

Remarks by Governor Laurence H. Meyer

Globalization and U.S. monetary policy

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World trade has increased much faster than world output over the last 30 years and international capital flows have expanded at a still more rapid pace. As a result, forecasting and modeling the national economic developments and the conduct of domestic policy has increasingly required more careful attention to the global context.

My focus is on how globalization has affected the conduct of U.S. monetary policy. I begin by documenting the trend toward increased openness of the U.S. economy. With that background in place, I turn to the implications of increased openness for the conduct of U.S. monetary policy. The views I present here about the conduct of monetary policy are my own. They should not be interpreted as official policy positions of the Board of Governors or the FOMC.

Some of the questions that I address along the way are: Does an open economy introduce either new objectives or new instruments for monetary policy? How does an open economy affect the monetary policy transmission mechanism? Does the rapid growth in cross-border capital flows limit or even eliminate the ability of domestic monetary policy to affect domestic interest rates? How does U.S. monetary policy affect economic conditions in other countries? How does globalization affect the cyclical properties of the U.S. economy, the inflation process, and longer-term trends in the economy?

My conclusion is that, while the increasing openness has resulted in some important changes to how the U.S. economy operates, it has not fundamentally altered the determination of output and inflation, introduced new objectives of monetary policy, or offered new instruments to pursue those objectives. Nevertheless, it has importantly affected the monetary policy transmission mechanism and increasingly subjected the domestic economy to the effects of changes in economic conditions abroad.

Documenting the trend toward increased openness of the U.S. economy

The increased openness has two dimensions -- expanded trade in goods and services and expanded cross-border capital flows. A related indicator of openness is the volume of foreign exchange transactions, since both goods and financial asset transactions typically are preceded by currency conversions.

U.S. trade in goods and services has increased about twice as fast as the growth in U.S. GDP over the last 3 ½ decades. This reflects the effect of both trade liberalization and technological advance, as well as the rapid growth of emerging markets recently. Trade liberalization -- including both a series of multi-lateral efforts through GATT and regional efforts such as NAFTA -- has involved both reduction in tariffs and the elimination of many

non-tariff barriers to trade. Technological gains have reduced transportation costs and improved the flow of information about goods around the world. A measure of the openness of the U.S. economy in terms of trade in goods and services is the ratio of the sum of U.S. imports and exports to U.S. GDP. This ratio has almost tripled over the last 3 1/2 decades, from 9% in 1960 to 24% in 1996.

Even more striking is the expansion of international capital flows. Financial liberalization, deregulation, and technology, including the information revolution, have contributed to the globalization of asset markets. A measure of the net result of cross-border capital flows, the combined U.S. holdings of foreign securities and foreign holdings of U.S. securities, has increased more than tenfold just from 1980 to 1996. Foreigners now hold 33% of U.S. government securities, 17% of U.S. corporate bonds, and 7% of U.S. corporate stocks. U.S. holdings of foreign securities have also increased. Foreign stocks now make up about 10% of U.S. residents' equity holdings and foreign bonds make up about 4% of U.S. bond holdings. While the increase in cross-border capital flows is impressive, it is nevertheless clear that "home bias," the concentration of domestic wealth in domestic assets, still exists.

Another indicator of the increased openness of the U.S. and other economies is the volume of foreign exchange transactions, since these transactions are often the first step in effecting both foreign trade and cross-border capital flows. The daily volume of foreign exchange transactions surveyed in major financial centers doubled over the period from 1989 to 1995 to about \$1.2 trillion, and more than 4/5 of these transactions involve dollars. The daily volume of foreign exchange transactions, however, is an imperfect measure of openness of the U.S. economy, because many transactions among other countries involve dollars.

Monetary policy in a global economy: responding to external shocks

One implication of a global economy is that external shocks, those arising from outside the country, become an additional source of disturbance to the U.S. economy and therefore an additional challenge to which monetary policy must respond. I will consider three types of external shocks: demand, supply, and exchange rate shocks.

An example of a demand shock would be an unexpected change in the overall level of economic activity abroad, which would affect the demand for U.S. exports. For example, in the early 1970s, the latter 1970s, and late 1980s, global expansions and the resulting sharp increase in world commodity prices and demand for U.S. exports contributed to the mounting inflationary pressures and overheating in the United States.

In the three episodes just noted, commodity price booms were exacerbated by a run-up in oil prices resulting from the disruption of supplies from the Middle East. In the mid-1980s, oil prices plummeted, contributing to a transitory decline in inflation and easing of monetary conditions. Such changes in world oil prices are an example of a supply shock, a change in the price of goods unrelated to the balance between supply and demand in the domestic market. Energy and food prices, in particular, are subject to volatile swings, due to political decisions, weather, or other developments unrelated to overall domestic economic conditions. The United States is vulnerable to oil price shocks both because we have a very high consumption of oil and because we import about 50% of crude petroleum. The rise in oil prices not only has a sharp effect on overall prices in the United States, but, given the relatively inelastic demand for energy, results in an increase in real imports and hence a decline in aggregate demand for domestic output. Even much smaller shocks have had clearly visible effects on the U.S. economy, including the \$5 dollar a barrel increase over

1996 and the \$5 decline over 1997.

Exchange rates move in response to both domestic and foreign economic developments and at times appear to move for reasons not clearly linked to economic fundamentals. The movements that are tied to changes in domestic economic fundamentals are part of the process of income and price determination in open economies, and I will have something to say about this below. But movements related to developments abroad or movements not clearly tied to economic fundamentals are another source of shock to national economies. This is especially important because the empirical linkages between exchange rates and fundamentals are weak, or not as well understood as we might like, so that movements in exchange rates often appear to be exaggerated relative to or seemingly unrelated to changes in fundamentals.

Do cross-border capital flows reduce the effectiveness of monetary policy?

One of the dimensions of increased openness is the rapid increase in the volume of cross-border capital flows. If foreign and domestic securities are perfect substitutes, the liberalization of cross-border financial transactions could, in principle, result in a single world financial market. This might appear to imply that the interest rate at which citizens and governments of a nation could borrow and lend would then be set on world markets, with little or at least limited influence by national policymakers. A small country, for example, would have no ability to influence world interest rates in this case. A very large country, such as the U.S., would retain some influence, but the influence would be diminished relative to the closed-economy case and would result from its ability to affect the world interest rate.

If a country's exchange rate is pegged to the currency of another country (or countries), then its interest rates will move closely in line with those in the country or group of countries to which it is pegged. But for countries with flexible exchange rates, domestic interest rates can move quite independently of interest rates abroad. However, if countries care about the level of their exchange rates, which have implications for aggregate demand and inflation, and adjust monetary policy accordingly, interest rates will, to a degree, move in common across countries.

Greater integration of global capital markets does in fact mean that expected returns for holding different assets, with appropriate compensation for differences in risk, should increasingly converge. However, as long as exchange rates can adjust, this does not imply that interest rates across countries must move together. Instead, it is movements in exchange rates which insure convergence of holding period yields across the countries.

Before turning to the connection between interest rates and exchange rates, let me note that the evidence does not confirm an increase in correlations in interest rate movements across world asset markets, at least in the 1990s compared to the 1980s. It is true that the levels of long-term interest rates in major industrial countries have tended to converge since the early 1980s. But this is largely accounted for by a convergence of inflation rates. On the other hand, there is little evidence to suggest that correlations between changes in long-term interest rates across these countries have increased over this period. These correlations are a little higher in the 1980s and 1990s than they were in the 1970s, but again have shown no tendency to increase since the early 1980s. At any rate, the correlations between U.S. interest rates and those of major industrial countries suggest that there remains ample room for real interest rates to move differently across the world financial markets and implies that

domestic monetary policies remain important tools of macroeconomic policy, at least in countries with flexible exchange rates.

While the correlations among changes in interest rates have not increased, changes in interest rates between the U.S. and major industrial countries are correlated. Correlations tend to be about 0.5. This leaves open the question of causality and source of the correlations. It does not mean that higher U.S. interest rates directly raise foreign interest rates by this amount. First, some of the co-movement could reflect synchronous business cycles. Second, some of the co-movement could reflect the spillover effects of a cycle in one country on aggregate demand and hence interest rates in the other countries. In addition, some of the correlation may reflect the effect of the response of monetary policy to exchange rate developments. Perhaps reflecting the latter influence, the correlation between interest rates in the United States and Canada is higher, about 0.8, while that between the United States and Europe is lower, about 0.4.

The transmission mechanism in an open economy

While cross-border capital flows do not interfere with the ability of U.S. monetary policy to influence the broad spectrum of interest rates in the United States, they do quickly transmit pressures from changes in U.S. interest rates to the exchange rate and thereby broaden the channels through which monetary policy affects aggregate demand.

In the closed economy setting, the transmission mechanism runs from increases in the federal funds rate, the short-term interest rate targeted by monetary policy, first to longer term interest rates and equity prices and then to aggregate demand. Several components of aggregate demand depend importantly on interest rates, particularly longer-term interest rates (specifically, business fixed investment, housing, spending on consumer durables); consumer spending also depends on the net wealth of households and is therefore affected by equity prices.

Under floating exchange rates, net exports become another interest sensitive component of aggregate demand. Higher U.S. (real) interest rates, relative to foreign rates, raise the demand for dollar-denominated assets, and bring about an appreciation of the dollar which, in turn, stimulates imports and restrains exports. Net exports as a result become inversely related to U.S. interest rates. Evidence suggests that the response of net exports to interest rates (via exchange rates) has become larger over time.

The open economy version of the monetary policy transmission mechanism involves three steps: from U.S. interest rates to nominal exchange rates; from nominal exchange rates to the absolute and relative prices of imports and exports; and from the prices of imports and exports to the real volumes of imports and exports and domestic prices.

From U.S. interest rates to the exchange rate

We begin with the link between interest rates in the U.S. and exchange rates. A policy-initiated increase in U.S. short-term rates would, as noted above, generally result in higher U.S. long-term interest rates. At initial levels of foreign interest rates and equity prices, the movement in U.S. rates would make dollar-denominated assets more attractive compared to foreign currency-denominated assets, resulting in shifts in asset demands and either incipient or actual cross-boarder capital inflows to the U.S. and outflows from foreign economies. These shifts result in an appreciation of the dollar.

Indeed, the single most important determinant of short-term movements in exchange rates is the change in real interest rate differentials across countries. A 1% point increase in U.S. long-term (10-year) interest rates, with unchanged foreign rates, will typically induce a 10% increase in the U.S. trade-weighted exchange rate. After the initial jump in the dollar, there will be an expectation of a decline in the dollar by about 1% each year for the next 10 years. The result of the rise in the dollar and the expectations of gradual reversal is what is referred to as international interest rate parity. The holding period yields of U.S. and foreign assets, each denominated in their home currency, are thereby equated, eliminating the incentive for further changes in asset demands or capital flows. That is, the higher interest rate yield on U.S. assets (measured in dollars) is just offset by the expected depreciation in the value of the asset, measured in the foreign currency. This is the mechanism by which holding period yields are equated across countries via international capital flows. By the end of the 10-year period, according to this framework, both interest rates and exchange rate would have returned to their original levels.

Evidence suggests that the response of the exchange rate to changes in U.S. interest rates (relative to foreign rates) has increased over time. This likely reflects the removal of capital controls by many major industrial countries during the 1970s and early 1980s that in turn contributed the sharp rise in international capital flows documented above. So increased integration of financial markets across countries appears to have had a more important effect in raising the responsiveness of exchange rates to interest rate developments than in directly connecting interest rates across countries.

From the exchange rate to the relative prices of imports and exports

The next step in the transmission mechanism is the pass-through of the exchange rate to the dollar prices of imports and the foreign currency price of U.S. exports. The evidence suggests that the pass-through is much more complete for U.S. exports than for imports, but there is no evidence that these pass-throughs have changed over time. An appreciation of the dollar will be gradually partially passed through over time to the price of imports, lowering their price relative to U.S. produced goods. The corresponding depreciation in other countries currencies will result in a gradual increase in the foreign currency price of U.S. exports, compared to the prices of foreign produced goods. The result is movements in relative prices that encourage imports and discourage exports.

From relative prices to real import and export volumes

The final step in the process is from the relative price of imports and exports to the volumes of real imports and exports. This depends on the elasticity of the demands for imports and exports with respect to their relative prices and the size of trade flows relative to GDP. The elasticities of imports and exports with respect to their respective relative prices are estimated to be about unity, and there is no evidence of a shift in this elasticity over the past several decades. A one percentage point increase in the real exchange rate would increase real imports by one percentage point over a three year period and decrease real exports by a similar percentage. The absolute effect on aggregate demand also depends on initial levels of imports and exports. As import and export volumes have been increasing rapidly, the absolute effect of exchange rate changes on aggregate demand and the contribution of the exchange rate channel to the monetary transmission mechanism has been growing over time.

Trends in interest sensitivity

If the magnitude of other channels in the transmission mechanism remained unchanged, the growing importance of imports and exports and the increase in the responsiveness of

exchange rates to interest rate differentials would have raised the overall responsiveness of aggregate demand to interest rates. However, it appears that the interest sensitivity of residential construction has moderated over time, beginning with the repeal of Regulation Q, and continuing with innovations in housing finance, including adjustable rate mortgages, the broadening of the sources of mortgage lending, and the development of securitization and secondary markets for mortgages. The net result is that the interest responsiveness of aggregate demand appears to have remained reasonably stable over time, although the sectoral distribution of the overall effect of interest rates has shifted toward net exports and away from housing.

The response of net exports to changes in U.S. interest rates, via exchange rates, contributes about one-third of the total interest sensitivity of U.S. aggregate demand over both a one-year and three-year interval. It is therefore a very important part of the monetary policy transmission mechanism.

How does U.S. monetary policy affect other countries?

Just as developments abroad affect the U.S. economy, changes in U.S. economic conditions impact on foreign economies, although the effects are not necessarily symmetric. Because of the large relative size of the U.S. economy, changes in U.S. economic conditions have relatively larger effects on foreign economies, compared to the effect of changing conditions in any one country abroad on the U.S. economy.

A change in U.S. monetary policy affects foreign economies in three ways -- via exchange rates, interest rates, and income in the United States. The effects depend critically on the nature of the foreign exchange regime in the foreign country. If the foreign country's currency is pegged to the dollar, for example, there will, of course, be no exchange rate effect vis-à-vis the United States. An increase in U.S. interest rates, however, would put downward pressure on the foreign currency and require the country to raise domestic interest rates to maintain the fixed exchange rate. Therefore, foreign interest rates are very likely to have to rise with U.S. rates in this case. The restraining effect of the rise in foreign interest rates will be reinforced by the effect of the deceleration in U.S. demand for foreign goods induced by the slowdown in U.S. income. As a result, a tightening of monetary policy is likely to have an unambiguously restrictive impact on those countries whose exchange rates are pegged to the dollar.

For countries with floating exchange rates, on the other hand, the exchange rate and income effects of rising U.S. interest rates are likely to be offsetting. The appreciation of the dollar, of course, implies a depreciation in other countries' exchange rates; the depreciation will stimulate foreign aggregate demand by raising net exports. Offsetting this will be the effect of the decline in U.S. income on the demand for foreign countries' exports. The net effect, for countries with floating exchange rates, is likely to be small. That is, floating exchange rates tend to insulate a country from monetary shocks abroad.

Other effects of globalization on the U.S. economy

The increased openness of the U.S. economy has also focused attention on the possible effects of globalization on the macroeconomic performance of the U.S. economy, beyond the effects on the transmission of monetary policy that I have already addressed. I want to focus my attention in this section on the implications of globalization for wage-price dynamics because this has a direct bearing on the conduct of monetary policy. Some have argued that increased global competition has made the United States (and presumably other

countries) less inflation prone, so that the U.S. economy can operate at a higher degree of resource utilization without the threat of rising inflation.

It is useful to distinguish three ways in which global developments might recently be contributing to restraining inflation in the United States. First, the significant appreciation of the dollar over the last two years has clearly had an important restraining effect on U.S. inflation, both via the direct effect on the prices of imported goods and on the pricing power of domestic firms producing import-competing goods. Second, the absence of synchronous expansions among the major industrial countries - specifically the much weaker expansions in continental Europe and the still weaker condition of the Japanese economy - has prevented the pressures on worldwide commodity markets that often accompany U.S. expansions and has perhaps also encouraged greater price competitiveness than would otherwise have been the case. Third, increased international competitive pressures, associated with growing openness of the U.S. economy, might be restraining inflation. But I wonder whether we would be talking about the contribution of globalization to U.S. inflation performance if the dollar had been stable for the last several years and the expansions in Europe and Japan were as robust as in the U.S. I doubt it.

Are there additional objectives for monetary policy in a global environment?

An interesting question is whether the increased openness of the U.S. and other economies suggests new objectives for domestic monetary policies. It is certainly true that increased globalization has encouraged a proliferation of information-sharing exercises around the world and some increased attention to the coordination of policies across countries. I will comment on this briefly below.

Let's start with objectives appropriate in the closed economy context. Congress has set dual objectives for monetary policy in the Federal Reserve Act: price stability and full employment. These objectives relate directly to the performance of the domestic economy and they are also objectives that monetary policy has the ability to pursue in the closed economy setting.

The first question is whether the open economy environment reduces the ability of domestic monetary policy to achieve these objectives. I have argued that globalization has not reduced the ability of countries with flexible exchange rates to carry out independent monetary policies and therefore pursue domestic objectives. On the other hand, countries that fix exchange rates do give up much of the independence in their domestic monetary policies.

The second issue is whether the open economy setting introduces new objectives, beyond those that motivate policy in the closed economy context. Three possibilities come to mind: the current account and/or trade balance, the exchange rate (or pattern in exchange rates around the world), and economic performance abroad.

Even thinking of the external measures as domestic objectives raises questions. With respect to the current account, we should begin by separating cyclical and structural movements. Cyclical movements in net exports contribute the economy's built-in stability and are therefore quite desirable. Changes in the structural current account balance may contribute to or interfere with broader domestic objectives, depending on circumstances. The fundamental source of a structural current account deficit is domestic spending in excess of domestic production. Is this good or bad? The answer is: it depends. An excess of spending

over production used to finance business fixed investment could have a payoff in terms of higher future output large enough to service the increased international indebtedness and still leave the country better off. An increase in the current account deficit as a result of increased private or public consumption would, in contrast, require lower future consumption as some of future production would have to be used to service the higher level of foreign debt. In addition, there is an issue of sustainability. International indebtedness can become so large in relation to current production, depending in part on the relationship between the real interest rate on foreign debt and the economy's trend rate of growth, that the current account deficit could increase explosively.

If the current account is an objective, durable changes in the structural deficit can only be achieved by fiscal policy. A cut in the structural federal budget deficit for example would increase national saving, lower real interest rates, lead to a depreciation of the dollar, boost net exports, and lower the current account deficit.

It is even more difficult to talk about the exchange rate as an objective. The exchange rate is, after all, basically a relative price. We might say that we prefer that an exchange rate that reflect fundamentals. But other than that the exchange rate is a symptom, rather than an outcome. If the current account deficit is wide because of a high dollar, the appropriate question is why is the dollar so high. If the answer is because the federal budget structural deficit is high and has raised real interest rates in the U.S., the offender is not the exchange rate, but the federal budget deficit.

If the problem with exchange rates is fundamentals, then it is the fundamentals that need to be changed. Monetary policy can, via its effect on interest rates, influence exchange rates in the short run. But, for monetary policy to target exchange rates, it must give reduced weight to its domestic objectives.

When fundamentals are the issue, it is the mix of monetary and fiscal policies that must answer the call. Stabilization policy, for example, calls for a level of aggregate demand consistent with full employment. That level of aggregate demand can be produced by a variety of combinations of monetary and fiscal policies, varying from a very tight fiscal and loose monetary policy to a tight monetary and loose fiscal policy. The difference among these options is interest rates. If fiscal policy, for example, moves to a higher deficit, monetary policy will have to offset the effect on aggregate demand by tightening. The result is higher interest rate, a higher dollar, and ultimately a wider current account deficit. If this outcome is viewed as undesirable, the way to unwind it is by lowering the deficit, accompanied by more accommodative monetary policy. It takes two to do this tango! But I always view fiscal policy as having the first move. Monetary policy's job is to follow the lead of fiscal, so that the resulting mix is appropriate to the requirements of stabilization policy.

I am occasionally asked whether I worry about the effect on other countries of changes in U.S. monetary policy. While I do keep in mind the potential international repercussions of U.S. monetary policy actions, I believe that the best way for the U.S. to contribute to the health of the world economy is to pursue prudent domestic policy and achieve maximum sustainable employment and price stability and accommodate the maximum sustainable growth in the U.S. economy.

Are there new policy instruments in a global economy?

Another question about the conduct of monetary policy in an open economy is whether the open economy offers monetary policy a new instrument that it did not have in the closed economy world. In a closed economy context, monetary policy has a single instrument: open market operations, used to target a short-term interest rate.

The obvious candidate for an additional instrument in the open economy case is the exchange rate. I have already argued that monetary policy cannot be used to target the exchange rate. The issue here is whether there are opportunities to exercise direct control of the exchange rate. The obvious option is intervention.

Intervention refers to a government buying or selling foreign currency in order to influence the exchange rate. One can identify two reasons for intervening. The first is to calm disorderly markets. That is, an increase in volatility in the foreign exchange market might be damped by intervention. However, most intervention is about affecting the level of the exchange rate, not its volatility, though the rhetoric of disorderly markets often is employed to justify the action. Actions to affect the level can be intended to prevent a further decline (or increase) or to encourage a change in the level.

With a daily volume of \$1.2 trillion in the foreign exchange markets, and underlying stocks of financial assets that are substantially larger, there is ground for skepticism that intervention, which seldom ranges into the billions of dollars in daily volume, can have more than a marginal and transitory effect. Still, there are examples of modest "successes," especially when intervention is coordinated across countries and well timed. The major opportunity for intervention to succeed is when the exchange rate has diverged to a significant degree from fundamentals and the intervention induces a reconsideration of the market or a refocus of the market on fundamentals.

The management of foreign exchange interventions varies around the world. In the United States, this management is shared by the Federal Reserve System and the Treasury Department. In principle, intervention can be initiated by either party, although when the Treasury opts to intervene it is the Federal Reserve Bank of New York that actually does the buying or selling of foreign currency, albeit from an account held in the name of Treasury and at the direction of Treasury. Similarly, when the FOMC makes a decision to intervene, it directs the Federal Reserve Bank of New York to do so, from the account in the name of the Federal Reserve System. The traditional practice is that U.S. intervention exercises are carried out jointly, half from the Federal Reserve's account and half from the Treasury's account. However, in principle, either party could intervene on its own.

International information exchange, policy coordination, and crisis management

Give the growing interdependence of national economies and macroeconomic policies, the coordination of (or more accurately, mutual consultation about) these policies has taken on increased importance. The Federal Reserve takes part in many international forums to exchange information on economic developments and discuss global economic issues. Examples include the 10 meetings each year among G-10 central bank Governors, under the auspices of the BIS; the twice a year meetings of the Economic Policy Committee of the OECD, meetings of the G-7, IMF, and regional meetings, such as APEC and Governors of the Central Banks of the American Continent.

In addition to discussions about the performance of the various economies and global macroeconomic issues, there are also ongoing discussions about international crisis

management and a growing interest in global standards for risk management in financial institutions and for cooperation in sharing information about the performance and risk profiles of internationally active financial conglomerates.

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