Federal Reserve Bank of Cleveland

ECONOMIC COMMENTARY

The Group of Five countries (France, Germany, Japan, the United Kingdom and the United States), plus Canada, met in Paris on February 21 and 22, seeking ways to eliminate huge trade imbalances in the United States, Japan and Germany, to encourage greater exchange-market stability, and to stave off growing protectionism.

The recent rapid depreciation of the dollar, which poses major problems both for the United States and for our major trading partners, prompted the Paris meeting. As the dollar depreciates relative to other currencies, foreign exporters find it difficult to compete against U.S. goods in world markets. The dollar depreciation already has contributed to a sharp slowdown in Japan's economic growth. For the United States, fear of continued rapid dollar depreciation increases the risk that international investors will shift funds out of dollar-denominated assets and, thereby, force up U.S. interest rates. Federal Reserve Chairman Paul A. Volcker repeatedly has cautioned about this possible effect. The depreciation also will contribute to higher prices in the United States.

Although vague on the issue, the Paris meeting increased speculation that the participating countries would intervene more forcefully in an attempt to limit movements in key exchange rates. As newspapers recently have reported, Japan, and to a lesser extent, Germany have committed large sums to exchange market intervention. In contrast, however, the United States has been reluctant to intervene in the exchange market, believing that when nations conduct intervention independent of their monetary policies it has, at best, a limited influence on exchange rates.

This Economic Commentary discusses the U.S. reluctance to intervene through exchange markets. We present three theoretical channels through which exchange-market intervention could influence exchange rates: the monetary channel, the portfolio-adjustment channel, and the expectations channel.

A Definition
Exchange-market intervention refers to official purchases and sales of foreign exchange, which nations undertake through their central banks to influence the exchange value of their currencies. Although nations have many ways to influence their exchange rate—such as using monetary and fiscal policy, capital controls and trade barriers—exchange-market intervention seems the most direct and most flexible method. Many nations, therefore, frequently resort to intervention. Members of the European Monetary System, for example, routinely intervene to keep their exchange rates within narrow margins.

Much of the recent interest in intervention stems from the belief that intervention enables nations to influence their exchange rates without altering monetary and fiscal policies. To understand this, we first must distinguish between sterilized and nonsterilized intervention. When a country undertakes sterilized intervention, it engages in other transactions to prevent either the purchase or sale of foreign currency from influencing its money-supply growth. In contrast, nonsterilized intervention can alter a country's money supply.

An example can help clarify the important distinction between sterilized and nonsterilized intervention. Suppose the United States wants to slow a depreciation of the dollar relative to the German mark. At the direction of the Treasury Department, the Federal Reserve System would buy dollars with German marks through its foreign-exchange desk in New York. Because this transaction reduces the supply of dollars in the foreign exchange market, the dollar should then appreciate relative to the German mark. The foreign-exchange desk's purchase of dollars, however, also contracts the money supply in the United States. At this point, the intervention transaction is nonsterilized.

The reduction in the money supply resulting from intervention might be inconsistent with the domestic objectives of monetary policy. Consequently, the Federal Reserve then might wish to offset the impact of the intervention purchases of dollars by purchasing Treasury bills through the System's open-market desk at the Federal Reserve Bank of New York. The purchase of Treasury bills supplies reserves to the banking system and increases the money supply. Thus, by coordinating the activities of the foreign-exchange and open-market desks, the Federal Reserve can offset, or sterilize, the monetar impact of its exchange-market activities.

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1. This article was revised and published after the February Group of Five meeting and has been backdated in order to maintain the continuity of the Economic Commentary series — editor.


3. The United States intervened quite frequently during much of the 1970s, but has intervened relatively infrequently in the 1980s.
While sterilized intervention has no effect on the money stock, it does lead to the formation of a portfolio of U.S. Treasury securities and foreign securities. In our example, sterilized intervention alters relative supplies of dollar-denominated and yen-denominated securities in the market.\footnote{5}{The Channels of Influence, Op. cit., pp. 45.}

**The Impact of Nonsterilized Exchange-Market Intervention**

Nonsterilized intervention alters relative supplies of government securities. Consequently, demand for dollars will increase, and the dollar will appreciate. The increased demand for dollars will tend to slow the money growth rate in the United States. For example, the additional demand for dollars will cause the dollar to appreciate both on a nominal basis and on an inflation-adjusted, or real, basis.\footnote{6}{The nominal appreciation of the dollar will make U.S. goods less competitive in world markets, until the U.S. inflation rate slows to the slower pace of money growth rate, but can alter the speed and timing of an impending crisis. The nominal appreciation of the dollar will make U.S. goods less competitive in world markets, until the U.S. inflation rate slows to the slower pace of money growth rate, but can alter the speed and timing of an impending crisis.}

In summary, nonsterilized intervention is identical to central bank open-market operations, except that the bank would slow the money growth through the sales of foreign assets instead of dollars. A slower rate of money growth resulting from nonsterilized intervention can be viewed as an adjustment to the slower world growth rate. This view is consistent with the portfolio-adjustment channel of sterilized intervention.\footnote{7}{This description ignores the important contribution of expectations. Expectation, however, will not alter the outcome of a decrease in the rate of money growth.}

Nonsterilized intervention alters relative supplies of government securities. In our example, sterilized intervention would slow the growth in the United States.

In summary, nonsterilized intervention is identical to central bank open-market operations, except that the bank would slow the money growth through the sales of foreign assets, thereby causing the dollar to appreciate. The nonsterilized intervention thus will not have a long-term impact on a nation's competitive position.

**Sterilized Intervention and Portfolio Adjustments**

While little disagreement exists about the importance of nonsterilized intervention in altering exchange rates through changes in money growth, disagreement persists about the role of sterilized intervention. Economists have suggested two theoretical channels through which sterilized intervention might influence exchange rates. These are the portfolio-adjustment channel and the sterilization channel.

According to the portfolio-adjustment channel, sterilized intervention alters the amounts of U.S. Treasury securities relative to foreign government securities, thereby altering investors' diversification intentions.\footnote{8}{The nominal exchange rate is the rate that is fixed by the market when there is no speculation. The nominal exchange rate is equal to the nominal exchange rate adjusted for inflation relative differences between the countries in question.}

To understand how the portfolio-adjustment effect operates, consider a world market in which foreign assets diversify an array of assets, diversify their portfolios instead of holding only the single asset currency.\footnote{9}{See Hutchison, Michael M. "Intervention, Deficit Finance, and the Federal Reserve," Economic Review, Federal Reserve Bank of San Francisco, Winter 1984, pp. 27-44.}

But, even if the relevant bonds are imperfect substitutes, it appears that the response to small changes in the risk premium is quite low.

Michael Hutchison, for example, noted that the change in the total outstanding publicly held government debt was the relevant variable for portfolio decisions.\footnote{10}{See Henderson, Dale W. "Exchange Market Intervention: The Impact of American Monetary Policy and Their Effects," in John F. O. Bilson Policy and Their Effects," in John F. O. Bilson Economic Review, Chicago: University of Chicago Press, 1984.}

The reduced rate of U.S. money growth also might slow the pace of economic activity, thereby reducing the demand for inflation in the United States. But, prices typically adjust more slowly than money, and if they do, the relative merchandise price and the risk and political risk, a strong incentive then exists for investors worldwide to trade German securities and the dollar.\footnote{11}{See Jegers, Philippe (Chairman). Report of the Conference on Foreign Exchange and Monetary Policy, Chicago: University of Chicago Press, 1983.}

In the case of major developing countries, analysts attach the greatest importance to exchange risk. Economists believe that the exchange risk is an important determinant of the exchange rate level.\footnote{12}{The exchange risk is the uncertainty associated with anticipated exchange rate movements. portfolio-adjustment channel. The portfolio-adjustment channel would be as follows: If the United States were to reduce its monetary growth rate, international investors would trade German marks for dollars in the exchange market. The exchange rate would increase as a result of the portfolio-adjustment channel. If the Federal Reserve were to undertake a large-scale reduction in its portfolio of open-market operations, it would cause investors to reorganize their portfolios. This re-diversification can have important implications for the exchange rate.}

Since sterilized intervention alters the relative amounts of bonds in the hands of private investors, it has the potential to affect risk-based premiums. Consider our original example. If the Federal Reserve were to cease sterilizing open-market operations to stabilize the dollar, the dollar would appreciate relative to the mark.\footnote{13}{See Jegers, Philippe (Chairman). Report of the Conference on Foreign Exchange and Monetary Policy, Chicago: University of Chicago Press, 1983.}

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In summary, nonsterilized intervention is identical to central bank open-market operations, except that the bank would slow the money growth through the sales of foreign assets, thereby causing the dollar to appreciate. The nonsterilized intervention thus will not have a long-term impact on a nation's competitive position.\footnote{15}{See Jegers, Philippe (Chairman). Report of the Conference on Foreign Exchange and Monetary Policy, Chicago: University of Chicago Press, 1983.}
Sterilized Intervention and Portfolio Adjustments

While little disagreement exists about the necessity of nonsterilized intervention, there is some difference in opinion about its effect on exchange rates through changes in money growth, disagreement over the extent to which intervention affects current accounts, and the extent to which intervention alters relative supplies of money. Economists have suggested two theoretical channels through which sterilized intervention might influence exchange rates. These are the portfolio-adjustment channel and the sterilized intervention channel.

According to the portfolio-adjustment channel, intervention alters the amounts of U.S. Treasury securities relative to foreign government securities. A sterilized intervention involving purchases or sales of foreign currency-denominated bonds as instruments of monetary policy, under certain conditions, might entice foreign investors to diversify into dollar assets, thereby causing the dollar to appreciate relative to the mark.

For the portfolio balance approach to operate, it is necessary to consider both sterilized intervention and the portfolio-adjustment effect. Sterilized intervention alters the relative supplies of dollar- and mark-denominated securities in the hands of the public. The change in the relative supply of dollar- and mark-denominated assets then could lower the relative values of these assets denominated in different currencies. Moreover, if the German Bundesbank also sterilized the impact of its purchase of dollar-denominated bonds, the U.S. dollar would likely become more attractive to investors holding mark-denominated bonds.

The reduced rate of U.S. money growth also might slow the pace of economic activity and influence the rate of inflation in the United States. But, prices typically adjust more slowly than nominal interest rates, so investors will overvalue dollar-denominated assets. The overvaluing in the dollar growth rate will cause the dollar to appreciate both on a nominal basis and on an inflation-adjusted, or real, basis. The real appreciation of the dollar will make U.S. goods less competitive in world markets, until the U.S. inflation rate adjusts to the slowed rate of dollar money growth in the United States.

In summary, sterilized intervention alters the relative supplies of foreign- and domestic-currency denominated securities in the hands of the public. The change in the relative supply of dollar- and mark-denominated assets then could lower the relative value of these assets denominated in different currencies.

Since sterilized intervention alters the relative amounts of bonds in the hands of the public, it has the potential to affect risk-based premiums. Consider our original example. If the Federal Reserve increased its sterilized intervention, it would do so either by buying dollar-denominated securities or by selling mark-denominated securities.

Expectations

Even in the absence of a significant portfolio-adjustment effect, sterilized intervention increases expectations about exchange-rate changes, and these expectations influence the rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth. The United States intervenes forcefully immediately following the substantial outflow of dollar-denominated securities. Since foreign governments will impose capital controls, it is unlikely that the dollar-denominated securities will be sold in the hands of foreign investors. Therefore, foreign investors will demand higher interest rates for dollar-denominated securities than for mark-denominated securities. The cost of sterilized intervention is the reduced rate of U.S. money growth.
Conclusion
Most analysts believe that growing U.S. trade deficits cannot continue. As our international indebtedness grows, foreigners will become increasingly reluctant to acquire additional dollar-denominated assets. This will initiate adjustments in many economic variables, including exchange rates and interest rates, to bring the international economy back into balance. How and how quickly these adjustments take place depends largely on how rapidly the market decides to adjust its holdings of dollar-denominated assets. Depreciation of the dollar can contribute to the adjustment process by increasing the competitiveness of U.S. goods and services in world markets. Nevertheless, economists have long realized that the ability of an economy to meet increased demands for its goods and services limits the contribution of a currency depreciation to improving its trade balance. If the economy is operating at full capacity, the depreciation will not generate much improvement in the trade balance. Ultimately a reduction in the trade deficit requires that the United States reduce its budget deficit, that it promotes savings, and that it encourages production of tradable goods and services.

Exchange-market participants understand these relationships and look for compatible developments in U.S. economic policies. If they believe that the United States is attempting to force a dollar depreciation through an inflationary increase in money growth or that the United States is not taking credible steps to reduce its budget deficit, international investors, who have played an important role in helping finance U.S. credit demands, could shift rapidly out of dollars into assets denominated in other currencies. Under such circumstances, no amount of exchange-market intervention could supplant appropriate monetary or fiscal policies.

If, on the other hand, monetary and fiscal policy are consistent with a reduction in the trade deficit and an orderly depreciation of the dollar, then intervention can play a useful role in reinforcing the intention of policy should market uncertainty arise. Policymakers should clearly state the objectives of such policies. Under these circumstances, monetary and fiscal policies will help minimize market uncertainty and, hence, the need for intervention.


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