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Foreign Exchange and the Liquidity Trap

by Owen F. Humpage and William R. Melick

When short-term interest rates hover near zero, central banks may have difficulty offsetting downward momentum on prices and economic activity through traditional monetary-policy channels, since commercial banks have little incentive to make loans. Economists refer to this situation as a liquidity trap. Do exchange rate targets and foreign exchange operations, as some have suggested, offer a way to escape such a trap?

The federal funds rate—the interest rate that the Federal Reserve uses to guide monetary policy—currently stands at 1 percent, its lowest level since the recession of 1958. Overnight reserve-market interest rates are similarly low in the euro area and are essentially at zero in Japan. Rates this low raise concerns among economists and policymakers about the ability of central banks to conduct monetary policy. The problem is that when prices are falling and short-term interest rates approach zero, banks may become indifferent between lending and holding money in their portfolios. If banks have no incentive to lend, the standard method for conducting monetary policy—cutting short-term interest rates by purchasing government securities to add reserves to commercial bank portfolios—becomes ineffective because reserves stay in banks and are not lent out to trickle through the economy. With this mechanism closed, central banks may find offsetting any downward momentum in prices and economic activity inordinately difficult.

Economists often refer to this situation as a liquidity trap, and they have proposed a wide variety of ways to make an escape. Some economists, notably Ben McCallum of Carnegie Mellon University and Lars Svensson of Princeton University, suggest that central banks buy foreign exchange instead of domestic government securities and use an exchange rate target to help guide monetary policy out of a liquidity trap.

While not everyone agrees that liquidity traps are a serious possibility, in this *Economic Commentary*, we assume they are and discuss the merits and the drawbacks of these exchange-rate-based escapes. We show that while these foreign-exchange-based recommendations are theoretically feasible, they rely on rather esoteric and largely untried transmission mechanisms. Moreover, they raise potential beggar-thy-neighbor issues that would likely require the domestic monetary authorities to coordinate with foreign monetary authorities.

The Japanese Experience

Japan's economic experience over the past 12 years, and the fear that similar problems could develop in the United States or in Europe, have motivated much of the current discussion about liquidity traps. While the issue of whether Japan is truly stuck in a liquidity trap or is instead the victim of persistent structural banking problems remains contentious, the country exhibits most of the hallmarks that economists associate with a liquidity trap. Real growth in Japan began to stagnate in 1990 (see figure 1). By 1995, prices started to fall, and short-term interest rates reached their zero limit. Frustrated by the inability of standard monetary procedures to combat these symptoms, the Bank of Japan switched its operating procedure in March 2001 from targeting a nominal overnight interest rate to targeting reserves held by Japanese banks. The Bank has since increased its reserve target roughly fourfold and tripled the amount of long-term Japanese government bonds that it purchases each month. These policy changes resulted in a rapid increase in the monetary base, but the broader money stock has not grown apace (see figure 2). Commercial banks in Japan apparently are still holding the additional reserves instead of using them to support more lending.

From the perspective of the banks, holding reserves makes economic sense. With nominal short-term interest rates stuck at zero, reserves and short-term interest-bearing assets become close substitutes in Japanese banks' portfolios—especially portfolios weakened by questionable loans. The situation becomes even more intractable if, as is the case in Japan, prices are falling and the balance sheets of many potential borrowers are in poor condition. With falling prices, cash in a bank's vault will increase in value and offer a return that may be greater than a loan to a struggling business. In this type of environment, how might a central bank operate?

Inflation, Credibility, and the Expectations Channel

When Princeton University economist Paul Krugman first suggested that Japan was caught in a liquidity trap, he emphasized the importance of policy credibility to making an escape. A central bank caught in a liquidity trap faces the daunting task of convincing the public that it is committed to raising the rate of inflation substantially. The expectation that prices will soon rise should have two effects on economic activity. First, a public that expects prices to be higher in the future will spend today on both consumption and investment in order to beat the coming price increases. Second, as prices rise and inflation expectations firm, loan demand will strengthen, and interest

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rates will also begin to rise. Banks will no longer be content to hold excess reserves, since idle cash in vaults will lose value as prices rise. Lenders will look to satisfy a rising loan demand and earn a positive rate of return. Economic activity will expand.

Krugman advocated that the Bank of Japan simply announce an inflation target and expand its open market operations accordingly. But a simple announcement may not be sufficiently convincing for central banks like the Bank of Japan or the Federal Reserve System, which have consistently demonstrated an aversion to inflation. If people doubt the central bank's resolve to generate inflation, economic activity will continue to stagnate.

Lars Svensson's plan for escaping a liquidity trap primarily offers a mechanism for enhancing credibility. Not all economists agree in their interpretation of the nuts and bolts of Svensson's proposal, but in the main, he seems to exploit a mechanism known as the expectations channel.

Svensson suggests that the Bank of Japan—and, by extension, any central bank caught in a liquidity trap—announce a long-term target path for the price level (necessarily embodying a significant inflation rate) and a long-term target path for the exchange rate (necessarily embodying a significant depreciation) that is consistent with the target path for the price level. Svensson argues that this twin announcement will be more credible, since the Bank of Japan can guarantee the exchange rate depreciation by flooding the world with yen by purchasing essentially unlimited amounts of foreign exchange, such as dollars or euros. Except for the instruments involved—foreign currencies instead of domestic securities—such an operation is equivalent to a standard central bank open market operation. How then does this mechanism enhance credibility? What encourages Japanese banks to lend out these yen reserves instead of holding on to them?

The essential element in Svensson's proposal is that the Bank of Japan must persuade the public that the yen will remain at the depreciated rate until the price target is achieved and convincingly maintained. Since exchange rates are quoted minute by minute—unlike price indexes, which appear at a monthly frequency and only after a significant lag—the Bank of Japan's efforts to depreciate the yen are immediately and always visible. Market participants can continuously monitor the central bank's commitment to depreciate the currency. The transparency of this mechanism enhances the central bank's credibility more than standard open market operations aimed solely at an inflation rate. The hope is that once the central bank announces the twin target paths and depreciates the yen, people will anticipate the inflation rate embodied in the price-level target and will immediately alter their behavior.

While Svensson's plan has the benefit of being more transparent with respect to the inflation objective than a typical open market operation, it is far from foolproof. Ultimately, it relies on the public seeing the immediate depreciation of the yen and therefore completely believing the central bank's commitment to the price-level target and higher inflation. However, the plan could go awry if the public instead believes that the immediate depreciation of the yen is only temporary and perhaps likely to be reversed. Given that the yen has basically appreciated against the dollar over the past 30 years, this possibility cannot be ignored, as emphasized by Stanford economist Ronald McKinnon.

■ Portfolio-Balance Channel

Ben McCallum's proposal for a foreign-exchange-based escape from a liquidity trap introduces a channel of influence—the portfolio-balance mechanism—that does not depend on affecting expectations. In a liquidity trap, the purchase of foreign exchange can produce a depreciation—even if expectations about a future depreciation and inflation do not change—by altering the currency composition of assets in investors' portfolios. If, for example, the Bank of Japan acquires dollars (or other foreign currencies), private investors across the globe necessarily end up holding more yen-denominated base money and securities in their portfolios relative to dollar-denominated assets. Although short-term Japanese securities and currency may be perfect substitutes in a liquidity trap, yen- and dollar-denominated assets probably will not be perfect substitutes. Consequently, international investors may only acquire additional yen assets if compensated for the risk of loading their portfolios with them. Their initial aversion to additional yen assets induces a spot depreciation. With the expected future exchange rate unchanged, the initial depreciation implies that the yen will appreciate in the future and will provide holders of the yen assets with a valuation gain. This implied valuation gain compensates investors for their added risk.

This portfolio-balance effect offers a mechanism through which the spot exchange rate will immediately depreciate even if domestic short-term interest rates are stuck at zero. As we discuss in the next section, the yen depreciation will lower the foreign currency prices of Japanese goods and raise the yen price of foreign goods. This change in relative prices shifts worldwide demand—at least temporarily—toward Japanese goods and services. If the depreciation is large enough, it could provide a sufficient boost to lift economic activity out of the liquidity trap.

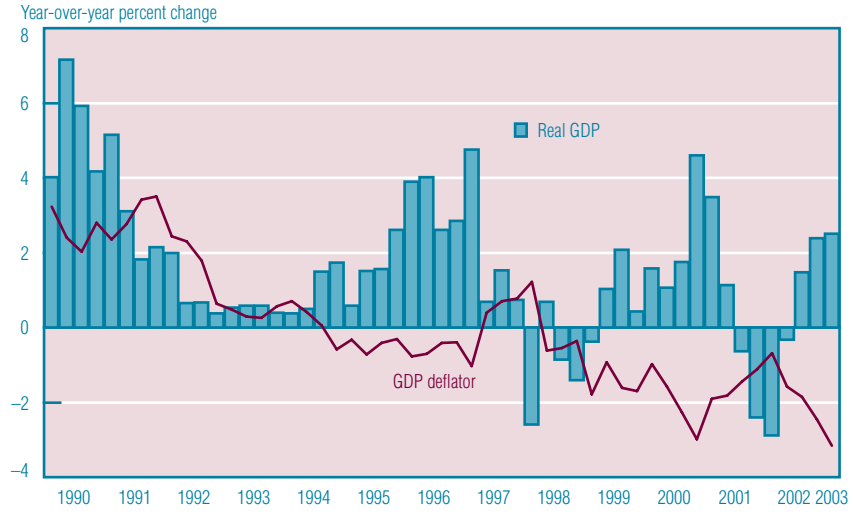
Although theoretically sound, the portfolio-balance mechanism lacks convincing empirical support. At best, empirical studies suggest that to exploit the portfolio-balance channel, a central bank would have to undertake an extremely large amount of foreign exchange purchases—an amount well beyond the typical central bank foreign exchange intervention. However, for a central bank caught in a liquidity trap, these large purchases may indeed be technically feasible. A central bank can essentially print an unlimited amount of its own currency, and the pool of foreign currencies available for purchase is vast.

■ Beggar-Thy-Neighbor

Along with questions about their feasibility, proposals to escape a liquidity trap through planned currency depreciation have raised concerns about their potential consequences for other countries. The depreciating country would gain competitiveness—at least initially—at the expense of its trading partners. Economist Michael Mussa, for example, contends that such proposals, if narrowly construed, might violate the prohibition in the International Monetary Fund's Articles of Agreement against "manipulating exchange rates…to gain an unfair competitive advantage over other members." Even though the ultimate objective is to generate inflation, and even though any competitive gain would dissipate as prices rose, the technical legality of these proposals might be problematic.

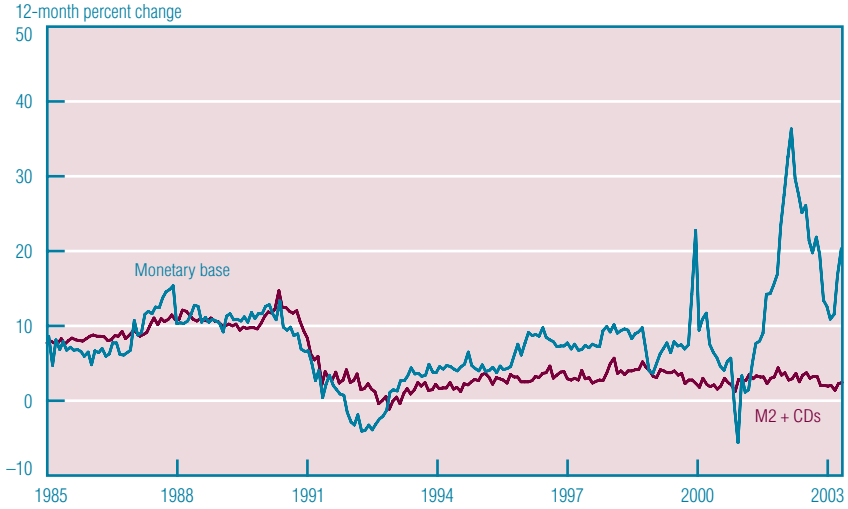
Clearly the fault lies solely in the explicit yen depreciation, since any monetary expansion that successfully

FIGURE 1 JAPANESE GDP AND GDP DEFLATOR



SOURCE: International Monetary Fund, *International Financial Statistics*.

FIGURE 2 JAPANESE MONETARY BASE AND M2



SOURCE: International Monetary Fund, *International Financial Statistics*.

freed Japan from its liquidity trap—no matter how it was induced—would depreciate the yen. Because exchange rates tend to respond to monetary policy changes faster than goods prices, a yen depreciation would initially improve Japan's price competitiveness, thereby boosting its exports and reducing its imports. An accelerating inflation rate, however, would eventually erode the competitive gains from the depreciation, and import demand would rise with the revival of GDP growth.

Empirical studies are unclear about how these offsetting influences play out over time. Many suggest that a monetary expansion could eventually worsen Japan's trade balance because renewed growth would increase that country's imports more than enough to offset the temporary gain in price competitiveness resulting from the yen depreciation. Claims that exchange-rate-based proposals violate international law may be technically correct, but largely overblown. The proposals are not likely to do much damage to other countries.

Some commentators have been especially concerned that a depreciation of the yen will have dramatic effects in East Asia. These commentators fear that floating East Asian currencies, especially the Singapore dollar, South Korean won, and Taiwan dollar, will depreciate in sympathy with the yen and put excessive pressure on those currencies maintaining a fixed parity with the dollar, particularly China's.

These concerns also seem exaggerated. Detailed trade data reveal that Chinese exports compete most closely with exports from Indonesia, Thailand, Taiwan, and Malaysia—countries whose exchange rates do not move all that closely with the yen. This finding suggests that the competitive effects of yen depreciation on China are likely to be modest. Moreover, the share of China's exports destined for Japan has increased rapidly, from 13.9 percent in 1995 to 20.8 percent in 2000. China stands to gain enormously from a Japanese economic revival, even one entailing a weaker yen.

■ Global Liquidity Trap?

What works well for one can fail miserably for many. Although the exchange-rate-based proposals for escaping a liquidity trap rely on rather uncertain transmission mechanisms, they are theoretically feasible. If it were willing to commit the resources, Japan probably could escape a liquidity trap by following the exchange-rate-based approaches. But if the United States and the euro area face liquidity traps and adopt similar strategies, this route will be unavailable. All three currencies cannot simultaneously depreciate against each other.

■ Recommended Reading

For background on Japan's economic problems:

Alan Ahearne et al., 2002, "Preventing Deflation: Lessons from Japan's Experience in the 1990s," Board of Governors of the Federal Reserve System, International Finance Discussion Papers No. 729 (June).

Ronald McKinnon and Kenichi Ohno, 2000, "The Foreign Exchange Origins of Japan's Economic Slump and Low Interest Liquidity Trap," *The World Economy*, vol. 24, no. 3.

For background on deflation and liquidity traps:
Federal Reserve Bank of Cleveland, *2002 Annual Report*.

Paul R. Krugman, 1998, "It's Baaack: Japan's Slump and the Return of the Liquidity Trap," Brookings Papers on Economic Activity 2, pp. 137–203.

On exchange-rate-based escapes from liquidity traps:
Bennett T. McCallum, 2000, "Theoretical Analysis Regarding a Zero Lower Bound on Nominal Interest Rates," *Journal of Money, Credit, and Banking*, vol. 32 (November, Part 2), pp. 870–904.

Bennett T. McCallum, 2003, "Japanese Monetary Policy, 1991-2001," Federal Reserve Bank of Richmond, *Economic Quarterly*, vol. 89 (Winter), pp. 1–32.

Lars E. O. Svensson, 2001, "The Zero Bound in an Open Economy: A Foolproof Way of Escaping from a Liquidity Trap," Monetary and Economic Studies (Special Edition) (February), pp. 277–321.

For critical commentary on this and other proposals:
Lawrence J. Christiano, 2000, "Comment on Analysis Regarding a Zero Lower Bound on Nominal Interest Rates," *Journal of Money, Credit, and Banking*, vol. 32 (November, Part 2), pp. 909–30.

James Clouse et al., 2000, "Monetary Policy When the Nominal Short-Term Interest Rate Is Zero," Board of Governors of the Federal Reserve System, November 27.

Owen F. Humpage is an economic advisor at the Federal Reserve Bank of Cleveland. William R. Melick is an associate professor of economics at Kenyon College and a research associate at the Bank. *The authors thank Alain Chaboud, Carolyn Evans, Dale Henderson, Lars Svensson, Edward Stevens, and Edwin Truman for comments on an early version of this* Commentary.

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Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
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