

Southwest Economy



Monetary Policy in a Zero-Interest-Rate Economy

As short-term interest rates fall toward zero, it may be necessary for the Fed to rethink how it conducts monetary policy. In this article, we examine why conventional policy loses its effectiveness at very low interest rates and review some alternative tools for stimulating the economy. We hope that this discussion will prove to be academic—that our economy’s natural resilience, together with the easing the Fed has already undertaken, will be sufficient to get employment and output growing again. But it’s nice to know that if additional stimulus is required, there are still arrows left in our quiver.

U.S. Economic Growth Weak Despite Low Interest Rates

Short-term interest rates have fallen dramatically over the past two and a half years, and are now as close to zero as they’ve been since 1958 (*Chart 1*). Any significant further rate reduction will make life difficult for money market mutual funds, which will either have to start paying out less than a dollar for each dollar invested or begin charging explicit management fees.

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INSIDE:
*Japan’s Economic
Policy Conundrums*

Texas Economy Warming Up in 2003

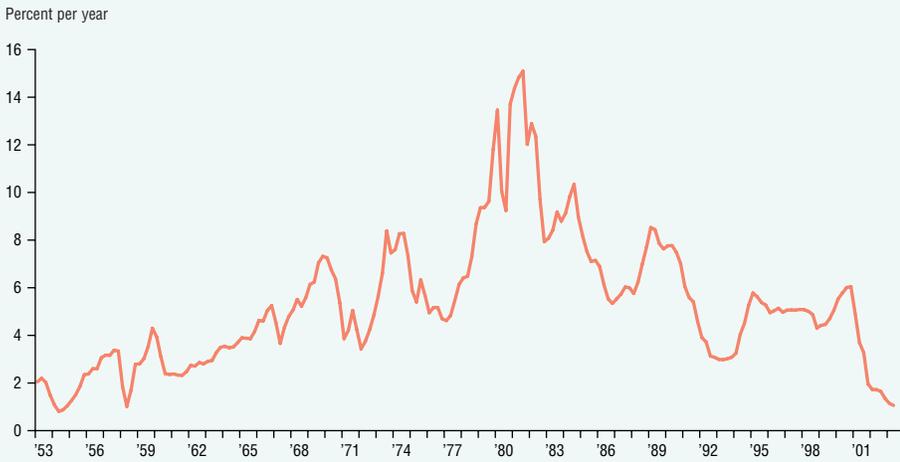
Midway through 2003, it appears the Texas economy has bottomed out and is tilted toward expansion. Year-to-date data (through May) suggest the economy has finally emerged from the recession that began in 2001 and lasted through 2002.

Despite the good news, the improvement has been so moderate that it still feels like a recession to many Texans. A majority of economic indicators suggest growth will be slow, but that is an improvement over last year. A more robust pickup in the Texas economy depends on the strength of the U.S. recovery because many of the state’s key sectors will benefit from stronger U.S. growth.

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Chart 1

Short-Term Interest Rates Drop to Their Lowest Levels in 45 Years (Three-month Treasury bills)



SOURCE: Federal Reserve Board.

A year ago, it looked as though interest-rate cuts would not be required. Important monthly indicators such as industrial production and payroll employment appeared to be on the upswing (*Chart 2*). Since last summer, however, new data and revisions to the old data have brought the economy's incipient recovery into question. The spring 2002 employment upturn, for example, has been entirely revised away. Indeed, the year-to-year change in nonfarm payrolls has now been negative for 24 straight months—the longest uninterrupted stretch of year-over-year job losses since 1944–46.

Analysts (and investors) are hopeful that growth will pick up during the second half of 2003 in response to stimulative monetary and fiscal policy. But analysts (and investors) have been known to be wrong. The economy remains vulnerable to adverse shocks.

Open-Market Operations: The Conventional Response to a Weak Economy

Usually, the Fed attacks weakness in the economy by conducting expansionary open-market operations. In a typical open-market operation, the Fed purchases Treasury bills from bond traders in the New York securities market. The effect is to increase liquidity in the economy—cash and bank reserves rise while the number of Treasury bills held by the

public falls—and to lower short-term interest rates. Lower interest rates encourage consumption and investment, and greater liquidity provides the means to finance the new expenditures.

Unfortunately, conventional open-market operations lose their effectiveness as the yield on Treasury bills approaches zero. At a zero interest rate a Treasury bill is no different from vault cash or large-denomination currency. An open-market operation is like the Fed offering to exchange 20 \$1 bills for one \$20 bill: The increase in liquidity is negligible.

Moreover, there is no way to achieve any further reduction in the interest rate. Why would anyone accept a negative return on Treasury bills when they have the option of holding cash at a zero return? With no increase in liquidity and no reduction in the interest rate, there is no reason to expect an open-market operation to produce any increase in household or business spending.

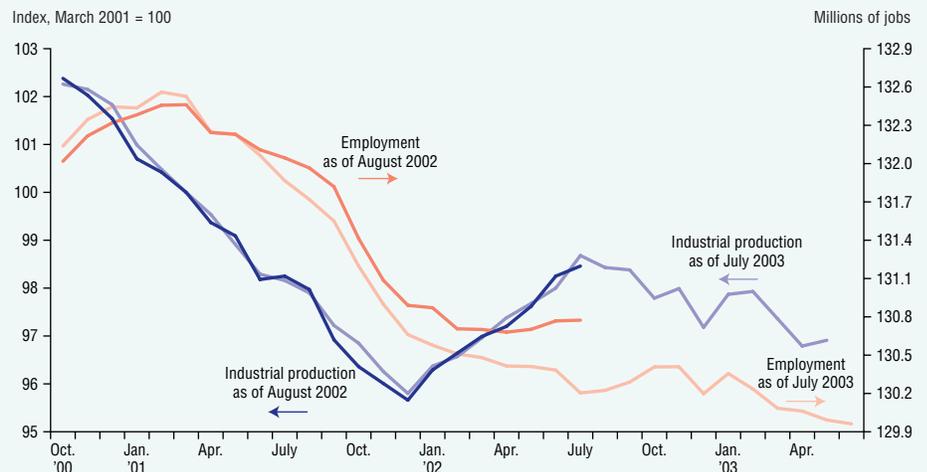
The Zero-Interest-Rate Bound and Deflation

Policymakers can find themselves in a bind if a low interest rate is accompanied by falling prices—that is, by deflation. That's because what ultimately matters to households and firms is the *real* cost of borrowing—what economists call the real interest rate. The real interest rate is the difference between the market, or nominal, interest rate and the rate of inflation. It is the prospect of a low real interest rate that makes current consumption and investment spending attractive. The trouble is, even a zero nominal interest rate can produce an expected real interest rate that is too high if people expect a negative inflation rate.

For example, if prices fall at a 3 percent annual rate, then a zero nominal interest rate puts the real cost of borrowing at a positive 3 percent. The prospect of a 3 percent real interest rate might be just fine in a healthy, growing economy. It will be excessive, however, in an

Chart 2

Looking Good...or Maybe Not

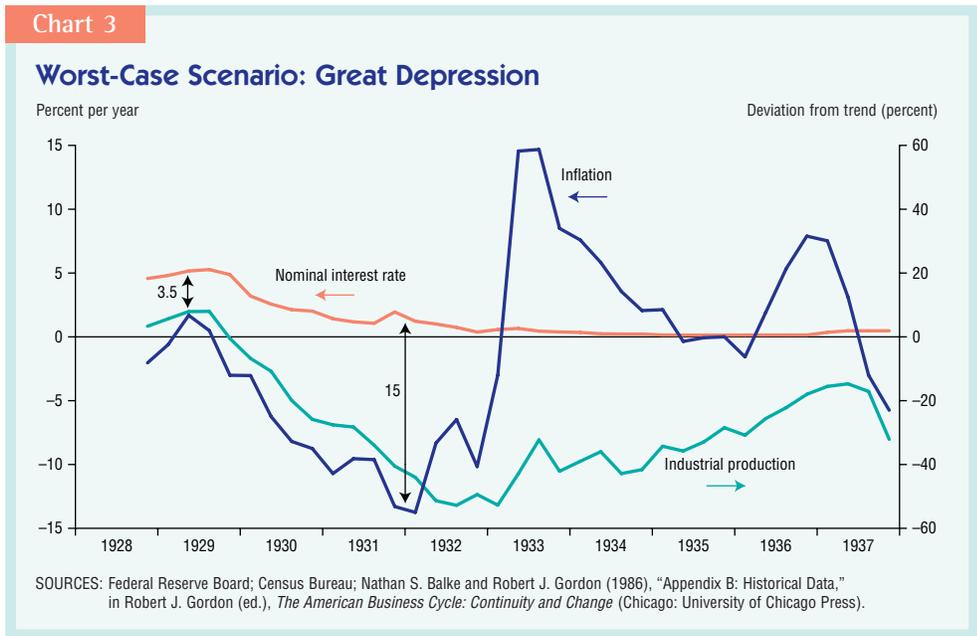


SOURCES: Federal Reserve Board; Bureau of Labor Statistics.

economy where the growth outlook is poor or where fragile finances have led households and firms to become cautious about spending and banks to become cautious about lending.

The United States' Great Depression is the textbook example of what can go wrong if policymakers are slow to respond to a deteriorating economy and falling inflation. As shown in Chart 3, the Federal Reserve cut the short-term nominal interest rate from 5 percent in 1929 to 0.5 percent in late 1932. However, inflation fell even faster. Consequently, the real interest rate—the difference between the nominal interest rate and the inflation rate—actually increased, rising from 3.5 percent in the spring of 1929 to a peak of 15 percent in late 1931 and early 1932. Monetary policy was, effectively, becoming tighter and tighter in the early 1930s, rather than easier and easier. As a result, industrial output fell by a whopping 50 percent relative to trend. Recovery didn't begin until 1933, when the Roosevelt administration suspended gold payments and allowed the dollar to depreciate. Inflation rose well above the nominal interest rate, turning the real interest rate sharply negative.

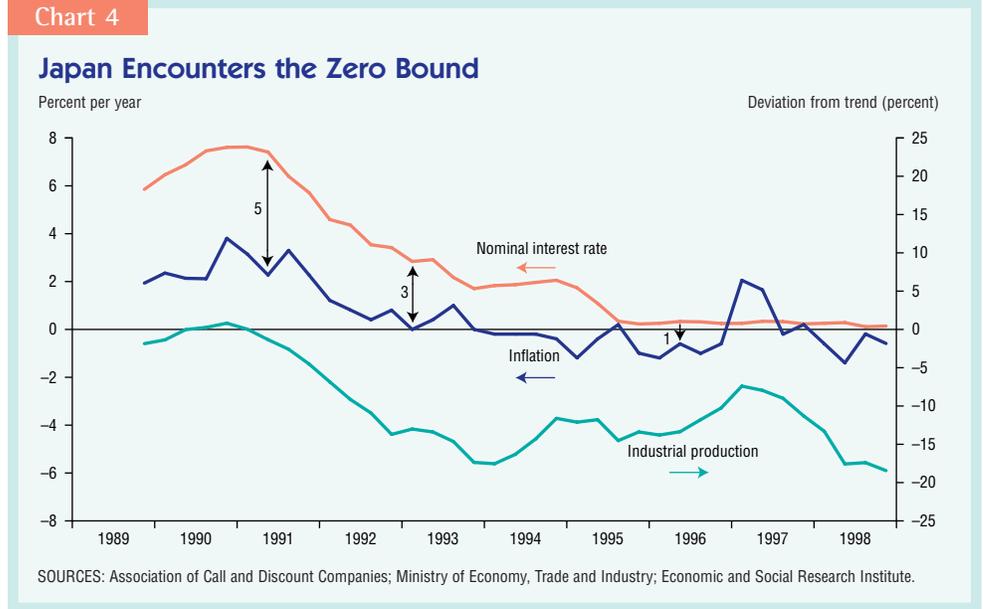
Japan in the 1990s provides a more recent example of the trouble that can be caused by the zero-interest-rate bound. Like the Depression-era Federal Reserve, the Bank of Japan cut short-term nominal interest rates in response to a weak econ-



omy (Chart 4). By the second half of 1995, the three-month government rate was essentially zero. Although the interest-rate decline was too slow to prevent inflation from turning into deflation, the real interest rate fell from 5 percent in late 1990 to 3 percent in 1993 and to 1 percent or less in 1995, 1996 and 1997. Industrial output, which had nosedived in the early '90s, began to recover in 1996. But then the Asian economic crisis hit. Conventional monetary policy was powerless to respond, and Japan remains mired in depression to this day. (For a more detailed account

of Japan's decade-long struggle with economic downturn, see page 6.)

It took the Bank of Japan six years to get short-term interest rates (briefly) down below the rate of inflation. As shown in Chart 5, the Fed has closed the interest-rate–inflation gap in less than half that time. This relatively quick action has prevented inflation from becoming outright deflation and avoided any significant damage to our financial institutions. As we saw earlier, however, recent weakness in employment and industrial output has raised concerns that additional stimulus may be required, especially if adverse shocks hit the economy. With the nominal interest rate so close to zero that conventional open-market operations are of doubtful effectiveness, what policy options are available to the Fed, should further stimulus be required?



Strategies for Overcoming the Zero Bound

A number of strategies have been proposed for pulling the economy out of a zero-interest-rate trap. These range from the radical to the mundane and from the practically difficult to the eminently practicable. We will examine several such strategies. We first consider the boldest, though also the most difficult to implement: eliminating the zero bound altogether. We then examine modifications to standard policy that avoid some of the problems we alluded to earlier.

These more workable approaches may require the coordination of Fed policy with that of other actors—either foreign central banks or domestic fiscal policy-makers—or may allow the Fed to act unilaterally.

The most daring suggestion for escaping the zero-interest-rate trap is to eliminate the zero lower bound altogether. How can this be done? As we noted earlier, the zero bound on interest rates exists because money pays a sure nominal interest rate of zero. No one would be willing to hold any asset that pays a negative nominal rate, as long as zero-interest money is available as a store of value.

The strategy for eliminating the zero bound, therefore, is to make money pay a negative nominal interest rate by imposing some type of “carry tax” on currency and deposits. A tax on money holdings of 0.5 percent per month, for example, would mean that money, in effect, pays a negative nominal interest rate of roughly –6 percent. Market interest rates would then be free to fall into negative territory, and the Fed could continue to cut short-term rates, with –6 percent as the new lower bound.

It’s easy to envision such a system with regard to deposits at the Federal Reserve or transactions deposits at banks; for the most part, the technology to implement such a system is already in place. The main difficulty—both technological and political—lies in imposing such a tax on currency. In the 1930s, Yale economist Irving Fisher proposed such a system, in which currency had to be periodically “stamped,” for a fee, to retain its status as legal tender.¹ The stamp fee could be calibrated to generate any negative nominal interest rate the central bank desired.

While the technology available for implementing such a system is more sophisticated today than in Fisher’s time, enforcement still seems a mammoth problem. It would require physical modifications to currency and some means of tracking the length of time each piece spends in circulation.

Given the technological hurdles of implementation, a carry tax on money is probably not a feasible response to circumstances that might arise in the near term, though it merits study as a possible

long-run solution to the zero-bound problem. With the technology in place to (on occasion) impose a carry tax, a central bank would be free to target a very low average inflation rate, knowing that if severe downturns arise it could temporarily drive the nominal return on money below zero.

Without such a mechanism available, it’s likely that central banks will try to avoid the zero-interest-rate bound by simply aiming for higher long-run rates of inflation—which also amounts to taxing individuals’ money holdings, more consistently though less overtly, by eroding their real purchasing power. Thus, the average tax on money balances might actually be lower if the technology to impose a carry tax were developed. At the same time, we must acknowledge that—as is the case with all instruments of taxation—there is no guarantee that policy-makers would not abuse the carry tax once the means to collect it were in place.

If the bound can’t be easily sidestepped, what options does the Fed have? As we implied at the outset, to be effective, monetary policy must do more than simply give the private sector “change for a twenty.” In other words, monetary policy must take actions that expand the sum of zero-interest money and its zero-yielding substitutes, not simply swap one for the other. This can be achieved if the Fed purchases assets that are not perfect substitutes for money. We will consider three possible candidates:

1. Foreign exchange
2. Real goods and services
3. Other domestic securities, such as longer-term Treasuries

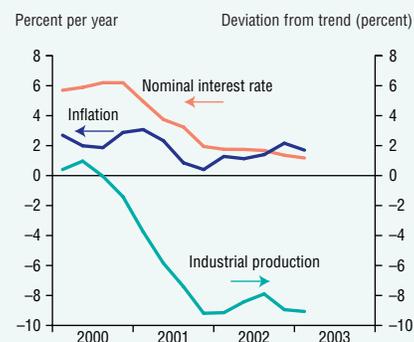
Strategies that target the first two candidates can only succeed if the Fed coordinates its policy actions with those of other actors—namely, foreign central banks or domestic fiscal policymakers. A strategy targeting the third is something the Fed can do today, unilaterally, within the constraints imposed by the Federal Reserve Act.

The Foreign Exchange Escape Route.

Foreign exchange intervention has been suggested by more than one prominent economist as a surefire strategy for getting an economy out of a zero-interest-rate trap.² How would such a strategy work? In this approach, the Fed would

Chart 5

Whither the U.S. Economy?



SOURCES: Federal Reserve Board; Bureau of Economic Analysis.

pursue a targeted, substantial depreciation of the U.S. dollar by purchasing foreign currency using newly minted dollars. The dollar depreciation would increase current demand by stimulating net exports—that is, by increasing sales of U.S. goods abroad and reducing purchases of foreign goods in the United States. If the Fed committed to maintain the depreciated dollar for some length of time, inflationary expectations could also increase. Higher expected inflation, in turn, would result in a lower prospective real interest rate, even if nominal rates do not change.

The big problem with this strategy is that, in a roundabout way, it amounts to conducting a monetary contraction in our trading partners’ economies. In buying up another country’s currency—and assuming the Fed simply holds, rather than spends, that foreign currency—the Fed would, in effect, be reducing the foreign economy’s supply of money and, likely, raising interest rates there as well. If the foreign central bank was attempting to pursue a neutral or expansionary policy, the Fed’s action might generate some consternation or even a policy response. If the Fed purchased euros, for example, the European Central Bank might respond by simply printing more of them, thus neutralizing the Fed’s action.³

To be successful, this strategy requires cooperation, or at least acquiescence, on the part of our trading partners. Given current growth prospects elsewhere around the globe, such acquiescence, while not impossible, seems unlikely.

The Goods and Services Solution.

Why not have the Fed just conduct an open-market purchase of real goods and services? Even more than exchange-rate intervention, this strategy would represent a direct stimulus to aggregate demand. As posed, though, the strategy has a major drawback: It violates the Federal Reserve Act. The Fed isn't authorized to purchase goods and services, apart from those needed for the operation of the Federal Reserve System.

The strategy can be implemented, however, by coordination with fiscal policymakers. The federal government, for example, could purchase goods and services and finance the purchases with new debt, which the Fed in turn would buy—in technical terminology, the Fed would “monetize” the resulting debt. By coordinating with fiscal policy, the Fed could even implement what is essentially the classic textbook policy of dropping freshly printed money from a helicopter. In this case, the Fed would monetize government debt that had been issued to finance a tax cut.

The scale of operations entailed by this approach would be large. To monetize government spending equal to 1 percent of gross domestic product, for example, could mean increasing the monetary base (the sum of currency and bank reserves) by as much as 15 to 20 percent. Though trite to say, it is nonetheless true that extreme circumstances could require policymakers to take extreme measures.

Buying Other Domestic Securities.

We finally turn to the simplest strategy: buying other domestic securities. Even if the economy's short-term riskless interest rate is equal to zero, interest rates on other securities will generally be positive, and those securities could be targets for open-market operations. This is a course of action the Fed can follow today, without coordinating its action with other policymakers or running afoul of the Federal Reserve Act.

The Federal Reserve Act does impose restrictions on what type of domestic securities the Fed can buy through open-market operations (*Table 1*). Some of the allowed securities may be less than familiar. Debt guaranteed by the U.S. government refers to the debt of government-backed enterprises such as Ginnie

Table 1

Federal Reserve Act Restrictions on Domestic Security Purchases

Allowed	Not allowed
U.S. federal, state and local government debt	Corporate bonds
Debt guaranteed by the U.S. government	Mortgages
Bills of exchange	Commercial paper
Banker's acceptances	Equities

Mae. A bill of exchange is essentially a draft order that specifies a future date on which the order is to be executed. Banker's acceptances are bills of exchange in which the bank on which the draft order is made guarantees payment.

For all practical purposes, though, the legal constraints limit open-market operations in domestic securities to U.S. government debt or debt guaranteed by the U.S. government. The markets for bills of exchange and banker's acceptances are currently too small to be of any use, though they would likely expand over time if those securities became instruments of Fed policy.

How, then, would the strategy of buying other domestic securities work? Following this avenue, the Fed could purchase any government debt with positive yields—for example, longer-term Treasuries. In broad terms, the purchases reduce the outstanding supply of these securities (and replace them with money or zero-interest Treasury bills), thus forcing the private sector to rebalance its portfolio. The yields on the securities whose supply has shrunk must fall, to make people content with holding less of them. The yields on other traded securities could fall as well, to the extent that those other securities are similar, in terms of maturity and risk, to the government securities the Fed has purchased. The prices of all these assets, which move in the opposite direction from their yields, must rise.

For consumers, the lower yields reduce saving and spur consumption. For businesses, the lower yields can mean a lower cost of funds, while the rise in the assets' prices can improve businesses' balance sheets or give them more valuable collateral with which to secure financing.

This strategy, while indeed the simplest to implement, is not without its

problems. First, no one, we believe, has a good quantitative sense of the mechanics of this strategy—that is, what size operations are needed to secure a given stimulus. While the Fed has managed longer-term yields at various times in the 1940s, '50 and '60s, the last time such a strategy was implemented was nearly 40 years ago.

Second, if the economy's short-term riskless interest rate is zero but other rates are positive, those rates must be positive for reasons—to compensate the holders of those assets for some form of illiquidity or risk. Under this strategy, the Fed takes those risks onto its balance sheet.

This leads to a third point: The Fed is almost guaranteed to take a capital loss on its portfolio. If the strategy works, the economy picks up, interest rates go up, bond prices go down and the value of the Fed's holdings of longer-term Treasuries falls. To be sure, a negative net worth does not mean the same for the Fed as it would for a private bank; the Fed's liabilities, after all, consist almost entirely of noninterest-bearing money, which is not explicitly redeemable for anything. The potential problem—if it really is a problem—seems to be mainly one of perception. Nevertheless, some advocates of the long-bond-purchases strategy have suggested that explicit mechanisms be put in place by which the Treasury would indemnify the Fed against capital losses on its long-bond portfolio.⁴

Finally, narrowing the yield spread between assets of long and short maturity can stress institutions, such as banks, that profit from that spread. On the other hand, it must be noted, a wave of deflation-induced loan defaults would no doubt also be stressful for banks.

(Continued on back page)

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(Continued from page 5)

Conclusion

Open-market purchases of Treasury bills—the Fed’s standard method for stimulating the economy over the past 40 years—become ineffective as short-term interest rates approach zero. With Treasury bill rates today so near zero, the Fed will need to be open to alternatives to standard policy and stand ready to vigorously pursue them if the economy remains weak.

In the event it must act alone, the Fed’s best policy option is probably open-market purchases of longer-term government bonds. Efforts by the Fed to manipulate longer-term Treasury yields are not unprecedented: They were fairly common in the 1940s and early 1950s. But that’s not to say that reorienting Fed policy would be problem-free. There are good reasons why the Fed usually aims its efforts on the short end of the yield curve.

If standard policy options are exhausted, the Fed’s quiver is by no means empty. But the arrows that remain are less familiar and, perhaps, not quite as straight as the ones that have already been fired.

—Evan F. Koenig
Jim Dolmas

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Notes

- ¹ Irving Fisher (1933), *Stamp Scrip* (New York: Adelphi). Fisher credits the stamp money idea to the German–Argentine economist and businessman Silvio Gesell.
- ² See, for example, Bennett McCallum (2000), “Theoretical Analysis Regarding a Zero Lower Bound on Nominal Interest Rates,” *Journal of Money, Credit, and Banking* 32 (pt. 2, November): 870–904 or Lars E. O. Svensson (2001), “The Zero Bound in an Open Economy: A Fool-proof Way of Escaping from a Liquidity Trap,” *Monetary and Economic Studies* 19 (Special ed., February): 277–312.
- ³ This conclusion is perhaps overly pessimistic. As long as the foreign central bank did not expand its money supply through open-market purchases of dollars, the Fed’s purchases of foreign currency would still increase liquidity in the U.S. economy, even if the purchases had no effect on exchange rates. The expansion of liquidity—what some economists refer to as “quantitative easing”—might be beneficial in itself, since we know that *eventually* increases in an economy’s money supply fuel inflation, and such inflation would be welcome in a deflationary, zero-interest-rate setting. One problem with quantitative easing, however, is predicting its near-term effects, since the short-run relationship between the money supply and inflation is tenuous and unpredictable in normal times, let alone in a deflationary, zero-interest-rate environment.
- ⁴ See, for example, Marvin Goodfriend (2000), “Overcoming the Zero Bound on Interest Rate Policy,” *Journal of Money, Credit, and Banking* 32 (pt. 2, November): 1007–35. A very clear discussion of the balance-sheet-risk issue, though with a focus on the Bank of Japan, is contained in Federal Reserve Board Governor Ben S. Bernanke’s speech before the Japan Society of Monetary Economics on May 31, 2003 (available online at: www.federalreserve.gov/boarddocs/speeches/2003/20030531/default.htm).

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