# Cash Is Dead! Long Live Cash!

*By President and CEO John C. Williams*

It is often said that cash is king. But a quick glance at the register in stores and restaurants might make you think the king is on his deathbed. Increasingly, customers are finding other ways to pay for things, whether it's credit, debit, or gift cards, or even mobile phones. At home, they use their computers to make payments from their bank or credit accounts, or turn to popular services such as PayPal. So it's easy to find commentators who blithely declare that we are on the cusp of a cashless society in which everything is paid for with the swipe of a card or the tap of a phone. Cash, they tell us, is doomed to go the way of the dinosaurs.

Yet, to paraphrase Mark Twain, reports of the demise of cash are greatly exaggerated. In fact, they are plain wrong. It's undeniable, of course, that alternative payment methods are growing rapidly and significantly increasing their market share. But cash lives on. The quantity of currency in the economy keeps growing. As **Figure 1** shows, since the start of the recession in December 2007 and throughout the recovery, the value of U. S. currency in circulation has risen dramatically. It is now fully 42% higher than it was five years ago.

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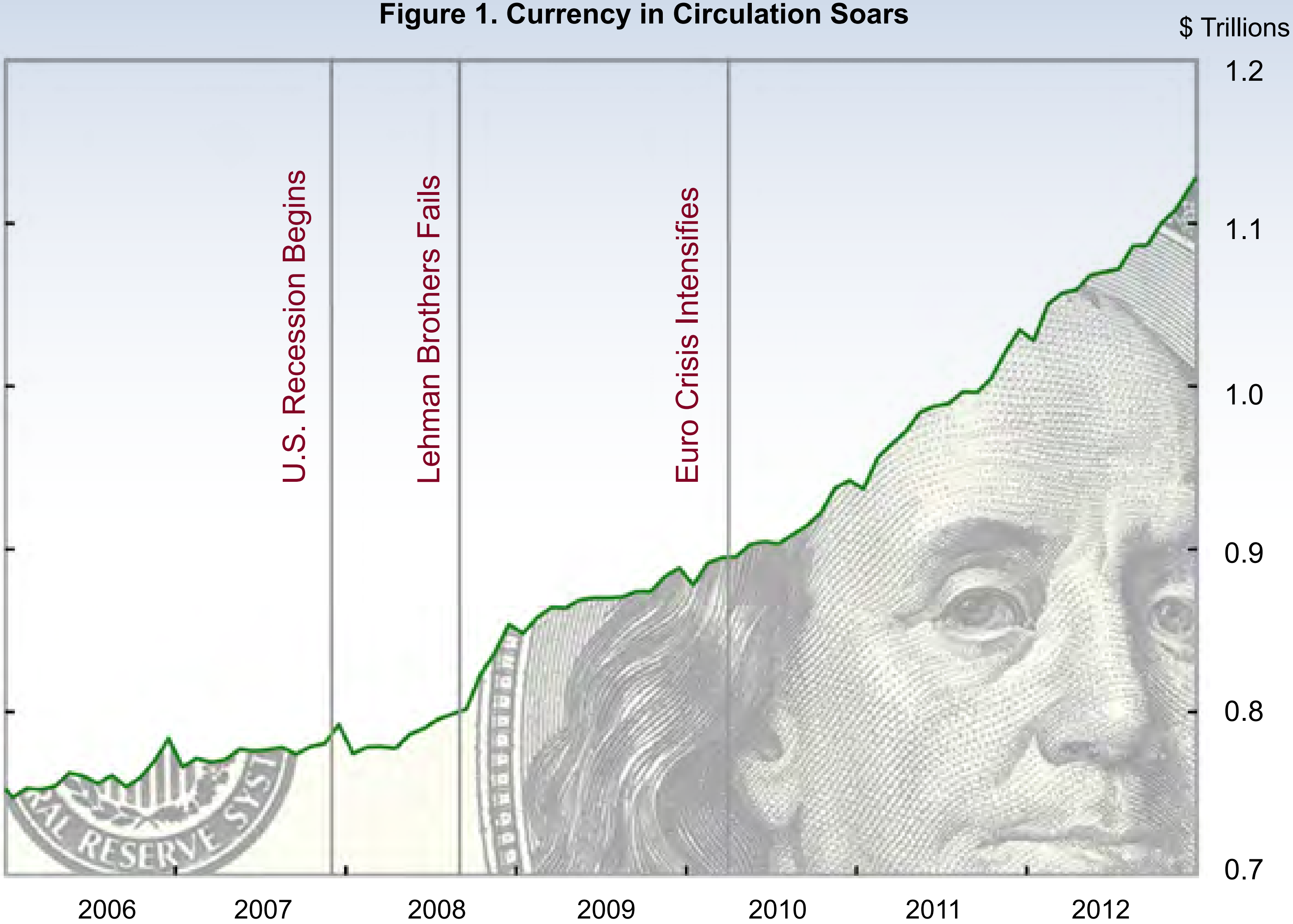
What explains the rapid rise in currency holdings at the same time other methods of payment are displacing the greenback? And what is the future of cash? Are we truly becoming a society in which paper currency is obsolete? Or will the supply of currency continue to grow? It's useful to approach these questions and explain recent trends in the use of cash by considering the key economic and social factors behind what's happening in the payment market.

We are all affected by changes in payment technologies. These innovations are critically important to organizations and businesses in managing cash flow and making sure that transactions are convenient for customers. They are also of great importance to the Federal Reserve. Our nation's central bank is responsible for overseeing key parts of our payment system. A vital part of that responsibility is processing and distributing currency and coin. The Fed supplies them to the banking system so that they are available for use by the general public. Last year, the Federal Reserve processed 31.7 billion notes at our 28 processing centers across the country.

**Figure 1. Currency in Circulation Soars**

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Here at the Federal Reserve Bank of San Francisco, we are home to the Cash Product Office, the unit that provides operational and policy direction for the Fed's vast cash services. It is part of our job to understand what drives current demand for currency and predict future developments so that the Fed can plan for cash processing in the years and decades ahead.

## The Supply and Demand for Cash

Why are holdings of currency soaring at the same time that Americans appear to be turning away from using cash to pay for purchases? To make sense of this paradox, it's helpful to understand the reasons people hold cash in the first place. Economists have identified two basic reasons why people use currency. First, it is exceptionally convenient as a medium of exchange. Cash is easy to carry, it's widely accepted, and it's easy to divide for transactions of different sizes. Importantly, you can count on cash even when other payment methods might not be working, during power outages and natural disasters, for example. And cash has another advantage to users: It's anonymous. Using cash keeps transactions away from the eyes of tax collectors, law enforcement agencies, and businesses that track the buying habits of individual Americans.

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The second reason to hold cash is that it serves as a store of value. Keeping a hoard of currency—whether under a mattress, in a safe, or in a safe deposit box—is often viewed as a low-risk way to hold financial assets. That's especially so during periods of political or financial turmoil. For example, during the recent financial crisis, some people may have withdrawn cash from accounts at banks and other institutions because they were afraid these institutions might fail. Around the world, during periods of political unrest or war, cash—especially the currency of a stable country like the United States—is seen as a safe asset that can be spirited out of harm's way with relative ease.

These two functions—medium of exchange and store of value—describe the benefits of holding cash. But there are costs as well. Unlike many bank accounts and other investments, currency does not bear interest. When you withdraw money from an account that pays interest and hold cash instead, you sacrifice the income you could have earned. Economists refer to this lost income as the opportunity cost of holding cash. In addition, people who keep large sums of currency can incur costs if they pay for protection against theft, by buying a safe, for example.

Understanding the benefits and costs of holding currency helps clarify what causes the demand for cash to rise or fall. First, reflecting its role as a medium of exchange, cash holdings tend to rise as total spending in the economy goes up over time. Second, cash holdings tend to rise during periods of political and economic turbulence. Third, when the interest rate depositors can earn from a bank account goes up, the opportunity cost of holding cash is higher and people tend to hold less of it. Finally, increased availability of low-cost alternatives to cash will tend to shrink cash holdings, all else equal.

*"... even though the amount of cash has continued to climb, the share of transactions using cash has fallen steadily in recent years."*

So far, I've discussed what drives the demand for cash. But that's only half the story. Economics teaches us that if we want to understand the market for a commodity, we must also look at supply. What then determines the supply of currency? That's actually pretty straightforward. The Federal Reserve supplies currency elastically to the banking system. By elastically, I mean that, when people want to hold more cash, banks come to us, and we freely supply it to them. In turn, we debit the deposits the banks hold at the Fed. The result is that the amount of currency in circulation goes up. When people want to hold less cash, the process is reversed. We take back currency from banks and credit their accounts at the Fed. The amount of currency in circulation falls.

In fact, this rise and fall in the demand for cash actually takes place every year around the holiday shopping season. Late in the year, merchants and banks stock up on currency to meet the needs of shoppers. The quantity of currency in circulation shoots up. Then, after the New Year, the cash flows back into the Fed and currency in circulation declines.

## The Cash Paradox

There's no question that alternatives to cash have expanded dramatically over the past few decades. **Figure 2** shows trends in the use of the biggest payment alternatives—checks, debit cards, credit cards, and electronic payments cleared through the automated clearinghouse (ACH) system, which includes transactions such as bill payments and automated deposits of paychecks. Debit card and ACH use has grown dramatically, while check volume has dropped. Although not shown in the chart, there has also been significant growth in the use of prepaid cards.

The volume of currency transactions is harder to measure. But there's evidence that, even though the amount of cash has continued to climb, the share of transactions using cash has fallen steadily in recent years. One sign of this comes from comparing the growth of currency with face values of $50 and below with the overall growth of the economy. I look at these smaller bills because they are

**Figure 2. Growth in Alternatives to Cash**
**Average annual percent growth in transaction volume, 2000-09**

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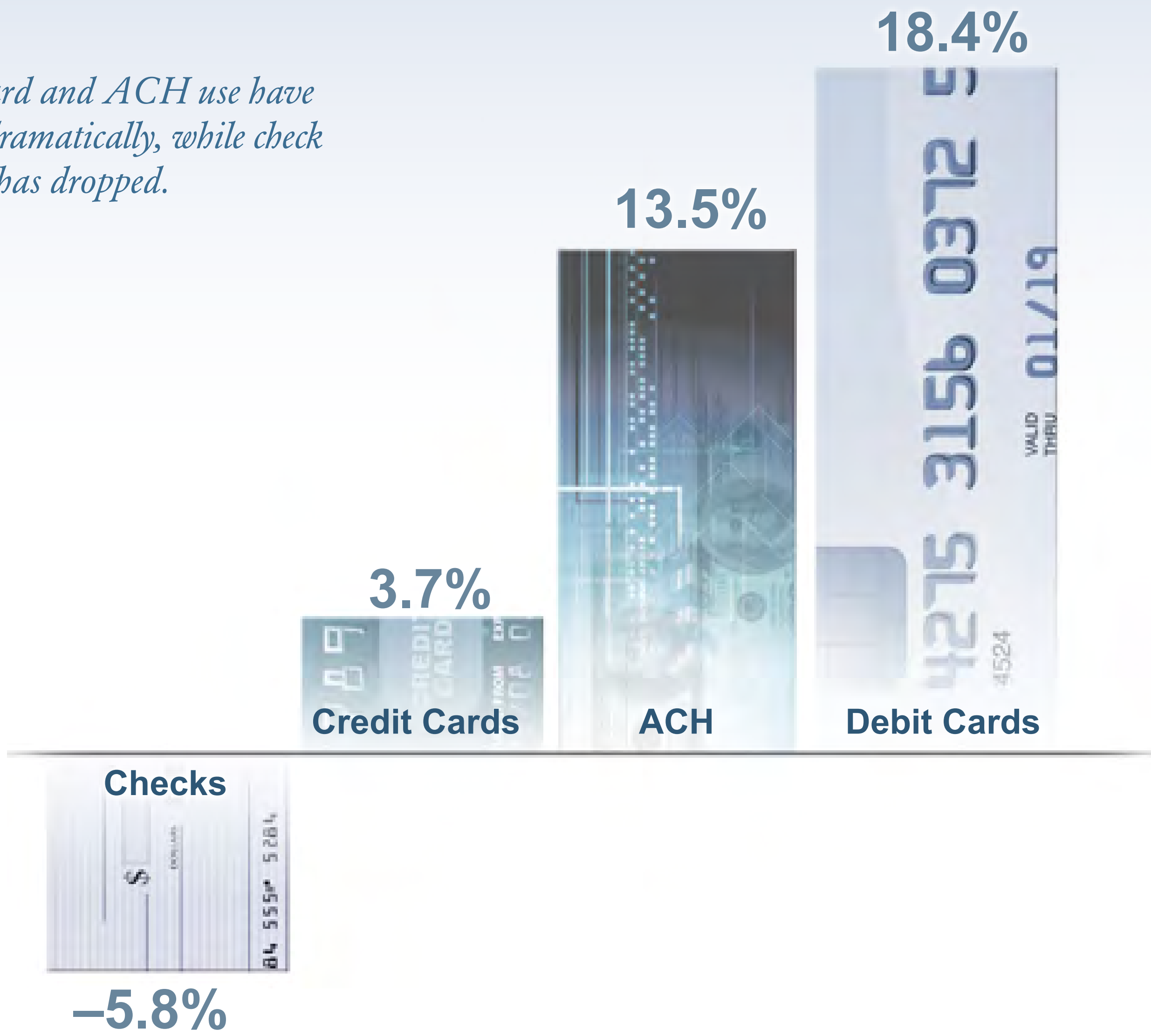


the ones typically used for everyday purchases. In **Figure 3**, the green line shows the total value of all bills of $50 or less in circulation. The red line shows gross domestic product, which is the dollar value of everything the U.S. economy produces. Up until the mid-1990s, these lines track each other closely, indicating that the use of currency for transactions was growing in line with the economy. That's consistent with the medium-of-exchange role I described earlier. Around that time though, growth in the use of currency began lagging behind the growth of the economy, and it has never recovered. Some of this may be due to greater use of $100 bills in place of $20 and $50 bills as prices rose. But the size of the gap suggests that people turned to other means of payment besides cash, at least for small- and medium-sized transactions.

*". . . in the six months following the fall of the investment bank Lehman Brothers in 2008, holdings of $100 bills soared by $58 billion, a 10% jump."*

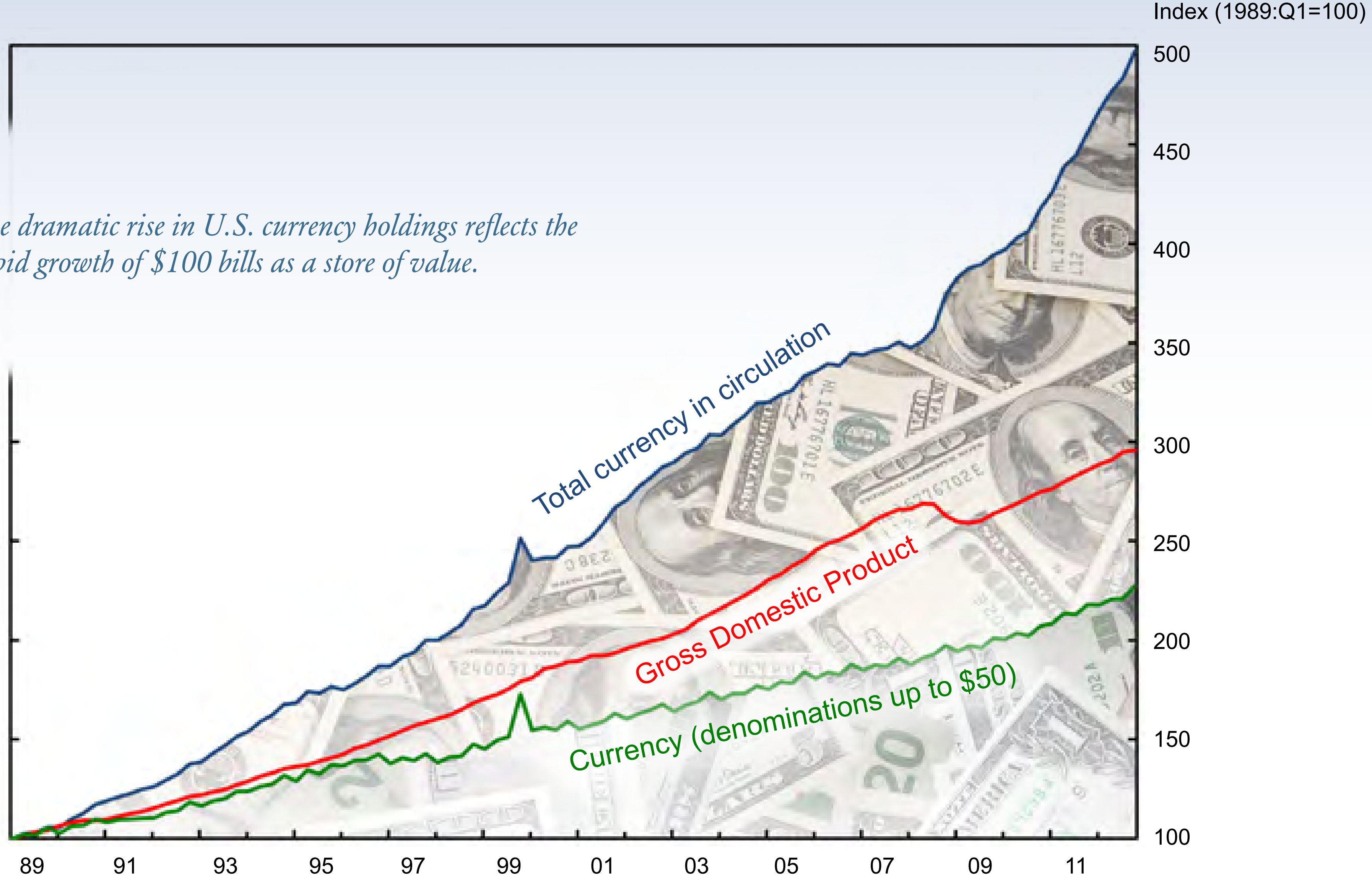
Despite the evidence that people are increasingly using other forms of payment, the amount of currency in circulation keeps piling up. The blue line in **Figure 3** shows the growth of total currency in circulation, including $100 bills and larger denominations that are no longer issued. Over the past five years, cash holdings increased on average about 7¼% annually, more than three times faster than the economy's growth rate over this period. At the end of 2012, currency in circulation stood at over $1.1 trillion, representing a staggering $3,500 for every man, woman, and child in the nation. If people aren't using this cash to pay for things, then what are they doing with it?

## Follow the Franklins

The explanation for this cash mystery is hiding in plain view in **Figure 3**. The difference between the growth of total currency in circulation and currency in denominations of $50 and smaller reflects the rapid growth of holdings of $100 bills. But why would people hold so many more $100 bills now than before the recession? That brings us back to cash as a store of value. As fears about the safety of the banking system spread in late 2008, many people became terrified of losing their savings. Instead, they put their trust in cold, hard cash. Not surprisingly, as depositors socked away money to protect themselves against a financial collapse, they often sought $100 bills. Such a large denomination is easier to conceal or store in bulk than smaller bills. Indeed, in the six months following the fall of the investment bank Lehman Brothers in 2008, holdings of $100 bills soared by $58 billion, a 10% jump.

The U.S. financial crisis ended in 2009, and confidence in banks has largely returned. So, why have cash holdings continued to rise? One reason is that interest rates are very low in the United States and many other countries, dramatically lowering the opportunity cost of holding cash. In December 2008, the Federal Reserve lowered short-term interest rates close to zero, and they have remained low since. As a result, checking and short-term savings accounts offer extraordinarily low interest rates, if they pay anything at all. People have little incentive to put cash back into the banks.

**Figure 3. Cash Transactions Lose Ground**




*The dramatic rise in U.S. currency holdings reflects the rapid growth of $100 bills as a store of value.*

But there's more to the story. Demand for U.S. currency is not only affected by events at home. What happens in other countries is also important. Europe's financial crisis has played a powerful role in driving demand. As Europe's crisis worsened in the spring of 2010, U.S. currency holdings rose sharply. And they continued to rise as economic and political turmoil and uncertainty about the future sent Europeans scrambling to convert some of their euros to dollars. According to one estimate, the share of U.S. currency held abroad rose from about 56% before the tumultuous events of the past five years to nearly 66% in 2012.[1]

## The Future of Cash in an Uncertain World

The unusually large rise in cash holdings over the past five years reflects a combination of circumstances. Interest rates in the United States and other countries have been exceptionally low. Economic and political uncertainty have been exceptionally high. Future demand for currency will be driven in large part by how these factors evolve. Developments in alternative payment methods will also affect demand. Meanwhile, when interest rates return to more-normal levels, the opportunity cost of holding cash will rise, which should cause currency demand to fall somewhat. But the $100 question is whether economic and political uncertainty will remain high. If uncertainty recedes, many people will probably take their $100 bills back to the banks. But if events in Europe or elsewhere around the globe stir more anxiety, appetite for U.S. dollars could surge anew. At the Federal Reserve, we need to plan for all contingencies and stand ready to meet the public's demand for currency, whatever the future holds.

1. These estimates of global demand for U.S. currency are from Judson (2012).

## Further reading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