied on patterns of cash usage to try to estimate the size of the "underground" economy. However, the recent reductions in federal marginal tax rates, in theory, should have reduced the incentives for tax evasion and therefore, reduced the popularity of cash transactions.

## **Growth in ATMs**

Perhaps a more important reason for the growing popularity of cash is the introduction and rapid growth of automatic teller machines (ATMs), a trend that is also related to the convenience demand for cash. The number of these machines has grown from 10,000 nationwide in 1977 to over 80,000 today.

By offering virtual around-the-clock availability from many locations, ATMs make it possible for individuals to obtain cash frequently and at their



convenience, thereby reducing the time costs involved in obtaining cash. Moreover, individuals do not have to risk possible loss, theft, or loss of interest on large cash balances. Instead, they can obtain cash frequently and in amounts more closely related to the size and timing of planned expenditures. In fact, the 1984 Federal Reserve survey confirms that ATM users hold smaller average cash balances and obtain cash more frequently than do non-ATM users. Also, ATMs are used more frequently by high-income persons with high time costs and thus larger incentives to economize on the time involved in making payments.

The chart shows a correlation between the growth of ATMs and the demand for cash. Since most ATMs use \$20 bills, it is interesting to note that the growth in the volume of \$20 bills has been greater than that of other denominations since 1977 — about the same time that the number of ATMs installed started to grow rapidly nationwide. Moreover, the volume of

\$20 bills processed by the Federal Reserve has exceeded that of other denominations since 1983. Surveys by the Bank Administration Institute in 1979 and 1986 also show that the fraction of the number of all debits from checking accounts arising from ATM cash withdrawals increased 336 percent while the number of debits associated with checks actually declined about 4 percent.

One final reason that cash has been and likely will continue to be so popular is that the Federal Reserve's cash services are not priced. (However, institutions pay the full costs of transporting cash to and from the Federal Reserve.) Check services and wire transfers, in contrast, are both priced at levels intended to recover processing costs. Because Federal Reserve cash services are underpriced compared to checks and electronic transfers, cash payments are more economical than if users had to pay the full costs of the Federal Reserve's services. This, in turn, may help to explain the rapid growth of ATMs, since ATMs require sorted and fit currency — two services banks can obtain without cost from the Federal Reserve.

#### **Cash is here to stay**

Far from becoming a cashless society, the U.S. appears to be relying *more* on currency as a means of payment. The reasons for this trend include increased time costs, the innovation of ATMs and the underpricing of Federal Reserve cash services. Thus, it seems unlikely that electronic payments will replace cash anytime in the near future.

**Michael C. Keeley**

Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System. Editorial comments may be addressed to the editor (Barbara Bennett) or to the author. . . . Free copies of Federal Reserve publications can be obtained from the Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.

Alaska Arizona California Hawaii Idaho  
Nevada Oregon Utah Washington

Research Department  
Federal Reserve  
Bank of  
San Francisco

**NOTE**

The table entitled, "Selected Assets and Liabilities of Large Commercial Banks in the Twelfth Federal Reserve District," will no longer be published in conjunction with the *Weekly Letter*. For those in need of these data, a more timely publication entitled, "Weekly Consolidated Condition Report of Large Commercial Banks and Domestic Subsidiaries" (F.R. 2416x), is available from the Statistical and Data Services Department of this Bank.