Federal Reserve Bank of New York

Quarterly Review

Autumn 1983 Volume 8 No. 3

The Quarterly Review is published by the Research and Statistics Function of the Federal Reserve Bank of New York. Remarks of ANTHONY M. SOLOMON, *President of the Bank, on moving toward a more resilient international financial system begin on page 1. Two related articles follow, the first by* RONALD LEVEN *and* DAVID L. ROBERTS *(Latin America's prospects for recovery, page 6); the second by* SANJAY DHAR *(the consequences of financing constraints for U.S. trade with Latin America, page 14). Among other members of the staff who contributed to this issue are* AARON S. GURWITZ *(New York State's economic turnaround, page 30); and* LAURIE S. GOODMAN *(new options markets, page 35).*

This Review introduces a new regular feature: In Brief—Economic Capsules. It comprises staff analyses of a variety of topical issues. Staff contributors are ANDREW MOHL *and* DOROTHY SOBOL *(currency diversification and LDC debt, page 19);* WILLENE A. JOHNSON *(bank size and U.S. bank lending to Latin America, page 20);* SUSAN K. FANCHER, CARL J. PALASH, *and* ROBERT B. STODDARD *(why consumption surged in the first half of 1983, page 21);* PATRICK J. CORCORAN *(an update of the cost of capital, page 23);* A. STEVEN ENGLANDER *and* MARIE CHANDOHA *(will wage givebacks be reversed, page 24);* PAUL BENNETT *(reactions to discount rate cuts, page 25);* ROBIN C. DEMAGISTRIS *and* HOWARD ESAKI *(MMDA rates and flows, page 26); and* DANIEL E. CHALL *(New York City's low labor force participation, page 27).*

A semiannual report of Treasury and Federal Reserve foreign exchange operations for the period of February through July 1983 starts on page 48.

Toward a More Resilient International Financial System

I feel certain that a great many of you here tonight—and, in fact, thoughtful people throughout the business and financial community—have been following the twists and turns of the LDC debt problem extremely closely over the past year or so. The press and other media have provided extensive coverage. And there have been several excellent analyses of how the debt problems came about, both in general and for individual countries. Overall, I conclude that public understanding of the current situation is unusually good, given the enormous complexity of the issues at stake.

What I think is less familiar, and worthy of more attention, is the discussion of what the world will be like after the current emergency is behind us. We all want to feel confident that, when something closer to normal circumstances is restored, we will have built a stronger, more resilient international financial system. No one wants a recurrence of debt disturbances like those of the past year. No one wants prolonged stagnation or inadequate growth in the developing countries of Latin America and elsewhere. That would worsen our own growth prospects and inhibit world trade. And prolonged stagnation—as distinct from the temporary setbacks associated with emergency adjustment programs—would raise a greater danger of serious social and political consequences in a number of the LDCs.

Remarks of Anthony M. Solomon, President of the Federal Reserve Bank of New York before the Economic Club of New York on Tuesday, September 20, 1983.

Before discussing the post-emergency period, I must make clear that I am not complacent about the immediate task of completing the necessary debt restructurings and carrying through basic economic adjustments. We have to make sure we sustain the kind of concerted effort by all the principal participants which has yielded the tentative progress that has been made so far. The borrowing countries, the commercial banks, the governments in the industrial countries, and the International Monetary Fund have all had to make tough decisions and hard compromises. In particular, I think we should respect the painful measures that have already been taken and the sacrifices that have been endured by Mexico and some other countries. Under IMF guidance, these countries have, by any reasonable standard, made impressive efforts to adjust. But more hard work and political will must be marshaled, and more new financing will be required, before anyone can afford to relax.

Obviously, this concerted effort must go forward and must succeed. But make no mistake about it. That cannot happen unless the IMF can continue to play the pivotal role it has in binding together the different parts of this effort. And the Fund will be unable to play that role if it is starved of adequate financial resources and political support.

Frankly, I find it baffling that there are elements in this country, and especially in our Congress, who can ignore the catastrophic effects that would result from not acting now to make resources available to the IMF quickly. Without the IMF at the pivot, the whole debt restruc-

turing effort would be undermined, and needed new credits would be blocked. Outright defaults could actually happen. In the longer run, the consequences could also be grave. Debtor countries could be forced into disorderly adjustments that would almost certainly include more protectionist measures, credit controls, price distortions, and severe damage to local private sectors. It would injure the world trading system and seriously impair the prospects for economic growth, not only in the debtor countries but here and everywhere else.

The direct cost to the United States alone would be enormous. Until last year, our exports to LDCs that now have debt-servicing problems had been averaging $50 billion a year—almost a quarter of our total exports. Already last year, exports to these countries fell by over $10 billion (more than 20 percent), costing us 300,000 jobs and at least $1 billion in profits. How can it be rational for this country to risk giant price tags like these in the future and oppose the quota increase?

I know that there are those who do not see it this way. Some look at the issue entirely in narrow financial terms and conclude that the IMF can squeak by without the quota increase for the time being. That view is wrong, and it misses the central point. In the absence of clear, unequivocal support for the institution by the United States Government, including the Congress, the Fund will be permanently crippled.

What is even more baffling is that, among those who would cripple the Fund, there are people who claim to be strong advocates of free markets. What they entirely fail to see is that the IMF, in its efforts to get countries to pursue market-oriented policies and to minimize the hodgepodge of distortions that undermine economic performance, is the best friend that market-oriented people have in the kind of world we live in.

No one wants a recurrence of debt disturbances like those of the past year. No one wants prolonged stagnation or inadequate growth in the developing countries of Latin America and elsewhere.

My strong sense is that the misguided opposition to the IMF quota legislation, and the mischievous amendments that undercut it, will not prevail. I believe that ultimately the Congress will support the IMF and act positively to meet the international responsibilities of the United States. It is both in our own immediate and longer term interest.

Suppose that we all do what we need to do in the short term. Then, it is worth raising the question of what kind of economic prospects the LDCs, especially in Latin America where the debt burden is greatest, can look forward to in a couple of years when the immediate emergency is behind, but not forgotten. Can they return to rates of economic growth that are reasonably satisfactory and broadly meet their aspirations for achieving social and political progress? I do not want to put specific numbers on this, because growth potential differs from one country to the next. But I am talking about growth rates that would not be too far below the historical experience of most of the countries before the debt problems materialized.

I am not complacent about the immediate task of completing the necessary debt restructurings and carrying through basic economic adjustments. We have to make sure we sustain the kind of concerted effort by all the principal participants which has yielded the tentative progress that has been made so far.

It seems to me that it is certainly not impossible to get that outcome. But we have to face reality. There are going to be continuing constraints that will limit the scope for expansionary policies for some time to come. We can identify ways of easing some of these constraints and softening their impact. And we can be heartened by more optimistic developments lately in the industrial economies, where the prospects for higher growth seem to be improving. But there still must be an extended period in which the heavily indebted LDC governments are going to have very little margin for error.

The most obvious constraint will be with respect to external financing. Conventional commercial bank lending will be much harder to come by. In the first instance, that would limit countries' ability to import. And lower imports, particularly of capital goods, will hamper growth.

The natural question is whether that shortfall can be replaced by greater official assistance from industrial country governments. In my view, that is not likely. While government officials have the will and resources to provide temporary support in a crisis, there really is not much chance of legislatures going along with increases in long-term official funding in amounts large enough to offset lower commercial bank lending significantly. After all, it was partly because of the difficulty of obtaining official financing that borrowing from banks grew so much in the first place.

Another question is whether the central banks of industrial countries—in particular, the Federal Reserve—should provide large-scale infusions of liquidity so as to

ease credit availability for LDCs. Certainly, in a crisis, central banks have a traditional responsibility, as lenders of last resort, to insure stability. But any assistance of that sort must be strictly temporary. Central banks simply cannot be viewed as a source of medium- and longer term financing.

Without the IMF at the pivot, the whole debt restructuring effort would be undermined, and needed new credits would be blocked. Outright defaults could actually happen.

So what is left? By process of elimination there are really only two alternatives: Either funds will have to find their way into LDCs through channels other than commercial banks, or borrowing countries will have to run their economies in ways that make them less dependent on external financing. In fact, the LDCs will have to move on both fronts at the same time if they hope to be able to achieve the satisfactory growth rates we are talking about.

Traditionally, direct investment has been an alternative to bank financing. In calmer times, greater direct investment inflows should be an effective source of capital. To be sure, we know that the internal political opposition to direct investment has been strident from time to time in the past and certainly could resurface as soon as the debt emergency starts to fade. Yet, it seems to me that this manifestation of economic nationalism must be challenged and overcome if the LDCs are going to be serious about economic development in a period when new borrowing from commercial banks is constrained.

Improving financial management offers another important way for borrowing countries to cope with the constraints they are going to face. This should especially include efforts to diversify the currency composition of a country's debt. By choice or by necessity, too much of the debt of many LDCs was in dollars. That left them vulnerable to a period of high dollar exchange rates and high dollar interest rates. We calculate that if from 1979 to 1982 developing countries had borrowed currencies in a diversified way—that is, in proportion to their import shares—the LDCs as a group would today be over $30 billion better off. I am not saying that kind of benefit can be repeated in any particular time period in the future. But the clear lesson is that a more balanced and skillfully drawn portfolio of debt is important. Of course, that requires not only a willingness of borrowers to diversify, but equally a willingness of market participants to modify their operations and of the authorities in other industrial countries to allow it.

In addition, both borrowers and lenders have an interest in taking some potentially valuable financial instruments off the drawing board and getting them to market. To take one example, perhaps commercial banks could shift at the margin toward originating loans and then selling them off into a secondary market, where price fluctuations could give useful, early disciplinary signals to borrowers. Or, to take another example, I can visualize variable maturity obligations that offer a constant debt-service flow in the face of any unexpected jump in interest rates, a kind of built-in rescheduling. There may also be a place in the market for securities with equity-like features on which some part of the total yield to the investor could be calibrated, for instance, to the borrowing country's real GNP or export earnings growth, or some similar measure of economic performance.

Finally, there are a number of tools and techniques that are used by corporate borrowers here but are not yet being used by borrowers in developing countries. Just to give two illustrations, these instruments range from futures contracts to hedge against commodity fluctuations to interest rate swaps that can add another way of gaining fixed-rate funding. In a period of restricted access to credit, it is worthwhile developing the expertise and sophistication to take advantage of the array of novel financing tools that are now available.

Innovations like those in the private capital markets would be helpful in ameliorating the financing problem. But I would not want to overstate the role that these mechanisms can play. It will not eliminate the need for major changes and reforms in general economic policies so that dependence on external financing is lastingly reduced.

It seems to me that heavily indebted developing countries have to be resolute in keeping their exports competitive in world markets....
Every subsidy, every credit allocation scheme, every price distortion has to be tested against the standard of what it costs, both in budgetary terms and in terms of economic efficiency.

The way I see it there are three broad areas where policy reform in borrowing countries is called for to reduce dependence on external financing and promote domestic savings. After all, on average, gross domestic savings finance 90 percent of LDC investment.

The first is in the balance-of-payments area. It seems to me that heavily indebted developing countries have to be resolute in keeping their exports competitive in world markets. First and foremost, this means following

realistic exchange rate policies and not letting the domestic currency get out of line. It also means realistic interest rates to deter damaging flight of domestic capital.

The second broad area is reform of government budgeting. To begin with, though it is getting harder for an American to preach to others on the subject, excessively large structural deficits have to be reduced. In addition, LDC governments must have tighter oversight of spending agencies, closer financial monitoring of projects, better and more timely budget numbers, and improved regulatory capabilities over their own financial institutions.

We do not want to go back to a situation where the IMF becomes deeply involved only after serious payments disruptions have occurred. That is too late. Instead, a more continuous relationship would have some important advantages.

The third broad area is reform of the domestic price system. Every subsidy, every credit allocation scheme, every price distortion has to be tested against the standard of what it costs, both in budgetary terms and in terms of economic efficiency. These are long-standing problems that existed well before the debt crisis. And fixing any of them inevitably pits a government against powerful vested interests at home. But, in the aftermath of the debt problem, there may be no alternative to meeting the task head on, because of the huge toll distortions take in limiting productivity and growth.

The governments in the industrial countries and the IMF both have to support LDC efforts to bring about market-oriented reforms and better financial management.

The industrial countries obviously have a major role to play in sustaining growth, in lowering global interest rates by reducing their own government deficits, and in keeping markets open for LDC goods. At the same time they have to open up their financial markets further so that the LDCs can diversify their sources of credit more effectively. They must help create a healthy world environment within which the LDC efforts can pay off.

As for the IMF, its role in managing crises is well recognized and indispensable. But treatment and cure are not enough; it must work harder and more effectively at prevention. What I see as close to being essential is that its surveillance role under more normal circumstances be enhanced. This has two dimensions:

First, the IMF should be assisting countries in improving their financial management. It can help them monitor their debts. It can work with countries to develop financial strategies covering the currency and maturity mix of borrowing as well as the degree of reliance on bank debt, bond finance, direct investment, and so on.

Second, appropriate IMF surveillance should extend well beyond matters of finance. The Fund is not just a lender. It is a force for promoting sensible policies. I believe it should put its weight behind governments which are committed to a transition toward more efficient domestic price, interest rate, and exchange rate policies. And it must reject the argument that the IMF should focus only on a balance-of-payments target, regardless of how it is achieved.

These broader efforts by the Fund should be an integral part of its regular consultations with all members. We do not want to go back to a situation where the IMF becomes deeply involved only after serious payments disruptions have occurred. That is too late.

Instead, a more continuous relationship would have some important advantages. It would improve the Fund's detailed knowledge of the constraints that regularly confront policymakers in each individual country. And it would provide a type of involvement by the Fund that might head off some of the resentment and occasional hostility that can occur when the IMF is seen as an outsider always prescribing austerity at a time of trouble.

In my approach, there is no quick fix. There is no single scheme or gimmick that will put things right and allow everybody to go back to business as usual.... What I am recommending is rooted instead in pragmatism. It basically seeks to build a more resilient system on the best features of what we have now.

To encourage movement in this general direction, I would go even one step further. It would be worthwhile considering whether access to funding could be made more readily available by the IMF to countries that voluntarily participate in these financial and economic policy reviews should they have a balance-of-payments need later on.

In summary, we must plan for a world of tighter financial constraints and less margin for error. The approach I am recommending boils down to a combination of stronger market institutions and better market instruments developing alongside better economic policies and stronger financial controls. In my approach, there is no quick fix. There is no single scheme or gimmick that will put things right and allow everybody to go back to business as usual. To the contrary, I feel that those debt-reshuffling schemes that you hear about, which look to industrial country governments to pick up

existing exposure from the banking system, are fanciful. They would be unjustifiably costly to the taxpayers. And, in fact, they would give just the wrong signals, convincing people at home that a government bailout will always be there and whipping up pressures abroad in developing countries to ask for bailouts.

What I am recommending is rooted instead in pragmatism. It basically seeks to build a more resilient system on the best features of what we have now.

And what we have now pivots on the IMF. That is the institution which in practical terms binds the system together and which must play a more comprehensive role in the future. Therefore, the first step toward that kind of system is for the Congress to act quickly and positively on the IMF quota legislation and put to rest doubts about the commitment of the United States to a common sense, multilateral approach to dealing with the world's financial problems.

Latin America's Prospects for Recovery

Under what circumstances will the Latin American countries be able to resume satisfactory economic growth and reestablish their creditworthiness? This is the basic question to be examined in seeking to look beyond the immediate situation in Latin America. In general terms, satisfactory economic growth for Latin America must be at least high enough to keep up with population and labor force growth and not too far from the 5 to 6 percent rates these countries have come to expect. At the same time a return to creditworthiness requires substantial reductions of debt burdens—debt servicing as a proportion of exports of goods and services or output—toward levels that were acceptable to commercial lenders in the recent past.

Resumption of economic growth along with reduced debt burdens is possible under favorable but not unrealistic assumptions. With moderate noninflationary growth in the industrial countries and adequate external financing, as called for by the International Monetary Fund (IMF) programs, the decline in income per capita could be halted within a year or so. Real growth could return to close to its rate over most of the 1970s fairly quickly. The debt burden could come down gradually. But, after a prolonged period of poor economic growth and declining income per capita, average income would return to its 1980 peak only in 1987 or beyond.

Even this modest recovery would be jeopardized by adverse world conditions or poor domestic policies. Low industrial country growth or high interest rates would substantially prolong the adjustment period. If the Latin American governments do not keep to their IMF programs or lenders cannot be convinced to maintain credit flows, further severe economic cutbacks could be forced on Latin America.

This article discusses Latin America's prospects under alternative world conditions on the basis of a simulation model of the region's economy. The model is derived from past relations between world economic conditions and financial flows and Latin American imports and growth. The model allows for alternative assumptions for world economic growth, interest rates, and the availability of financing over the next several years. Any economic model can only suggest the possible range of outcomes. The internal responses of the Latin American governments along with the external environment will be critical.

A simulation model of Latin America

The economies in Latin America are obviously diverse, but it still is meaningful to look at the prospects for the region as a whole. The concentration of debt in Latin America is heavy. Seven of the ten largest developing country borrowers from banks are in the region. Nearly all Latin American countries are having debt-servicing problems. Sixteen Latin American and Caribbean countries already have IMF adjustment programs and others are considering them. Debt-servicing problems have spread throughout Latin America, in part because all the countries face similar economic conditions and in part because of a herd effect among creditors.

Many of these countries share other structural characteristics that cause concern. Inflation rates are much higher than in any other region of the world. Government deficits are frequently high and rising. And, despite important moves toward opening their economies to foreign trade in recent years, Latin American countries trade less than others of comparable population and economic development. Thus, it is useful to consider Latin America as a whole while remembering that exceptions to the general case are unavoidable.

A recovery of Latin America's economy depends on its ability to import. Frequently, in looking at the relationship between imports and growth, it is not clear whether the rate of economic growth determines import levels or whether the ability to import limits the potential for growth. But, in Latin America, the volume of imports was cut by nearly one fourth in 1982. Reductions are continuing this year. This has been accompanied by the steepest sustained fall in gross domestic product (GDP) in Latin America in the last thirty years. The level of imports inevitably will be a strong constraint on economic growth over at least the next several years.

Any additional imports must be financed either through external borrowing or through increased exports. Latin America's limited access to commercial credit since 1982 restricts the overall current account deficit. The possibility for increasing exports depends largely on economic growth in the industrial countries and world inflation. Continued borrowing will add to debt and to debt servicing. The need to make interest payments reduces the proportion of export earnings available for imports. Chart 1 provides a schematic description of the relationships between these various factors and Latin America's growth and debt burden.

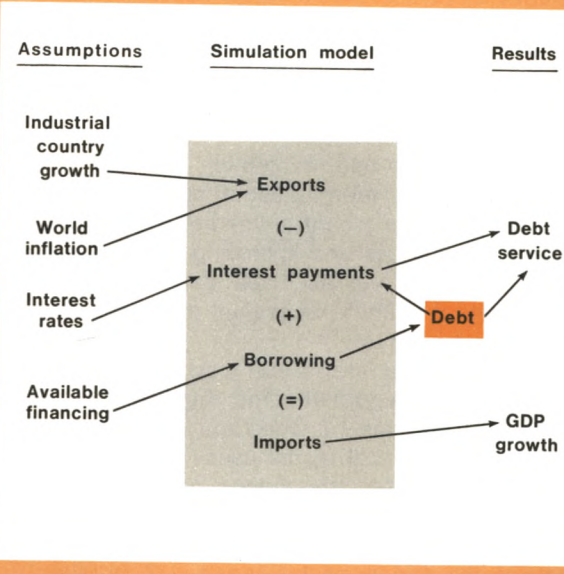
The intent of the model is to present the broad outlines of the economic prospects facing Latin America. By looking at alternative assumptions, the sensitivity of a Latin American recovery to varying world conditions can be explored. The model used here, like any other, is necessarily inexact and cannot capture fully all the determinants of growth. Importantly, it does not capture actions the Latin Americans can take themselves to improve the general efficiency of their economies. Moreover, the outlook for individual countries may be significantly better or worse than the general projections for the region as a whole.

Imports and GDP

More than half of Latin American imports consist of intermediate goods and raw materials used in the production process. When these are cut, production can continue only as long as inventories can be run down to replace them. At the same time, capital goods account for about one quarter of Latin American imports.

Chart 1

Schematic Model of Latin American Economic Growth and Debt Service



Frequently no close domestic substitutes for these goods are available so that, if imports are held down for long periods, the potential for economic growth is reduced.

To capture these short- and medium-term influences the estimated relationship between growth and imports used in this model includes the percentage change both in the current year's imports and in average imports over the past five years.[1] The results indicate that a decline in real imports of 2 percent is associated with 1/2 percent lower GDP growth within the first year and another 1/2 percent lower growth over subsequent years. Imports are an important determinant of growth but they are not the only determinant. Other factors will influence the actual outcome in the future as they have in the past.

[1] The estimated equation is:

$$g = 5.0 + 0.24DM + 0.28DMA \quad R^2 = 0.44$$
$$(2.46) \quad (1.26) \quad (3.46)$$

where g is growth of GDP, DM is the percentage change in merchandise import volume in the current year, and DMA is the average percentage change in real imports over the past five years. The estimation period is 1956 to 1980. Data on GDP are from J. W. Wilkie and S. Haber (eds.), *Statistical Abstract of Latin America;* merchandise imports are from the International Monetary Fund, *International Financial Statistics (IFS).* The figures in parentheses are t-statistics. In this article, Latin America includes those countries classified by the IMF as nonoil developing countries in the Western Hemisphere.

These factors range from random elements, such as floods and droughts, to systematic influences that cannot be included in a multicountry aggregate model, such as higher savings rates or more efficient use of resources. The equation based on past relations between imports and growth, however, can be used to simulate likely feasible paths for growth. Over the next several years imports will be the major constraint on Latin America's ability to return to sustainable growth.

Trade and industrial country growth

The relationship between industrial country growth and world trade provides a central link between recovery in the industrial countries and improving external balances in Latin America. Just as trade declined during the recent industrial country recession, it can be expected to pick up in a recovery.

Estimates of the statistical correlation between industrial countries' growth and imports vary widely across countries, time periods, and the exact specifications of the statistical model used. Most estimates of the elasticity, or percentage change in import volume for each 1 percent change in growth, are in the range of 1.2 to 2.2.[2] For the purposes of this model an overall estimate in the middle of this range, 1.7, is taken.

Export earnings should grow even faster than export volume. The steep drop in commodities prices has already turned around. Prices have risen well over 10 percent in the past year. Latin America's commodities exports, like copper, tin, and grains, follow long-term world inflation trends, but they are also subject to sharp short-term swings. To pick up the impact of the general movement of world prices and short-term fluctuations, export prices are assumed to be a function of both world inflation and past export prices. The estimated equation suggests that over the longer run Latin American export prices move in line with world inflation. Over shorter time periods, however, Latin American export prices magnify changes in inflation. That is, when world inflation increases, Latin American export prices go up sharply; when world inflation slows, export prices drop. This reflects the wide swings in Latin American prices, especially for commodities, over inflation cycles.[3]

Recovery in Latin America could be slowed by the depressed level of trade within the region. But, for all Latin American countries together, 64 percent of total exports went to industrial countries in 1979-81 and only 16 percent represented intraregional trade. Moreover, intraregional trade should pick up if growth in Latin America resumes. Economic recovery in the industrial countries thus remains the major influence on Latin American exports in the medium term.

Since Latin America's imports are more diverse than their exports, they have not been subject to as strong cyclical price trends. While Latin America contains both major importers and exporters of oil, the region as a whole is about in balance on oil trade. The sharp rise in oil prices during the 1970s did not significantly affect the combined terms of trade. Over the projection period it is assumed that oil prices move in line with world inflation. Thus, Latin America's import prices follow the index of industrial country prices more closely than export prices.[4]

Interest and other service payments

Interest payments on external debt have grown sharply in recent years. They now make up half of total service payments, up from 25 percent in 1973. Most international bank lending is based on a spread over the London interbank offer rate (LIBOR). This rate has come down to an average of 10 percent over the first ten months of this year from an average of 13 percent last year and 16½ percent in 1981. Increased spreads on rescheduled debt do not fully outweigh this decline. About one third of Latin America's debt is from official sources. Interest rates on official debt are usually lower than on private debt and subject to less fluctuation. The weighted average interest rate for private and official debt is used in the model. This overall average rate on

[2] See, for example, H. Houthakker and S. Magee in "Income and Price Elasticities in World Trade", *Review of Economics and Statistics* (May 1969). D. Warner and M. Klein in "Determinants of International Trade Flows", *Review of Economics and Statistics* (February 1983) provide a wider range of estimates for individual countries but most are around 1.5 to 2.0. A trade-weighted average of the individual elasticities for each study yields an overall income elasticity for imports of 1.7. W. Cline in *International Debt and the Stability of the World Economy* (Institute for International Economics, September 1983) suggests that the income elasticity for trade is as high as 3. But he also finds that there is a threshold industrial country growth of 1 percent below which import volume declines (*i.e.*, there is an intercept of −3). When industrial country growth is around 3 percent, Cline's import projections do not markedly differ from using 1.7 as the elasticity without an intercept.

[3] The estimated equation is:

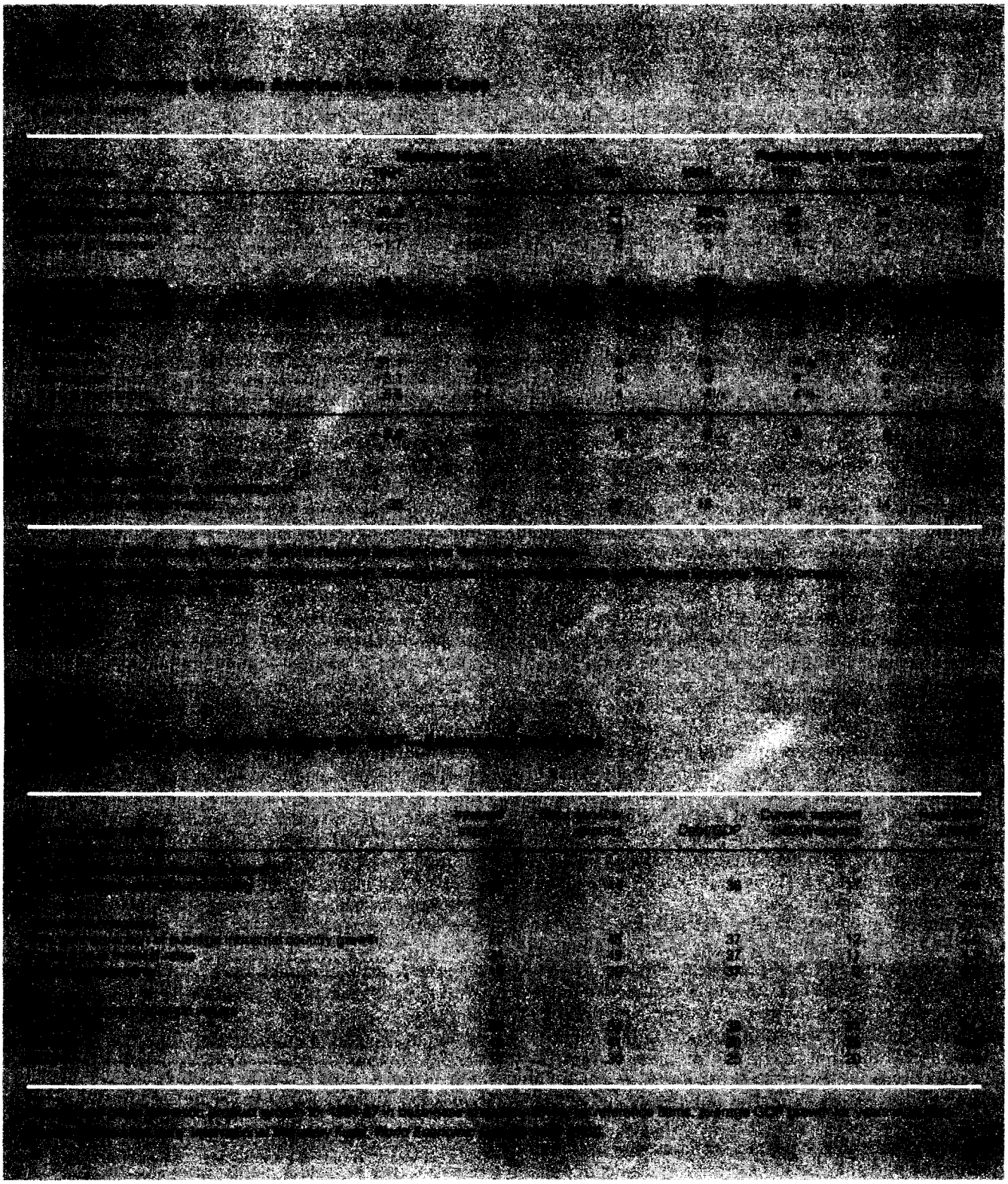
$$XP = -0.63 - 0.32XP_{-1} + 1.38P \quad R^2 = 0.79$$
$$(0.34) \quad (3.47) \quad (10.01)$$

where XP is the percentage change in export prices and P is the percentage change in the industrial countries' price index for traded goods. The estimation period is 1956 to 1981. Data on price changes are taken from the *IFS*. Since the constant term is not significantly different from zero and the sum of the other coefficients is close to one, the equation implies that in the long run Latin American export prices move in line with world inflation. However, over the short run, the price of Latin American exports will rise 1.38 percent in response to 1 percent higher world inflation.

[4] Import price changes were estimated as:

$$MP = 0.46 + 1.05P \quad R^2 = 0.85$$
$$(0.26) \quad (10.20)$$

where MP is the percentage change in Latin American import prices and P is the industrial countries' price index for traded goods. This relationship was also estimated with lagged prices, but the coefficient was not significant. The estimation period is 1956 to 1981, using data from the *IFS*.



Latin American debt declined from 14 percent in 1981 to about 12 percent this year.

Other service payments for transportation, insurance, and other incidental expenses play a relatively small role in Latin America's balance of payments. For the projections, service payments are estimated as a function of merchandise imports and service receipts are a function of merchandise exports. Transfers have never been important for Latin America. Transfers are assumed to remain constant in real terms.

Taken together, the various components of the model relate the world economic environment to the economic prospects for Latin America over the medium term. Given assumptions about the world economy and financial inflows, the model can be used to project the key trends needed to assess Latin America's prospects—the trend rates of real economic growth and the debt burden.

Economic recovery under moderate assumptions

To analyze Latin America's prospects it is reasonable to start with moderate assumptions on world economic conditions. Any assumptions about the future behavior of economic variables are uncertain, so that it is also important to look at the sensitivity of the resulting projections to alternative assumptions. With this in mind, the base projections for Latin America are derived from middle-ground assumptions for industrial countries' growth and the availability of financing from banks, official lenders, and direct investment. A plausible growth assumption is taken to be 3 percent average real growth in the industrial countries over the next five years. This is equal to average growth from 1973-80 (despite the 1974-75 recession) and well below the 4¼ percent average over the past two decades. This growth ought to be compatible with the inflation rate of 5 percent which we assume. With inflation in this range it is reasonable to suppose that world interest rates will tend to come down. The average interest rate facing Latin America is assumed to come down gradually ½ percent per year to 10 percent over the next four years and then remain constant.

Significant amounts of external financing can be assumed only if the Latin American countries remain in compliance with their IMF programs. While inevitably there will be adjustments to meet changed circumstances, the major features of the programs must be observed if any new financing is to be forthcoming.

Most IMF programs currently in place target an increase in bank claims on Latin American borrowers of around 7 percent per year. The base case projections assume bank claims increase 5 percent this year and 7 percent in subsequent years. This is substantially less than the 24 percent average increase in claims in 1980 and 1981. It is also below recent increases in the capital of large international banks. A 7 percent per year increase would still permit a gradual reduction of banks' exposure to these countries relative to the banks' capital base. International bank claims on Latin America[5] were $180 billion at the end of 1982. The assumed increase in bank claims would mean $9 billion in 1983 and then gradually rise to $16½ billion in 1987 (Table 1).

Lending by official agencies is also an important source for Latin American financial inflows. Official flows consist of reserve-related lending, principally from the IMF, and longer term official lending. Reserve-related lending, of course, has been crucial in the past year, rising from less than $1 billion in 1981 to over $4½ billion last year. The IMF programs for Latin America project this lending to remain at this level this year, then to taper off through 1985. Other official lending is generally for longer periods and not subject to rapid shifts. This category of official lending is projected to rise 7 percent per year.

Direct investment provided $6½ billion in financing for Latin America in 1981. Deteriorating conditions reduced direct investment to an estimated $5½ billion in 1982 and to perhaps only $4 billion this year. Our base estimate is for direct investment to grow at the same rate as world inflation (5 percent). Direct investment could be much stronger than this if economic conditions improve and the proper incentives are provided. Bonds and other forms of portfolio investments provided a net $3 billion as recently as 1981 but no significant amount of new bond financing is projected.

Under these constraints on available finance the Latin American current account deficit is assumed to come down to about $20 billion in 1983 and to average about $22 billion from 1984 through 1987. International reserves are assumed to grow only $2-4 billion per year after falling over $12 billion since 1980. This is in line with the IMF targets and would allow a gradual improvement in reserves relative to imports. The current account deficit would fall more than $20 billion from its peak of $45 billion in 1981. The current account deficit together with the level of exports will determine imports and potential growth.

Recovery under the base case

With these assumptions about world economic growth and available financing, the relationships used in our model suggest that most Latin American countries should be able to recover fairly quickly and to reduce their foreign debt burden (debt ratios) substantially within two to five years. Latin American countries could

[5] As reported by the Bank for International Settlements, "International banking developments—fourth quarter, 1982" (press release).

begin to recover in 1984 and return on average to real growth rates of nearly 5 percent a year by 1985.

The simulation suggests that by the end of the decade imports would no longer be the major constraint on growth. Chart 2 shows the very sharp declines in real GDP per capita these countries are experiencing. It also shows that most of these declines should have occurred already. With recovery in the industrial countries, export growth should resume and imports should be able to grow significantly without the need for excessive amounts of external financing. At the same time, debt positions should improve, so that by 1987 there could be a return to the sort of debt ratios that were common in the late 1970s. Debt relative to GDP should fall by 2 percentage points from its 1982 level. The ratio of interest payments on debt to exports should fall to 20 percent, down from 30 percent last year and close to the average from 1978 to 1981 (Table 2). An important measure of debt-servicing capacity—the ratio of debt servicing to exports—also would move toward its level of the late 1970s. There should be a slight upward movement in this ratio in 1987 as rescheduled debt comes due, but continued export growth thereafter should restore the downward trend.

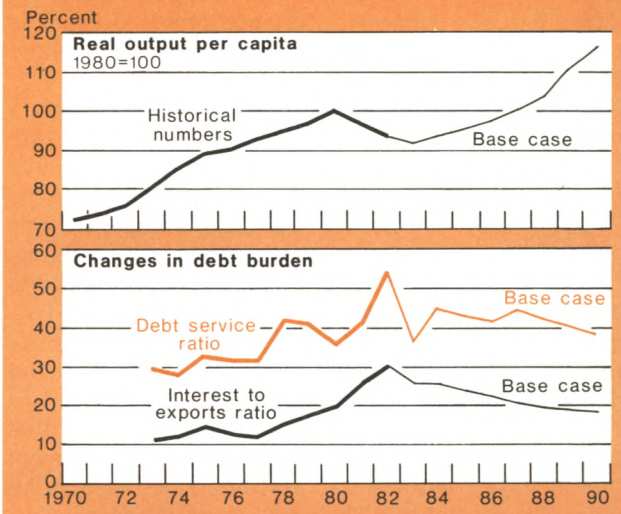
The return to moderate growth and sustainable debt ratios would occur at a very substantial cost. By the end of this year, per capita income will have fallen for the third straight year and will be 8 percent below its peak in 1980. After 1983, as growth picks up, per capita income should expand fairly rapidly. But it will not come back up to its 1980 level before 1987.

Once this long adjustment period is over, the model suggests that a return to growth rates close to those Latin America achieved in the past is possible. But the critical period is over the next two or three years. If these countries can look toward a return to growth and reduced debt ratios, their adjustment programs should be more acceptable. And banks will be more likely to provide adequate financing.

The projection model we have used for Latin America implicitly assumes that governments will manage no better or worse than they have over the past two or three decades. For some countries this means a decided improvement over their recent performance. But, the general framework used here does not suppose that these economies will shift radically toward export-led growth, remove all their built-in inflationary biases, or pursue other major reforms, no matter how desirable these may be on their own grounds. If some of these measures are taken successfully, Latin America's growth could be substantially better than projected. If they do not follow at least a minimal set of rational economic policies, however, little or no improvement will occur, no matter how favorable the external environment.

Chart 2

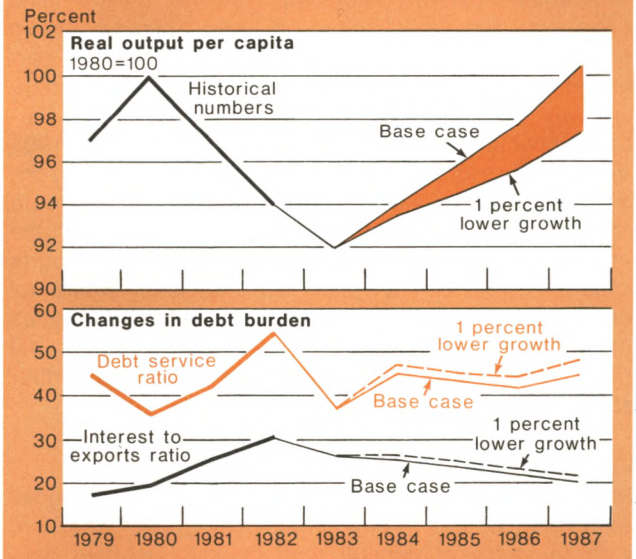
Moderate Industrial Country Growth Base Case



Sources: For historical data, International Monetary Fund, World Economic Outlook (May 1983); projections for 1983-87 are Federal Reserve Bank of New York staff estimates.

Chart 3

Industrial Country Growth 1 Percent Lower



Sources: See Chart 2.

Prospects in alternative cases

Given the uncertainty behind the assumptions of moderate noninflationary growth of the industrial world, adequate external financing, and continued adjustment policies by Latin America, it is appropriate to examine the sensitivity of the outcome to alternative developments.

An interrupted industrial country recovery. Each 1 percent reduction of average industrial country growth would reduce industrial country imports by nearly 2 percent and lower Latin America's annual growth by 3/4 percent over the 1984 to 1987 period (Table 2). This highlights the importance of renewed exports for a Latin American recovery. The ratio of debt servicing to exports would show little improvement until at least 1987. Per-capita GDP in 1987 would still be 3 percent below its 1980 level (Chart 3). This delay would add to the already difficult social and economic pressures.

Higher real interest rates. If average interest rates including the spread over LIBOR stay around 12 percent rather than decline toward 10 percent as assumed in the base case, annual real GDP growth would average 1/2 percent less over 1984-87 than in the base case, even if industrial country growth remained at 3 percent (Table 2, Chart 4). The sharpest impact would be on the ratio of interest payments to exports. Rather than declining quickly as in the base case, this ratio would remain close to 25 percent in 1987, well above the levels of the late 1970s. The ratio of debt servicing to exports would also remain high. The Latin American financing position would thus remain precarious.

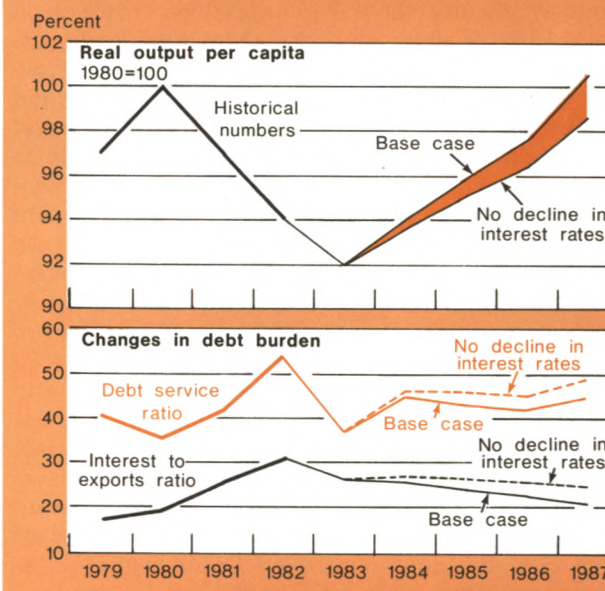
Inadequate external financing. If no net bank lending occurs (so that bank claims on Latin America remain constant), real GDP growth would average a full 1 percent less each year through 1987 (Table 2, Chart 5). Recovery could not even begin until at least 1985. Per-capita income would fall again in 1984. In fact, in 1985 average income would barely equal its current depressed level. The average income level would remain below its 1980 peak beyond 1987. Ironically, the debt burden indicators would improve since exports would go up faster than debt. But this clearly would not compensate for the economic deterioration. Continued heavy interest payments would be politically difficult, but failure to pay interest could disrupt trade and further reduce imports and growth.

A possible but not certain recovery

Our analysis indicates that the Latin American countries could resume reasonably satisfactory growth after two or three years of difficult adjustments. Relative debt burdens could be reduced and these countries could move toward renewed creditworthiness. Recovery could occur under a set of moderate and plausible assump-

Chart 4

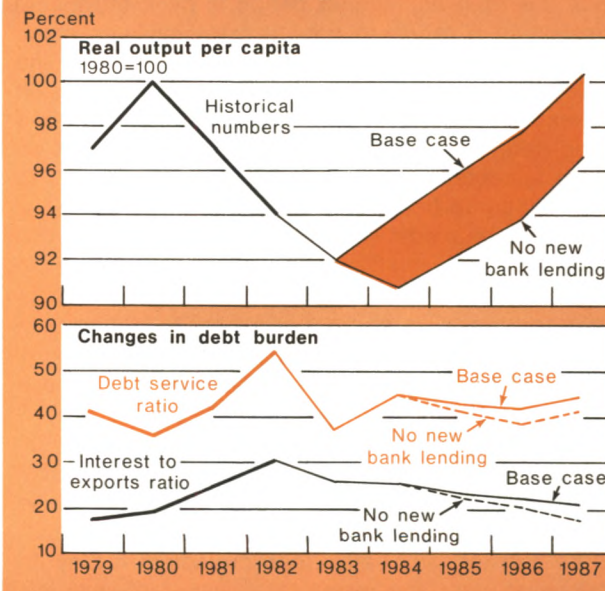
No Decline in Interest Rates



Sources: See Chart 2.

Chart 5

No New Bank Lending



Sources: See Chart 2.

tions about world economic growth, interest rates, and the availability of external financing. But it would not require either a boom in industrial country growth or inflation, major improvements in domestic economic policies, or enormous amounts of external financing.

Lower industrial country growth or higher interest rates than assumed here would delay the recovery. Latin America would have to extend its economic austerity beyond the measures it has taken, and these austerity programs would continue further into the future.

For Latin America to recover it is essential that financial flows not be cut off to those countries that are making adjustments. It is hard to imagine that lending will continue unless countries remain committed to the adjustment measures incorporated in the IMF programs. At the same time, the moderate rates of external financing these programs call for should be sufficient to permit a resumption of growth fairly quickly.

There is a legitimate concern that these countries will be forced to restrict their imports so much that a return to growth cannot be foreseen. Or that recovery will require massive amounts of new bank lending. The analysis presented here suggests that, for most Latin American countries, recovery is possible. Latin American countries should be able to resume satisfactory growth and reestablish their creditworthiness under reasonable assumptions about their own actions and the world economic environment.

Ronald Leven and David L. Roberts

U.S. Trade with Latin America: Consequences of Financing Constraints

It is by now well-known that the debt-servicing problems of Latin American countries have forced a severe reduction of their merchandise imports. Perhaps not so fully appreciated is the extent to which the repercussions of the Latin American debt crisis have affected the U.S. economy. U.S. exports to Latin America in 1983 will likely fall about 40 percent from their 1981 level. Almost the entire range of exports has been adversely affected; the fall in sales of traditional manufacturing industries has been particularly drastic. A loss of nearly 1/4 million U.S. jobs in 1982 can be attributed to the decline in exports to Latin America. This loss constituted the bulk of U.S. jobs lost due to debt problems worldwide and was concentrated in some of our most depressed industries. Additional employment losses this year have been nearly as high. Service receipts from direct investment and tourism have also fallen sharply. On the import side, U.S. purchases of Latin American goods remained steady in 1982. This year, import growth from Latin America in sectors such as chemicals and machinery has been very rapid and significantly faster than the growth of domestic production. Latin American exports, aided by more competitive exchange rates, can also be expected to provide stronger competition for U.S. exports in third markets.

These phenomena are a natural consequence of the acute shortage of foreign exchange prevalent throughout most of Latin America. The entire adjustment to reduced external financing in 1982 occurred through the reduction of merchandise imports and reserve losses. This year, Latin America's trade surplus is expected to exceed $20 billion, from a position of deficit as recently as 1981 (Table 1). Given the possibility of a sustained period of reduced capital inflows and high interest payments on external debt, the region may continue to need to generate substantial trade surpluses. A relevant question for future years is whether such surpluses will be generated by a continued compression of imports, or whether export expansion will permit a recovery of import growth. The manner of adjustment to financing constraints will therefore affect not only the development path of Latin America, but also trading relationships with its major trading partners, in particular the United States.

This article examines the trade implications for the United States of Latin America's financing difficulties. Undoubtedly, the economic costs to Latin American countries with debt-servicing problems have been heavy, but these costs are not the subject of the present analysis.

U.S. exports to Latin America

The initial effect of the Latin American (subsequently referred to as Latin) debt crisis has been felt most severely in the United States by exporters. Although exports to Latin America accounted for only 17 percent of total U.S. exports in 1981, between 1978 and 1981 these exports had grown over 50 percent faster than U.S. exports to the rest of the world. The decline in exports to Latin America since 1981 thus represents a particularly sharp reversal of past trends. The nearly $9 billion drop in U.S. merchandise exports to Latin America in 1982 (Table 2) accounted for over 40 percent of the total decline in our exports last year.

The value of U.S. exports to Latin America in 1982 fell at a rate even faster than the decline in total Latin

Table 1

Latin America: Current Account Balances*

In billions of dollars

Trade and current account	1978	1979	1980	1981	1982	Projection 1983
Exports (fob)	57.1	76.3	99.9	107.0	97.5	100
Imports (fob)	−60.4	−76.2	−100.6	−108.9	−88.6	−77
Trade balance	−3.3	0.1	−0.7	−1.9	8.9	23
Net service and transfers	−15.3	−20.4	−27.0	−40.2	−47.0	−42
(Gross interest payments)	(−12)	(−19)	(−27)	(−37)	(−42)	(−39)
Current account balance	−18.6	−20.3	−27.7	−42.1	−38.1	−19
Trade with the United States:*†						
Exports to the United States	23.0	30.5	37.5	39.1	38.6	42
Imports from the United States	−22.0	−28.6	−38.8	−42.8	−33.2	−26

*Includes nonLatin developing countries in the Western Hemisphere.
†Balance-of-payments basis.
Sources for historical data: International Monetary Fund, *World Economic Outlook* (May 1983) and *International Financial Statistics*. U.S. Department of Commerce, *Survey of Current Business* (various issues) for trade with the United States. Federal Reserve Bank of New York projections, estimates of interest payments, and adjustments for country coverage.

Table 2

U.S. Exports to Twenty Latin American Republics

In billions of dollars; FAS value basis

Selected countries and commodities	1980	1981	1982	1982 First half*	1982 Second half*	1983 First half*
Total	36.03	38.95	30.09	16.63	13.46	10.93
Selected countries:						
Mexico	15.14	17.79	11.82	7.20	4.62	4.40
Venezuela	4.57	5.44	5.21	2.60	2.61	1.38
Brazil	4.34	3.80	3.42	1.78	1.64	1.25
Argentina	2.62	2.19	1.29	0.76	0.53	0.49
Selected commodities:						
Food and animals	4.52	4.70	2.80	1.49	1.31	1.68
Crude materials	1.75	1.60	1.33	0.80	0.53	0.63
Mineral fuels	0.84	0.77	1.69	1.09	0.60	0.42
Chemicals	4.85	4.47	3.67	1.94	1.73	1.62
Machinery	10.59	12.34	9.72	5.32	4.40	2.95
Transport equipment	4.56	5.42	3.26	1.98	1.28	1.07
Other manufactured goods	6.80	7.50	5.37	3.03	2.34	1.81

*Not seasonally adjusted.
Source: U.S. Department of Commerce, *Highlights of U.S. Export and Import Trade* (various issues).

Table 3

U.S. International Transactions with Latin America*

In billions of dollars; balance-of-payments basis

Goods and services	1978	1979	1980	1981	1982	First half 1983†
Exports	38.06	50.15	66.64	79.95	71.12	27.53
Merchandise trade excluding military	22.03	28.56	38.85	42.80	33.16	12.36
Services	15.96	21.53	27.72	37.09	37.78	15.10
Travel and passenger fares	(2.75)	(3.55)	(4.42)	(5.96)	(5.09)	(2.02)
Direct investment receipts	(4.78)	(6.52)	(6.97)	(6.13)	(2.85)	(0.12)
Other private receipts	(5.87)	(8.36)	(12.28)	(20.50)	(25.60)	(10.68)
Imports	−31.54	−42.95	−53.09	−58.74	−62.18	−30.99
Merchandise trade excluding military	−23.04	−30.54	−37.53	−39.10	−38.56	−20.23
Services	−8.26	−12.12	−15.17	−19.31	−23.33	−10.67
Travel and passenger fares	(−3.54)	(−4.04)	(−4.40)	(−4.88)	(−5.45)	(−3.11)
Direct investment payments	(−0.41)	(−0.64)	(−1.02)	(−0.93)	(−0.47)	(−0.21)
Other private payments	(−2.06)	(−4.72)	(−6.59)	(−9.81)	(−13.47)	(−5.28)
Balance on merchandise trade	−1.01	−1.98	1.32	3.71	−5.40	−7.88
Balance on services	7.70	9.41	12.55	17.77	14.44	4.43
Balance on current account	5.69	6.12	12.35	19.95	7.62	−4.13

*Includes nonLatin developing countries in the Western Hemisphere.
†Not seasonally adjusted; preliminary.
Source: U.S. Department of Commerce, *Survey of Current Business* (various issues).

Table 4

U.S. Imports from Twenty Latin American Republics

In billions of dollars; customs value basis

Selected countries and commodities	1980	1981	1982	1982 First half*	1982 Second half*	1983 First half*
Total	30.02	32.06	32.51	15.67	16.84	17.38
Selected countries:						
Mexico	12.63	13.80	15.57	7.51	8.06	8.21
Venezuela	5.32	5.57	4.77	2.31	2.46	2.43
Brazil	3.72	4.47	4.29	1.99	2.30	2.26
Argentina	0.74	1.12	1.13	0.60	0.53	0.42
Selected commodities:						
Food and animals	7.44	6.87	6.10	3.12	2.98	3.41
Crude materials	1.10	1.28	0.97	0.52	0.45	0.46
Mineral fuels	12.82	13.66	15.18	6.89	8.29	7.49
Chemicals	0.54	0.67	0.61	0.31	0.30	0.51
Machinery	2.29	2.79	3.14	1.44	1.70	1.81
Transport equipment	0.38	0.41	0.38	0.18	0.20	0.22
Other manufactured goods	4.26	4.97	4.44	2.35	2.09	2.56

*Not seasonally adjusted.
Source: U.S. Department of Commerce, *Highlights of U.S. Export and Import Trade* (various issues).

imports (Table 1), more than 22 percent as compared with under 19 percent. This differential in the rate of decline appears to have held to about the same extent when measured in terms of volume.[1] While the appreciation of the dollar in world markets may have contributed to the falling share of U.S. exports, more significant was the timing of financial problems in individual Latin countries. Mexico, the third largest trading partner of the United States, accounting for nearly half of our exports to Latin America in 1981, was among the first of the major Latin countries curbing its imports in response to financing difficulties in 1982. This country's exports to Mexico fell by a third in 1982 and are expected to decline further this year as Mexico's adjustment program takes effect.[2] While U.S. exports to Argentina also fell sharply in 1982, the full impact of the economic contraction in Brazil, Venezuela, and most of the other Latin countries is only being felt this year.

The decline in exports to Latin America since 1981 has affected each major category of U.S. exports but has been particularly pronounced in machinery and transport equipment as well as in the broad category "other manufactured goods" (Table 2). The machinery and transport equipment sectors accounted for 45 percent of total exports to Latin America in 1981, with exports of machinery alone exceeding $12 billion. Several industries that were among those already hardest hit by the domestic recession appear to have suffered the sharpest declines in exports to Latin America. Exports of new passenger cars and trucks and buses fell by over half in 1982. At the same time, basic iron and steel products, the exports of which totaled over $1 billion in 1981, were nearly halved. These declines have continued through 1983, slowing the present recovery in these industries.

Falling U.S. exports have not been limited to traditional manufacturing industries. High technology products, in which the comparative advantage of the United States is possibly the greatest, were initially more insulated from the Latin adjustment measures. The export of scientific and business machinery to Latin America fell about 16 percent in 1982, while the value of computer exports actually remained steady. However, by the first half of 1983, exports of these high technology items were also falling rapidly: scientific and business machinery exports to Latin America were down 38 percent from the first half of last year, with computer exports falling 21 percent.

Even agricultural exports to Latin America have been affected. U.S. exports of grain and cereal preparations to Latin America, which totaled $3 billion in 1981, fell by 40 percent last year. This was partly due to good production years in Mexico and Brazil, but financing difficulties also contributed to the decline.

On the basis of a recent study estimating the direct and indirect domestic employment generated by U.S. exports, the loss of nearly $9 billion of merchandise exports to twenty Latin countries in 1982 caused the loss of about 225,000 U.S. jobs last year.[3] More than three quarters of these lost jobs are estimated to have occurred in the machinery, transport equipment, and other manufactured goods sectors, areas where unemployment in 1982 was generally higher than the U.S. average.[4] Falling exports to Latin America are estimated to have contributed directly about 0.3 percent to the decline in U.S. real GNP last year.[5] In the first half of 1983, U.S. exports to Latin America fell a further 19 percent over the previous six-month period and were down by more than a third from the first half of 1982. Some recovery of U.S. exports to Mexico is anticipated for the second half of 1983. But, given the declines that have already taken place and the ongoing scarcity of foreign exchange in the entire region, U.S. exports to twenty Latin countries in 1983 are projected to fall below $24 billion, or 40 percent below the level reached in 1981. Assuming

[1] U.S. export volume, estimated by adjusting value figures by unit value indexes of U.S. exports by "end-use" category, also fell about 22 percent. The total fall in import volume, estimated by adjusting the "Western Hemisphere" volume figure in the International Monetary Fund's 1983 *World Economic Outlook* for Venezuela's import volume growth, was about 18 percent. (Venezuela is not included in the IMF definition of nonoil developing countries in the Western Hemisphere.) Such comparisons are necessarily inexact since they involve the use of different base years and commodity categories.

[2] In value terms, the share of U.S. exports to Mexico as a proportion of total Mexican imports actually rose in 1982. (This is thought to be due to increased official financing from the United States. Also, speculative movements out of the Mexican peso, in part, took the form of the purchase of goods. To the extent that these unrecorded imports were largely from the United States, U.S. exports would benefit.) The share of U.S. exports to the region, excluding Mexico, remained approximately constant between 1981 and 1982. Thus, the proportionately greater decline in Mexican imports and the large U.S. share of those imports contributed heavily to the falling share of U.S. exports to the region as a whole.

[3] "Domestic Employment Generated by U.S. Exports" by Lester A. Davis, was released by the Commerce Department in May 1983. This study estimates that in 1982 $1 billion of U.S. exports generated an average of 25,200 jobs. Export-related employment in 1980 was estimated using an input-output model of the U.S. economy developed by the Interindustry Economic Research Fund at the University of Maryland. Estimates for 1982 were then derived by adjusting the 1980 figures for changes in the level of exports, export unit values, and U.S. productivity. The application of the above result for U.S. exports to Latin America is valid for two related reasons: (a) the composition of U.S. exports to Latin America is not dissimilar to the composition of U.S. exports in general; and (b) the employment generated by major export categories is, in any case, relatively invariant—see Davis. Therefore, while too much emphasis should not be placed on a precise figure, the analysis does provide reasonable orders of magnitude.

[4] For example, U.S. unemployment in the transport equipment sector in 1982 averaged 15.3 percent; unemployment in the machinery sector stood at about 11½ percent.

[5] This estimate, derived by deflating GNP and exports using 1980 as a base, does not take into account multiplier effects.

that this export projection for 1983 holds, nearly 400,000 U.S. jobs will have been lost during 1982 and 1983 as a result of declining merchandise exports to Latin America.[6]

In addition to the depressing effects of merchandise trade, reduced service receipts from Latin America have also retarded growth in the United States. Although total U.S. service receipts from Latin America in 1982 remained steady (Table 3), this was entirely due to the continued growth of "Other private receipts"—mainly interest receipts by U.S. banks—to over $25 billion in 1982. These receipts had peaked in mid-1982, after which the sharp reduction of net new lending along with a continued easing of world interest rates contributed to their decline. Lower average interest rates in 1983 are expected to reduce receipts in this category further this year.

Noninterest service earnings from Latin America were already showing declines in 1982. The largest decline among service receipts in 1982 was falling earnings from direct investment. The decline in direct investment receipts from Latin America, which amounted to about $2 billion in 1982 (after adjusting for falling income from the Netherlands Antilles), was entirely accounted for by the drop in earnings from Mexico. In 1983, income from U.S. direct investment in Latin America has declined further because of the severe regional recession and local currency depreciations.

Finally, the U.S. net tourist balance with Latin America moved from surplus to deficit last year, deteriorating by nearly $1½ billion. Mexico's scarcity of foreign exchange reserves, along with its consequent devaluations and efforts to implement exchange controls last year, largely accounted for the deterioration of the U.S. tourist balance with Latin America. Receipts from Mexico, including the border area, fell more than $900 million in 1982, exceeding the total drop in U.S. tourist receipts last year. The more favorable Mexican exchange rate also induced a larger number of travelers to Mexico, raising U.S. travel payments by nearly $500 million, with dollar expenditure in the Mexican border area rising by 27 percent. Further deterioration in our travel balance with Latin America has already occurred in 1983.

No estimates of the effect of service exports on domestic employment are available. Clearly there is much greater variability here than for merchandise trade. While the travel and tourist industries may well be more labor intensive on average than merchandise exports, fluctuations in investment earnings may have little direct employment effects. In any case, a comprehensive study on employment costs would need to take account of the adverse developments in the services sector.

[6] The employment equivalent of $1 billion of exports is slightly lower in 1983, with gains in productivity. Average export unit value is expected to remain substantially unchanged.

U.S. Imports from Latin America

Exports from Latin countries in 1982 fell $10 billion (Table 1), reflecting the fall in GNP of their major trading partners and the continued decline in the prices of their commodity exports. U.S. imports from Latin America in 1982, however, remained steady. The U.S. share of Latin exports therefore rose from 37 percent to 40 percent between 1981 and 1982. That share has continued to rise, reflecting the faster expansion of the U.S. economy than other major industrial countries and the continued strength of the dollar.

In addition, during the first half of this year, U.S. imports from Latin America expanded significantly faster than domestic production in comparable products. Latin exports to the United States also captured a larger share of the U.S. import market. In the first half of 1983, while our imports from Latin America grew by 11 percent from the same period in 1982 (Table 4), our imports from the rest of the world fell by 2 percent. In some sectors, the relative growth of imports from Latin America was even faster. For example, in the first half of 1983, U.S. imports of chemicals from Latin America grew by 64 percent from a year earlier. Over the comparable periods, U.S. imports of chemicals from other countries grew 11 percent, while domestic U.S. production was increasing only about 3 percent. Machinery imports from Latin America during this period grew 26 percent, as U.S. machinery imports from the rest of the world grew 7 percent and domestic production actually fell 6 percent.

In most cases, the relatively rapid growth of Latin exports to the United States has been facilitated by their low initial market shares. These low market shares suggest the potential for further growth is present. This potential is clearly enhanced by the possibility of a sustained recovery in the United States, subject to the recognition that imports can be impaired by overt or indirect protectionist pressures.

In terms of exchange rate competitiveness, substantial currency devaluations in real terms have placed most of the major Latin trading partners of the United States in a better position to take advantage of our increased growth. Looking ahead, the prospect of these and other Latin countries maintaining more competitive exchange rates has increased, precisely because of their financing difficulties. With reduced reserves to support their currencies and an ongoing need to avoid further capital outflows, the ability and desire to maintain overvalued exchange rates have considerably diminished.

Heightened competition from Latin exports is a relatively recent phenomenon and, to the extent that it represents an effort at adjustment by the expansion of trade, is a positive development. To date, however, the bulk of the adjustment to financing constraints has occurred through a contraction of Latin imports.

Sanjay Dhar

In Brief
Economic Capsules

Currency Diversification and LDC Debt

Between 1979 and 1982, the nonoil developing countries (LDCs) borrowed about $137 billion from commercial banks worldwide, virtually all in terms of dollars. Had these countries diversified the currency composition of their borrowings to correspond broadly with the currency composition of their trade, they would have incurred substantial savings in interest payments as well as in the conversion value of their principal.[1]

To estimate these savings, weights were assigned to various major currencies. The weights were based on the composition of nonoil LDC trade in 1980.[2]

The relative cost of borrowing was determined by comparing three-month average Eurodollar interest rates from 1979 to 1982 with three-month average Euro-rates for the trade-weighted mix of currencies. The interest rate for the mix of currencies was lower in each year (Table 1).

Relative exchange rate changes are reflected in changes in the level of the trade-weighted index of the

Table 1

Average Annual Rates of Interest

In percent

Year	Three-month Eurodollar interest rates	Three-month Euro-rates for a trade-weighted mix of currencies
1979	11.93	11.03
1980	13.96	13.36
1981	16.80	15.32
1982	13.10	12.45

Table 2

Effect on Principal of Borrowing in a Trade-Weighted Mix of Currencies

Year	Trade-weighted index (1978 = 100)	Net borrowings from banks ($ billion)	Cumulative borrowings ($ billion)	Conversion value of cumulative borrowings ($ billion)
1979	101.2	35	35	35.4
1980	101.3	38	73	73.9
1981	96.0	41	114	109.4
1982	91.6	23	137	125.5

[1]To the extent that borrowing and rolled-over maturing debt took place in currencies other than dollars, our estimates may overstate the benefits. Nevertheless, data for five major nonoil LDC borrowers indicate that only 1.4 percent of syndicated loans to these countries in 1980 took place in currencies other than dollars. Although this percentage has tended to increase in recent years, totaling 11.9 in 1982, it still lags well behind the world average. For example, the percentage of all syndicated loans in nondollar currencies was 10.6 in 1980 and 20.8 in 1982. Excluding the five major nonoil LDC borrowers, these percentages were 12.8 in 1980 and 30.1 in 1982. The five nonoil borrowers include Mexico, Brazil, Argentina, Korea, and the Philippines.

[2]Weights were based on aggregate nonoil LDC imports. Weights based on aggregate exports in the same year would have been almost identical. Over the past five years, the trade patterns have been reasonably stable. In our calculations, imports from Belgium and Denmark were attributed to the German mark. Imports from OPEC countries, from each other, and from those countries not accounted for in the currencies specified below were attributed to the dollar. The trade weights in percentage terms were: U.S. dollar 67.0, Japanese yen 10.5, German mark 8.5, French franc 4.8, pound sterling 4.6, Italian lira 3.0, Dutch guilder 1.6.

mix of currencies *vis-à-vis* the U.S. dollar (1978 = 100). With dollar depreciation during 1979 and 1980, the index rose slightly, *i.e.* appreciated, against the dollar in these two years. By contrast, the strengthening of the dollar during 1981 and 1982 caused the index to fall, *i.e.* depreciate, by roughly 5½ percent and 4½ percent, respectively, in each of these years.

Between 1979 and 1982, nonoil LDC cumulative net borrowings from banks amounted to $137 billion. Had this borrowing been denominated in the trade-weighted mix of currencies, its conversion value at end-1982 would have been about $125.5 billion (Table 2). This would have represented a savings of about $11.5 billion or 8½ percent over borrowing solely in U.S. dollars.

The interest rate on the trade-weighted mix of currencies was 1.48 percentage points lower than the comparable dollar rate in 1981 and 0.65 percentage points lower than that in 1982. Exchange rate changes reduced the value of the trade-weighted index against the U.S. dollar by 4 percent between 1978 and 1981 and by 8.4 percent between 1978 and 1982. As a result, interest payments on cumulative bank borrowings by the nonoil LDCs would have been lower by about $2 billion in 1981 and in 1982 (Table 3).

If maturing debt had also been rolled over into the trade-weighted mix of currencies, the savings effects would have been even greater. Additional savings would have amounted to $13 billion on the principal at end-1982 and roughly $2 billion on the interest payments in 1981 and in 1982.

Table 3

Effects on Interest Payments of Borrowing in a Trade-Weighted Mix of Currencies

In billions of dollars

Year	Average cumulative borrowings	Pure interest savings	Exchange rate savings (loss)	Total savings*
1979	17.5	0.16	(0.02)	0.13
1980	54.0	0.33	(0.09)	0.23
1981	93.5	1.39	0.58	1.96
1982	125.5	0.82	1.31	2.13

Average cumulative borrowings were calculated on the assumption that the borrowings were distributed evenly through the year. Pure interest savings measures the gain from borrowing at a lower interest rate using the trade-weighted mix of currencies. Exchange rate savings (loss) adjusts the interest payments for movements in the trade-weighted index against the U.S. dollar since 1978.

*Because of rounding, figures may not add to totals.

In total, these estimates suggest that the combined savings to the nonoil LDCs in terms of lower interest costs and exchange rate gains of diversifying their new and maturing bank debt between 1979 and 1982 could have amounted to over $30 billion.

Andrew Mohl and Dorothy Sobol

Bank Size and U.S. Bank Lending to Latin America

The reluctance of some regional banks to join in recent reschedulings has focused attention on bank size as a determinant in bank lending behavior. The results of our current research indicate that different size banks have behaved differently during the recent period of payments difficulties and that differential behavior during 1982 reflects fundamental differences in the patterns of bank lending to Latin America that developed during the period of 1977-81.[1]

Patterns of bank lending from 1978-81

An analysis of reported U.S. bank claims on non-OPEC Latin America from end-1977 through end-1981 reveals that the smallest banks reporting in the *Country Exposure Lending Survey* have developed patterns of bank lending distinct from those of the larger banks. The growth rates for the various size banks shown on the table indicate that small bank claims have grown faster on average throughout this period. Both the large money center banks and the medium-sized banks already had relatively large exposures in Latin America in 1977. The smallest banks in the survey thus expanded their claims at a faster rate to take advantage of newly developing profitable markets.

Claims held by small banks have been relatively more concentrated in shorter maturities. From 1977 to the present, the smallest banks in the survey have held a higher proportion of claims maturing in one year or less. The variation in the maturity structure of claims may reflect small bank preference for involvement in trade

[1]The primary data source for the analysis is the U.S. Federal Financial Institutions Examinations Council, *Country Exposure Lending Survey*. This semiannual series dates from end-1977 and provides information supplied by all U.S. commercial banks with more than $20 million in claims on residents of foreign countries. The banks are grouped according to the size of their total assets—the nine largest, the next fifteen, and all other. These groups are referred to here as large, medium, and smaller.

U.S. Bank Claims on Non-OPEC Latin America and Caribbean

*Bank size	Total claims	Claims maturing in 1 year or less	Claims on banks	Claims on public borrowers	Claims on private nonbanks
			Average annual growth rates, 1978-81		
					In percent
Large	15.1	20.0	22.9	17.8	9.2
Medium	15.8	20.3	18.4	5.1	23.0
Smaller	21.9	25.4	28.5	5.7	30.2
			Shares outstanding at end-1981		
			In percent of totals for each type of claim		
Large	58.6	57.0	45.9	70.0	59.5
Medium	18.9	18.7	23.0	14.4	19.5
Smaller	22.5	24.3	31.1	15.6	21.0
			Growth rate for 1982		
					In percent
Large	12.8	7.1	11.4	33.3	−6.6
Medium	19.0	21.8	27.9	23.6	7.4
Smaller	2.8	−0.3	−1.2	23.3	−5.1

*Reporting banks are divided into three groups ranked by size of total assets (the nine largest, the next fifteen, and all other reporting banks); banks in each group are referred to as large, medium, and smaller, respectively.

Source: U.S. Federal Financial Institutions Examinations Council, *Country Exposure Lending Survey.*

financing and interbank placements in Latin America.

Small bank preference for lending to the private sector became even more pronounced between 1977 and 1981, when small bank claims on both bank and nonbank private borrowers increased at an average annual rate of about 30 percent while the average annual increase in their claims on the public sector was less than 6 percent. By the end of 1981, 41 percent of claims on non-OPEC Latin America held by the small banks were claims on banks and only 23 percent of their claims were on the public sector. For the largest nine banks, only 23 percent of non-OPEC Latin American claims were held on banks while 39 percent were on public borrowers.

Payments problems during 1982[2]

In 1982 severe financial strains brought a halt to the rapid expansion of claims on Latin America. The changes in U.S. bank claims on Argentina and Mexico during 1982 indicate a withdrawal from lending by the smaller banks similar to that observed in earlier periods of payments problems for other countries. In Mexico and Argentina, banks of all sizes slowed their lending to the private sectors. But, unlike the larger banks, small banks did not offset this decrease in claims on the private sector with a comparable increase in their claims on public borrowers. This pattern was especially pronounced in Argentina and Mexico, but bank lending to the private sector was also slowing in other parts of the hemisphere.

Much of the decline in claims on the private sector can be attributed to a fall in the demand for trade credits and working capital as economies throughout the hemisphere experienced a deep recession. Thus, the demand for imports of both production inputs and consumer goods fell. Public-sector borrowers began absorbing credits that formerly went to the private sector. In addition, there were difficulties in finding financing for imports. These difficulties may remain with us in the near future as banks remain reluctant to increase their claims on the private sector. Some of this reluctance is due to the fear that private firms are no longer good credit risks and that even firms that remain solvent will have reduced access to foreign exchange during times of scarcity. Smaller banks have not only withdrawn from private-sector lending but are also hesitant to join in new loans to the public sector. This reluctance accords with the previously revealed preference behavior of these smaller banks who have not typically been attracted to the lower spreads and longer maturities of public-sector loans.

Willene A. Johnson

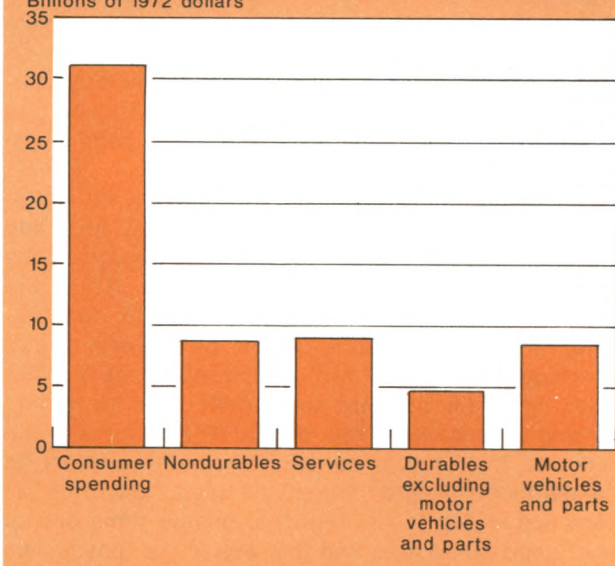
[2]William J. Gasser and David L. Roberts, "Bank Lending to Developing Countries: Problems and Prospects", this *Quarterly Review* (Autumn 1982), pages 18-29, for earlier payments problems.

Why Consumption Surged in the First Half of 1983

The strength of the economy over the first half of this year surprised many forecasters who earlier had predicted a below-average recovery in economic activity. Most of the economy's advance reflected a burst of consumer spending, much of which occurred in the second quarter, when the personal saving rate declined from 5.4 percent to 4 percent. Between the fourth quarter of 1982 and the second quarter of 1983, real consumer expenditures rose $31 billion, more than two thirds of the increase in GNP. This surge in spending

Composition of the Consumer Spending Surge in the First Half of 1983

Seasonally adjusted changes



Source: National Income and Product Accounts.

by households was fairly widespread among nondurables, services, and motor vehicles (chart). What caused households to go on a spending spree? Was it foreseeable before the recovery got under way?

Part of the spending surge may have reflected unintended purchases, *e.g.*, expenditures on heating fuel because of the unusually cold weather in April and May. However, we estimate that almost half of the pickup in consumer spending can be attributed to three developments perhaps not easily foreseen or evaluated at the start of the recovery. These developments were the steep rise in the stock market into 1983, the decline in oil prices, and the extent to which automobile manufacturers provided incentive financing.

The *stock market* climbed more than 50 percent between mid-1982 and mid-1983, the largest advance in the value of stocks in the postwar period (Table 1). In particular, over the second six months of this recovery, stocks surged by more than in any other corresponding period since the 1950s. In dollar terms, the value of stocks expanded by about $600 billion between mid-1982 and mid-1983, a gain of about $270 billion in 1972 dollars.

How much did consumer spending rise as a result of this increase in the net worth of households? Economists have long been of the view that changes in wealth affect consumer spending (in addition to the primary influence of changes in income) and, based on historical relationships, have made estimates of such effects. According to the Federal Reserve-MIT-Penn (FMP) econometric model, consumption of nondurable goods and services can be expected to climb over the course of two years by about 4 percent of a sustained gain in stocks, with most of the increase occurring in the first twelve months. In addition, purchases of consumer durables should expand by about 0.4 percent of the gain. These estimates, applied to the 1982-83 advance in stocks, indicate an increase in real consumer spending over the first half of 1983 of $6.2 billion, or 20 percent of the observed surge in consumption (Table 2). Almost half of this impact on consumer spending can be attributed to the continued strength of the stock market during the first two quarters of this year.

Spot *oil prices* fell about $3 a barrel, or 10 percent, between the fourth quarter of 1982 and the second quarter of 1983. The decline in oil prices was passed along to consumers quickly. For instance, excluding the five cent increase in Federal excise tax on gasoline that went into effect in April 1983, gasoline prices in the April-to-June period stood 6.3 percent below their level in the fourth quarter of last year. This drop in prices essentially reflected a complete passing through of the lower oil prices, as the cost of oil represents about three fifths of the price of a gallon of gasoline. With households directly consuming about 2 billion barrels of oil a year, the cut in price was equivalent to an income gain in current dollars of $6 billion, or about $3 billion in constant dollars. Assuming that about 90 percent of this income gain was spent, the oil-price decline would account for about $2.7 billion in additional purchases over the first half of the year, 9 percent of the total advance of consumer spending.

Automobile manufacturers in the first half of this year broadened their *incentive-financing programs* to encompass almost all their domestic automobile models and light trucks. This development resulted in an average loan rate of 12 percent between January and June, compared with 14.4 percent in the fourth quarter of 1982. This lower interest rate raised car sales primarily for two reasons. First, by reducing the effective price of a car or light truck by about 4 percent, the lower rate increased the number of cars desired by households. Second, as the lower rate might have been viewed as temporary, the programs may have encouraged consumers to push ahead their purchases of a car. As a result, using the FMP model, we estimate that the lower interest rates led to an increase in real expenditures on cars of about $2.5 billion over the first half of this year. With this figure as a benchmark, we estimate that the incentive programs bolstered the sales of light

Table 1

Rise in the Stock Market

In percentage change

Trough of market	First six months of market recovery	Second six months of market recovery	First twelve months of market recovery
June 1949	9.4	25.0	36.8
September 1953	13.7	23.5	40.4
December 1957	15.8	19.3	38.1
October 1960	21.1	6.8	29.4
July 1970	31.1	4.7	37.2
December 1974	38.4	−2.2	35.3
March 1978	25.2	−1.4	23.5
April 1980	27.8	5.3	34.6
June 1982	32.8	17.8	56.4

Sources: Estimated by authors using Standard and Poor's Dividend Price Ratio, and National Income and Product Accounts.

Table 2

Some Determinants of Consumer Spending: Estimated Impacts in the First Half of 1983

In percent

Determinant	Change from recent trough or peak of determinant	Impact on consumer spending as a share of total rise in consumer spending
Rise in stock market	56	20
Decline in oil price	−10	9
Decline in automobile loan rates	−17	13

Sources: Estimated by authors using Standard and Poor's Dividend Price Ratio, National Income and Product Accounts, *Ward's Automotive Reports*, Federal Reserve *Bulletin*, U.S. Department of Energy, and *Platt's Oilgram Price Report*.

trucks by $1.5 billion. Thus, the incentive programs may have accounted for about 13 percent of the rise in consumer spending over the first half of the year.

To summarize our analysis, we estimate that three developments—the steep rise in the stock market, the drop in oil prices, and the automobile incentive programs—can explain more than 40 percent of the rise in consumer spending over the first half of 1983. This conclusion, of course, leaves room for other factors to have played a role. For example, households may have increased their spending partly in anticipation of the July tax cut. A reliable estimate of the extent to which this was so is, however, difficult to obtain. Finally, the question remains why the surge in consumer expenditures was concentrated in April and May. While it is probably impossible to answer this question satisfactorily, we conjecture that people's views of the economy improved significantly in April, when employment began to rise sharply after being almost flat over the first three months of the year. With this change in their outlook, households may have at last responded to the three developments that had already improved their ability to purchase goods and services. In any case, since the spring the advance of the stock market has slowed, oil prices have stabilized, and automobile incentive programs have been scaled back considerably. These circumstances most likely help explain the slower growth of consumer spending in the third quarter.

Susan K. Fancher, Carl J. Palash, and
Robert B. Stoddard

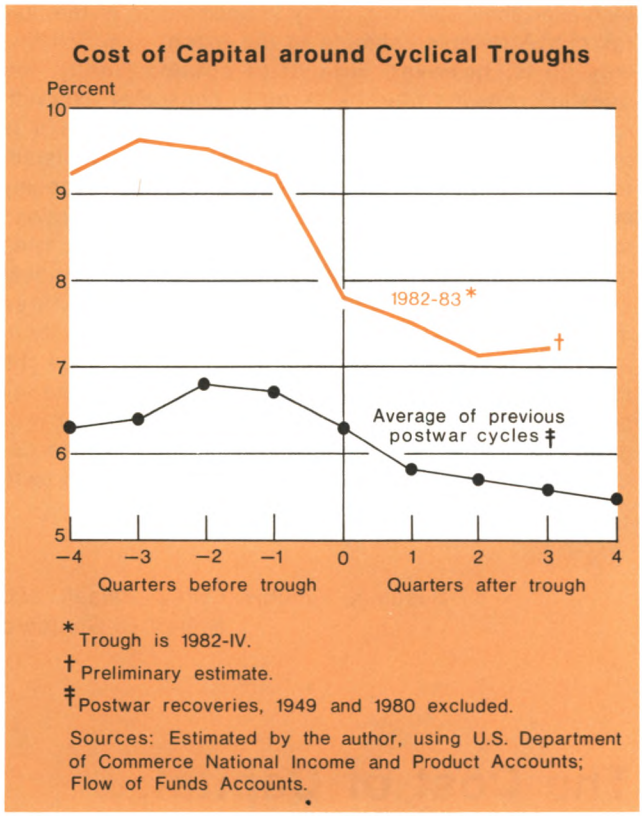
The Cost of Capital: An Update

Nominal interest rates reflect both financial market pressures and inflationary expectations. Yet what matters for household and business investment decisions are *real rates, i.e.,* rates that somehow net out expected inflation. In a previous article,[1] an attempt was made to measure such a real rate of interest—the cost of capital.

In a rough sense, the cost of capital (chart) is a weighted average of the dividend-price ratio and an inflation-adjusted bond rate. The bottom line shows the previous pattern of the cost of capital around business cycle troughs. In the past, the cost of capital peaked two quarters prior to the trough quarter and fell thereafter—for a cumulative decline of about 125 basis points. Most of the decline was achieved by the second quarter past the trough.

In the most recent U.S. experience, two things are noteworthy about the behavior of the cost of capital. First, the overall level is considerably higher than the historical average. The peak level shown in the chart corresponding to the first quarter of 1982 was 9.6 percent. This compares with a historical average peak of

[1]See "The Cost of Capital: How High Is It?", this *Quarterly Review* (Summer 1982), pages 23-31.



about 6¾ percent. Second, the reduction of the cost of capital from its peak level has been quite a bit larger than the average historical pattern. The estimate for the third quarter 1983 (shown as the third quarter past the trough) is about 240 basis points below the pre-trough peak, almost double the previous decline around the typical business cycle trough.

Why has the cost of capital fallen so much farther than in past cycles? A complete explanation is beyond the scope of this note. The main reason lies in the stock market rally of the past year which has served to bring equity financing costs down sharply. The drop in the dividend-price ratio "explains" about 220 basis points of the drop in the cost of capital from the peak in the first quarter of 1982.[2]

As of the second quarter of 1982, the relative importance of equity financing in the cost-of-capital measure was at its highest point in more than ten years. This point is underscored by the heavy volume of new equity financings in 1983, amounting to $39 billion thus far this year. With equity financing so important, it can be very misleading to look at nominal or inflation-adjusted bond rates alone as a measure of the cost of capital.

Patrick J. Corcoran

[2]By comparison, the decline in the inflation-adjusted bond rate component contributes about 75 basis points to the decline. Taken together, the reductions of the debt and equity financing components of the cost of capital overexplain the drop in the measure itself. The stock market rally has raised the relative weight received by equity financing costs. Since the equity costs exceed debt-financing costs, the effect is to raise the measured cost of capital.

Will Wage Givebacks Be Reversed?

Over the past year and a half almost 50 percent of workers in major collective bargaining settlements have agreed to wage freezes or reductions. Indeed, these concessions may have lowered the average union wage settlement both in 1982 and in the first half of 1983 by more than 2 percentage points (table, top panel). However, despite the continued weakness in wage growth recently, some analysts have voiced concern that these earlier givebacks will be reversed as labor markets tighten, spiking wage settlements sharply upward. The recent Chrysler settlement, for example, is expected to raise wages more than 25 percent in just over two years. If such reversals became common, they could set the pattern for a resurgence of wage inflation.

The wage freezes and concessions of the past year and a half, however, may have a more durable effect on wage growth than many analysts expect, for several reasons. First, despite the recovery, givebacks have proceeded at a faster pace in 1983 than in 1982, with more than half of 1983 settlements thus far containing wage freezes or reductions (table, bottom panel). Overall, wage settlements have continued to slow in 1983, even among workers receiving pay increases (table, top panel).

Also, it is not the case that the workers make concessions for one year but obtain large increases in the second or third year of their contracts. In the vast majority of 1982 and 1983 contracts with givebacks, the concessions persist over the life of the contracts (table, bottom panel). While some of these contracts can be reopened after a certain date, they are relatively few in number and generally specify profits or sales targets which must be met before any reopening. Moreover, in several cases the reopening option is available to management which may require further concessions. Thus, the only likely wage gains in these contracts are

from cost-of-living adjustments (COLAs). But, even the COLAs have been weakened in many cases. For example, some settlements now put a cap on COLA payments, while others have dropped COLAs entirely.

The other major reason to expect the recent givebacks to persist relates to long-term structural changes in several major industries. These structural changes may continue to exert downward pressure on wages even during the expansion. For example, deregulation of the airline and trucking industries allows new, often nonunionized entrants to compete with the established firms. Many of the newer carriers benefit from both lower wages and relaxed work rules. These cost advantages put competitive pressure on the older firms in the industry to exact wage concessions. The recent trucking industry proposals and the highly visible airline concessions reflect this competition.

For other industries, increased competition also appears to be a major source of downward pressure on wages. Part of that comes from abroad, reflecting the dollar's strength among other factors, but the competition arises from domestic sources as well. For instance, technological competition from a few, highly mechanized meat-packing firms exerts downward pressure on the wage structure in firms which use more traditional methods. Within such industries the need for wage and other concessions may remain for some time.

In sum, many of the concessions negotiated by labor and management in the past year and a half probably have not been temporary responses to purely cyclical factors. Instead, the concessions in these industries appear to stem from longer term structural developments which were exacerbated by the recession. Thus, the givebacks probably will hold and may even be extended in some cases.

Characteristics of Major Collective Bargaining Settlements
In percent

Provisions	1982	First half of 1983
Average wage change over life of contract:		
Workers with increases	5.8	5.2
All workers	3.6	2.7
Difference due to givebacks	2.2	2.5
Percentage of workers with freezes or reductions:		
First-year contract	45	54
Life of contract	36	44

Source: Bureau of Labor Statistics (BLS) contribution of givebacks calculated by the Federal Reserve Bank of New York from BLS data.

A. Steven Englander and Marie Chandoha

Reactions to Discount Rate Cuts

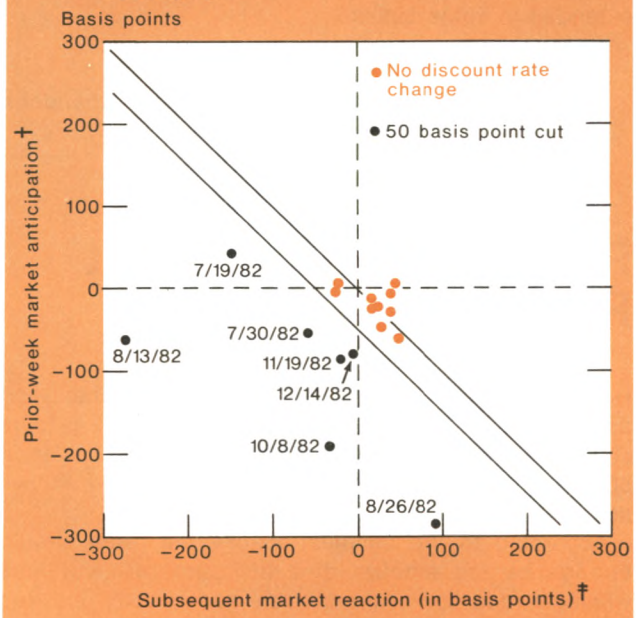
How do interest rates on short-term instruments such as Treasury bills react when the discount rate is changed? The experience in 1982, when seven different 50 basis point cuts in the discount rate occurred, throws some light on this question.

According to the simplest theory, bill rates should change by the amount of a discount rate cut less whatever reduction of the bill rate had already occurred in anticipation of the cut. The chart compares movements in three-month Treasury bill rates after each of these cuts with a measure of how much change had been incorporated in the bill rates beforehand. The lower of the two diagonal lines predicts where actual observations should lie when a 50 basis point discount rate cut occurs, assuming that the simple theory holds. For example, if an anticipated 50 basis point cut had been reflected in the bill rate ahead of time, the lower line predicts that, subsequent to an actual 50 basis point cut, bill rates should stay unchanged. If anticipation of a 100 basis point cut had been initially built into bill rates, then the lower line indicates that bill rates subsequently should rise 50 basis points following an actual cut of only 50 basis points.

But the simple theory is too simple, as the chart shows. All seven of the observations corresponding to actual discount rate cuts in 1982 lie below the lower line instead of clustering around it. One way this could happen would be if the Federal Reserve tended to increase reserve availability whenever it cut the discount rate. Such increased availability then would be reflected in less borrowing from the Federal Reserve to meet reserve requirements. But, in fact, such borrowing was already very low prior to each of these cuts and did not systematically drop much afterward.

Apparently what did happen, particularly during mid-1982, was that market participants suspected a downward *trend* in the discount rate was under way (as turned out to be true). In such a situation, bill rates

Market Reactions to Discount Rate Changes*



* Sloping lines show the market reaction predicted by the simple expectations hypothesis. The upper line corresponds to the hypothesis when no discount rate change actually occurs, and the lower line corresponds to the hypothesis for a 50 basis point cut.

† Average spread, in statement week prior to discount rate change, between the discount rate and the three-month Treasury bill rate (on a 365-day simple interest basis). For no discount rate change observations, current week spread is used.

‡ Change in average three-month Treasury bill rate between statement week prior to discount rate change and statement week following the week of the discount rate change. For no discount rate change observations, change between current week and two weeks later is used.

initially could fall quite a bit, in anticipation of several discount rate cuts. But, given the initial uncertainty about these expected cuts, when each cut occurred rates fell still further as events appeared to confirm the market's original suspicions. This shows up as observations lying in the lower left-hand quadrant of the chart—episodes when bill rates were initially low in anticipation of actual cuts, yet subsequently fell even further. One exception was the July 19, 1982 cut, which apparently was not widely foreseen by the market. But the subsequent fall in the bill rate was much larger than the discount rate cut itself, as further cuts began to be anticipated. Another exception was the August 26 cut. During the week before this cut, bill rates averaged more than 250 basis points below the discount rate, an unusually large negative spread. Then, after the cut, bill rates rose nearly 100 basis points but this was still consistent with expectations of more cuts to come.

The two cuts lying closest to the lower line (and thus conforming best to the simple theory) were those in November and December 1982. The market apparently had guessed that these cuts were in store and, when the cuts did come, bill rates moved relatively little. Why would the simple theory work at that time but not earlier in the year? The best explanation seems to be that during the summer and early fall the recession was still well under way, and thus a sizable downward trend in interest rates seemed likely to market participants. By late 1982, however, the chances of an economic upturn were starting to look better, and any cut in the discount rate seemed increasingly likely to be the last for the time being. Indeed, following the December 14 cut, yields on long-term government securities actually rose a bit.

Reinforcing this view was the behavior of bill rates in the period immediately following, early in 1983. For such periods when the discount rate remains unchanged, the simple theory predicts that, if anticipated cuts do not materialize, any initial drop in bill rates would be reversed. The upper line in the chart should apply to such episodes since it predicts that any anticipatory decline in bill rates will be exactly matched by a subsequent rate increase. In fact, the observations plotted for ten weeks in early 1983 do indeed lie near the upper line, in accordance with the simple theory. As was true during periods of actual cuts in 1982, adjustment borrowings from the Federal Reserve remained low during these ten weeks. While discount rate cuts may have been anticipated on several occasions in early 1983, the market quickly gave up such hopes when the cuts did not materialize immediately. Again, this is consistent with the improving economic data emerging at that time, which indicated that the fundamental forces behind the earlier series of rate declines had receded.

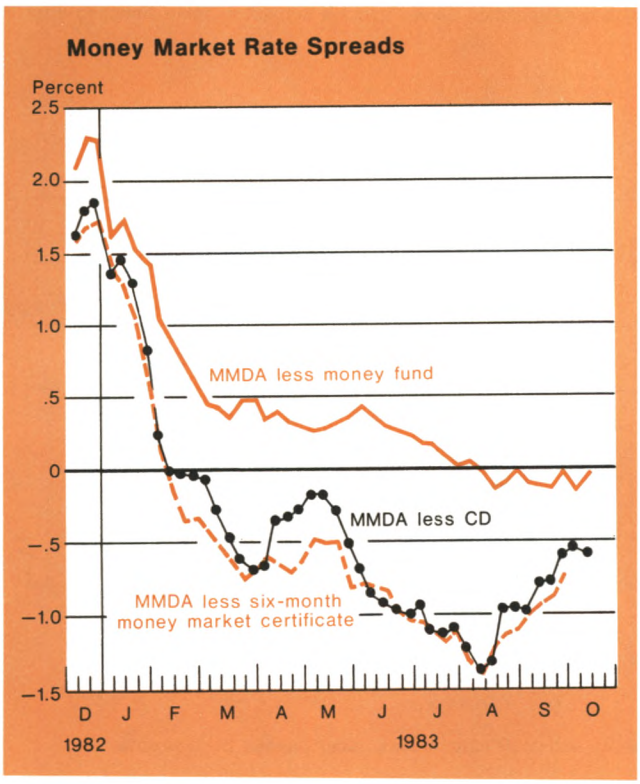
Paul Bennett

MMDA Rates and Flows

In recent months, rates on money market deposit accounts (MMDAs) have continued to decline relative to rates offered on competing assets and, as a result, MMDA growth has leveled off. Initially, rates on MMDAs

averaged more than 2 percentage points higher than rates on alternative assets such as money market mutual fund shares and small time deposits (*e.g.*, three- and six-month money market certificates). The difference in rates declined steadily between January 1983 and August 1983. Since then, the average rate on MMDAs has been below the average rate on money funds (chart).

As MMDA rates have come more in line with rates on other assets, deposit flows into MMDAs have diminished, and in several recent weeks there have been net outflows. At the same time, deposits at money funds have leveled off after having fallen by about $50 billion in the first half of 1983. Also, investors on balance have stopped shifting funds from small time deposit accounts to MMDAs. Small time deposits at commercial banks and thrift institutions fell by over $135 billion from December 1982 through June 1983, but in the third quarter these accounts increased by about $35 billion. As MMDA inflows have dropped off, banks and thrift institutions also have issued more large certificates of deposit as an alternative source of funds. Certificates of deposit outstanding rose $14 billion from July through September, after they had fallen by $30 billion in the first six months of the year.



While MMDAs and money funds are similar in terms of liquidity and transactions costs, MMDAs carry FDIC insurance. Consequently, in theory, investors should be willing to accept a somewhat lower rate on them than on money funds. However, the flows of funds during the last few months suggest that banks and thrift institutions were able to attract "new money" (from outside the banking system) to MMDA accounts only by paying a premium over the return from money funds and other competing assets. Unless depository institutions are again willing to pay a significant premium, net flows into the MMDAs from other accounts should remain comparatively modest from now on. Moreover, the introduction of unregulated small certificates of deposit on October 1 may cause shifts from MMDAs to these instruments, if the rates offered are sufficiently above MMDA rates to compensate for the reduced liquidity of the 32-day minimum maturity.

Robin C. DeMagistris and Howard Esaki

New York City's Low Labor Force Participation

In 1982, New York City's unemployment rate of 9.6 percent was slightly below the national average. This has been seen as a dramatic improvement over 1976, when the city's rate was substantially higher, and greatly exceeded the national rate. But celebration of an economic "turnaround" for the city must be tempered by the fact that other measures of labor market conditions tell a very different story. For example, New York City's *employment ratio* remains well below that of the rest of the country and showed a smaller improvement than the unemployment rate.[1]

The two statistics tell different stories because New York City has an unusually low *labor force participation rate*. In fact, New York City's rate is lower than those in forty-nine states (all but West Virginia) and in all thirty metropolitan areas for which the Bureau of Labor Statistics (BLS) publishes data.

New York City's labor force participation rate may not be all that unusual for a large city, however. Of the ten

[1]The employment ratio is defined as the percentage of the civilian noninstitutional population over 16 years of age with jobs; the labor force participation rate is the percentage of the civilian noninstitutional population over 16 years of age either working or looking for work.

Selected Labor Force Participation Rates and Population Shares, New York City and United States, 1982
In percent

Population group	New York City		United States	
	Participation rate	Population share	Participation rate	Population share
Total	55.2	100	64.0	100
White men	69.0	32.0	77.4	41.3
White women	42.2	38.6	52.4	45.4
Black men	67.8	10.6	70.1	4.8
Black women	47.0	14.6	53.7	6.0
White, 16-19 years	33.2	5.4	57.5	7.6
Black, 16-19 years	18.1	3.0	36.6	1.3
Hispanic men	68.6	8.4	80.0	2.6
Hispanic women	35.0	10.7	48.6	2.8
Married, spouse present	59.7	46.6	65.6	59.0

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment* (1982).

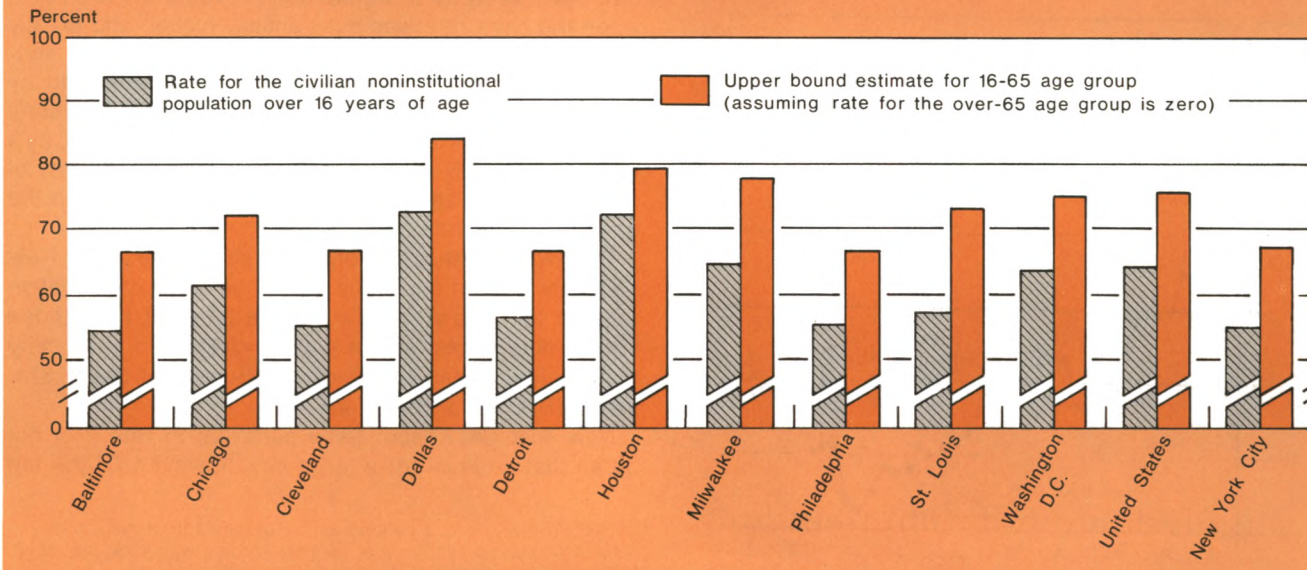
other cities for which the BLS provided labor force data, half had rates within 2 percentage points of New York's (chart).[2]

From a quick glance at the chart, it may appear that low participation rates are a general characteristic of large northern cities. But the story is more complicated. Chicago, Milwaukee, and Washington, D.C. have substantially higher participation rates than New York City, despite northern locations and double-digit unemployment rates. Thus, it is necessary to determine the characteristics that distinguish these cities and the traits the other northern cities have in common.

A typical first guess involves the demographic composition of cities. The nonwhite proportion of the population over 16 years of age in New York City was 29.4 percent, for example, compared with a national average of 13.3 percent. But demographics do not explain New York's low rate. In every demographic category for which the BLS provides a breakdown, New York's participation rate lies below the national average (table). And, if New York City had the same demographic breakdown by sex and race as the United States (but its own actual participation rates for each group), then the city's rate would be virtually unchanged. Likewise, if the United

[2]These labor force statistics were reported in *Geographic Profile of Employment and Unemployment*, (1982). The data are based on the Current Population Survey and are subject to some sampling error.

Labor Force Participation Rates for Selected Cities, 1982



Sources: Geographic Profile of Employment and Unemployment (1982); and staff calculations using Census Bureau data.

States had New York City's broad demographics, its rate would only fall from 64.0 percent to 63.0 percent. Teenage population shares and the marital status distributions also have little effect on the gap between the participation rates.

Northern cities tend to have higher than average population proportions over age 65. The BLS does not publish regional participation rate data on the elderly, but it is possible to approximate the effects of age composition on labor force participation. An *upper bound* for the participation rate of the 16-65 age group can be obtained by assuming a zero rate for the over-65 group. Except for St. Louis, however (which has an unusually high percentage of the elderly), the derived upper bounds for northern cities remain well below the national average (chart). High concentrations of elderly people do not explain low labor force participation rates in northern cities.

One possible explanation with some support from the data involves educational attainment. The northern cities Milwaukee and Washington, as well as Houston and Dallas, have both relatively high participation rates and higher than average percentages of high school graduates. New York and three other cities score relatively low on both counts. It is not clear to what extent the local educational systems affect these numbers (10 percent of New Yorkers in 1980 lived elsewhere in 1975), but they suggest a broad relationship between the possession of skills and incentives to look for work.

New York City's good news of an improved unemployment rate must be interpreted in the context of relatively low employment rates and labor force participation rates. The low rates cannot be explained away on the basis of broad urban demographics: New York's participation rate would still be well below the national average even if the city had the nationwide population composition by age, sex, and race. One possible explanation for New York's poor performance by this measure is the relatively high proportion of high school dropouts in the population.

Daniel E. Chall

New York State's Economic Turnaround: Services or Manufacturing

Over the past several years the outlook for the New York State economy has shifted from secular decline to something much more optimistic. In the mid-1970s the state was performing much worse than the national average, but more recently the state's performance, by some measures, has been better than the nation's. This turnaround is noteworthy for two reasons. First, New York State's relative economic recovery provides some hope and, possibly, some guidance to other states where current conditions are much worse than the national average. Second, an analysis of recent changes in the New York State economy calls into question two clichés about current economic events in the United States.

The clichés that need further examination on the basis of New York's experience are these:

- that almost all economic growth of the past decade has been generated by the expansion of the service industries,
- that large numbers of healthy small firms are the key to economic development.

This article describes some of the changes that took place over the last decade in New York State as a whole and in the state's largest labor market areas (LMAs).*

*Labor market areas (LMAs) are roughly equivalent to the more familiar standard metropolitan statistical areas (SMSAs). The U.S. Labor Department reports frequent statistics on employment and unemployment for a large number of LMAs.

The evidence, while still incomplete, suggests that a turnaround has, indeed, taken place. And it shows that the nature of recent economic change in New York may not be consistent with some conventional notions.

The turnaround

The main evidence of an economic turnaround in New York State comes from data on local and national unemployment rates (Chart 1). During the 1975 recession, New York State's unemployment rate exceeded the nation's by 30 percent. During the 1982 recession, the state's peak rate of 9.8 percent was only about 85 percent of the national peak unemployment rate of 11.4 percent. Furthermore, in 1975 only one New York LMA—Poughkeepsie—had a lower unemployment rate than the United States as a whole. In 1982, only three LMAs—Glens Falls, Elmira, and Buffalo—had higher peak unemployment rates than the national average.

Data on construction activity reveals further evidence of a turnaround. New York State's share of the total value of new building contracts in the United States has been generally rising since 1979 (Chart 2).

What accounts for the turnaround?

One way of accounting for New York State's economic turnaround is to examine the changes that took place in the state's individual labor market areas. Chart 3 summarizes data on employment growth rates—total and by sector—for New York LMAs, New York State, and the United States. Three points are noteworthy.

First, the widely discussed "shift to the service sector"

is clearly happening everywhere in New York State. In all LMAs, employment in nonmanufacturing has been growing faster than manufacturing employment.

Second, however, the performance of manufacturing industries still may play a major role in determining which parts of the state do well. Each of the four LMAs that grew more slowly than the state average lost substantial proportions of their 1974 manufacturing work force by 1981. But none of the LMAs where manufacturing employment increased over the period experienced employment growth rates below the state average. The two exceptions to the rule that local manufacturing had to perform well for the local economy to perform well were Syracuse and Albany-Schenectady-Troy. Only in these LMAs did nonmanufacturing employment grow fast enough to compensate substantially for a loss of manufacturing jobs.

Third, the LMAs that did best tended to experience relatively balanced economic growth across sectors. The lengths of the vertical lines in Chart 3 can be taken as a measure of "balance"; the longer the line the more "unbalanced" the growth. By this criterion, four of the five New York LMAs that performed best—Rochester, Binghamton, Poughkeepsie, and Nassau-Suffolk—experienced unusually balanced growth over the period. In these four LMAs, manufacturing contributed more to total employment growth than elsewhere in the state or in the United States as a whole.

Taken together, the data represented in Chart 3 suggest that, with only two exceptions, overall economic development has been associated with growth of *both* manufacturing and nonmanufacturing employment.

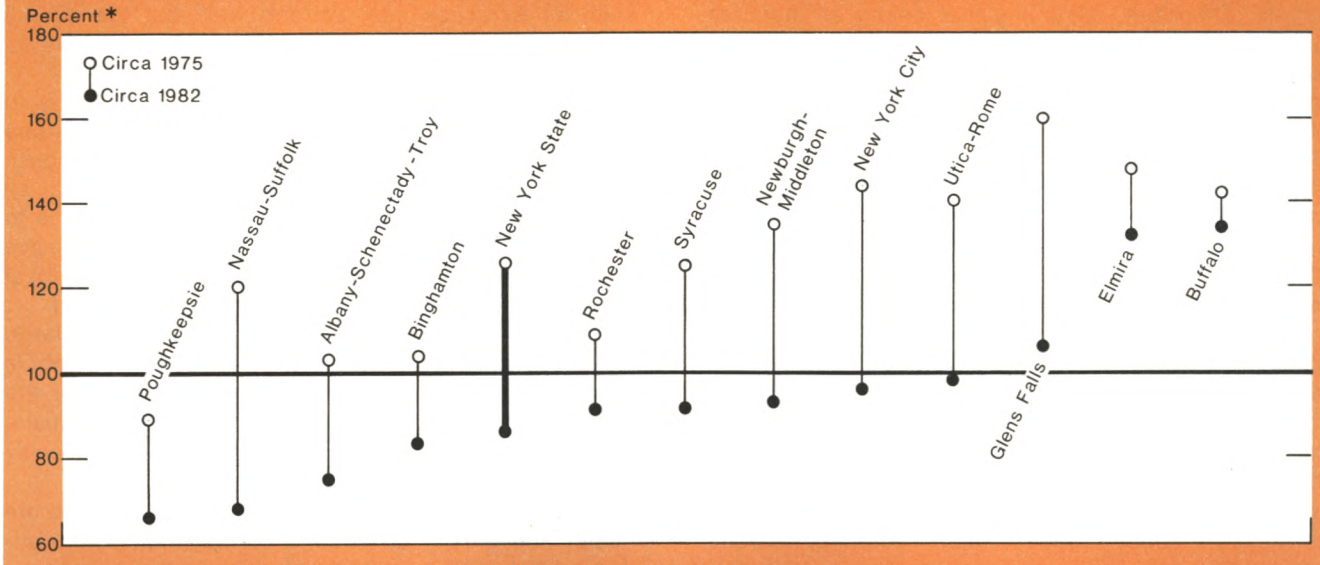
Some rough computations suggest the importance of the growth of manufacturing employment in Rochester, Binghamton, Poughkeepsie, and Nassau-Suffolk to the state's overall economic performance. The computations are based on the assumption that growth of a regional economy is initially stimulated by an increase in net sales of goods and services from the region to the rest of the nation and abroad. In other words, local growth depends on the growth of "net exports" from New York State to the rest of the United States and to the world. An increase in "export" employment stimulates increases in employment in firms producing either inputs for the exporters or goods and services for the local work force. A decent rough estimate is that each new net export job generates roughly two additional jobs in a regional economy.

Employment in New York State increased by about 200,000 jobs between 1974 and 1981. Given the estimate of an export multiplier of two, the original stimulus to the state's economy must have employed roughly

Chart 1

New York Labor Market Areas: Peak Unemployment Compared with U.S. Peak Unemployment

1975 to 1982 recessions



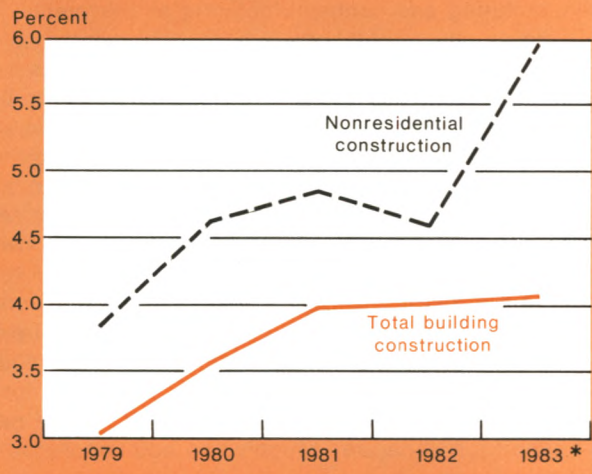
*Local peak unemployment as a percentage of U.S. peak unemployment.

Source: Computed from New York State Department of Labor monthly unemployment releases.

Chart 2

New York Construction Contracts

New York State percentage of dollar value of all U.S. contracts



* January-August average.

Source: McGraw-Hill Information Systems Company, F.W. Dodge Division, Dodge Construction Potentials.

67,000 workers. Over the same period, manufacturing employment increased by a total of 26,000 jobs in Rochester, Binghamton, Poughkeepsie, and Nassau-Suffolk. Therefore, assuming that nearly all manufacturing employment but a much smaller proportion of nonmanufacturing employment is for "export", about 40 percent of the original stimulus of 67,000 new net export jobs was composed of manufacturing jobs in these four LMAs.

In other words, without the increase in manufacturing employment that took place in these four LMAs, total employment growth in New York State might have been 40 percent smaller than it was. New net exports of services may have induced the remaining 60 percent.

The nature of New York's dynamic manufacturing centers

The four LMAs in which manufacturing employment increased between 1974 and 1981 share a number of characteristics. First, as Chart 4 indicates, with the exception of Nassau-Suffolk, employment in these LMAs is relatively concentrated in manufacturing. Second, although manufacturing employment is generally less cyclically stable than nonmanufacturing employment, these LMAs have fared relatively well through the most recent recession. A quick reference to Chart 1 indicates that these four are among the five areas of the state with the lowest peak unemployment rates in 1982.

Finally, each of these local economies is, to some extent, dominated by one or two large manufacturing concerns. In each of these labor markets a single firm accounts for more than 15 percent, and sometimes more than 25 percent, of total LMA manufacturing employment (Chart 5). In none of the other LMAs did single firms account for this large a share of total employment. In Rochester the dominant firms are Eastman Kodak and, to a lesser extent, Xerox; in Binghamton, IBM and, to a lesser extent, GE; in Poughkeepsie the dominant firm is IBM; and in Nassau-Suffolk, Grumman. These firms have several things in common in addition to their large size and local dominance. All manufacture technologically highly sophisticated products. And, overall, they have performed well over the past several years, with annual sales growth averaging about 12 percent between 1974 and 1981.

Conclusions

The performance of the healthiest of New York State's labor market areas over the past several years is not consistent with the clichés presented at the beginning of this article. Most of the places where employment has grown substantially experienced relatively balanced growth of both the nonmanufacturing and the manufacturing sectors. This suggests that regional growth led by the service sectors may be the exception rather than the rule. Governmental centers such as Albany-Schenectady-Troy and a few regional service centers such as Syracuse may perform well, but the overall economic fate of many LMAs still appears to depend on the condition of local manufacturing firms.

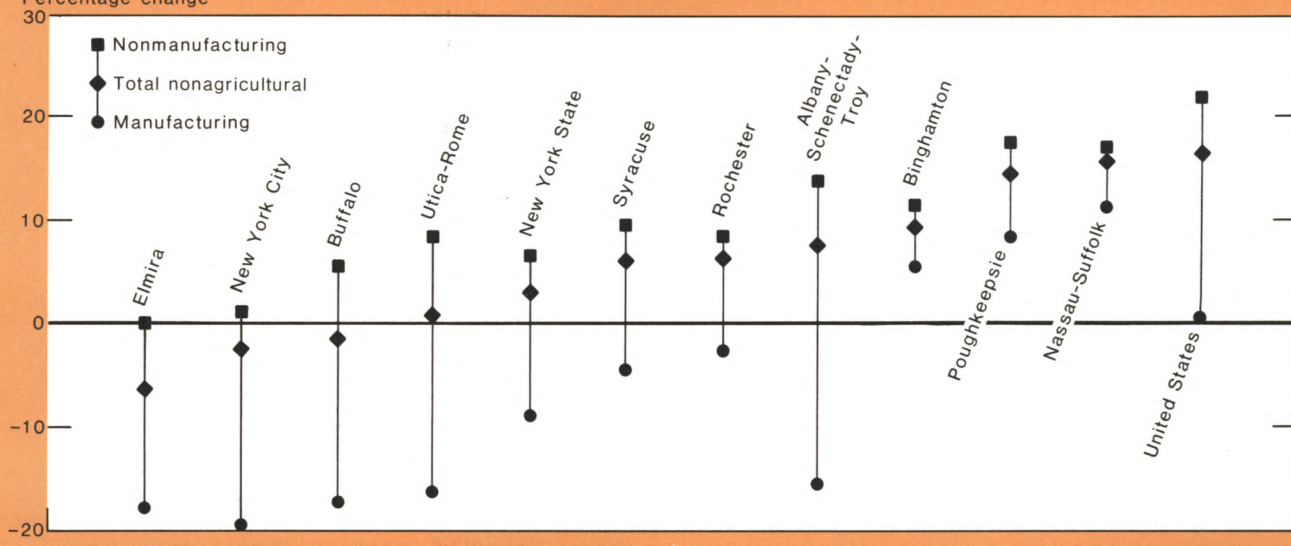
The second cliché—that small firms are the key to economic growth—may also be inconsistent with some of New York's experience. Not all employment growth in Rochester has been at Kodak or Xerox and not all of Poughkeepsie's growth is necessarily attributable to IBM. However, it is unlikely that these LMAs would have done nearly as well as they did had the dominant local firms failed to perform as well as they, in fact, did.

Regional dependence on one or a very few large firms, no matter how successful these firms may be, is far from an unmixed blessing. It makes sense for the leadership of Rochester, Binghamton, Poughkeepsie, and Long Island to be seeking opportunities to diversify their economic bases.

However, it is also important to recognize that the health and growth of these large, technologically advanced firms will be an important element in any continuation of New York State's economic turnaround. State leaders are rightly concerned with the severe

Chart 3

Employment Growth Rates in New York Labor Market Areas, 1974-81

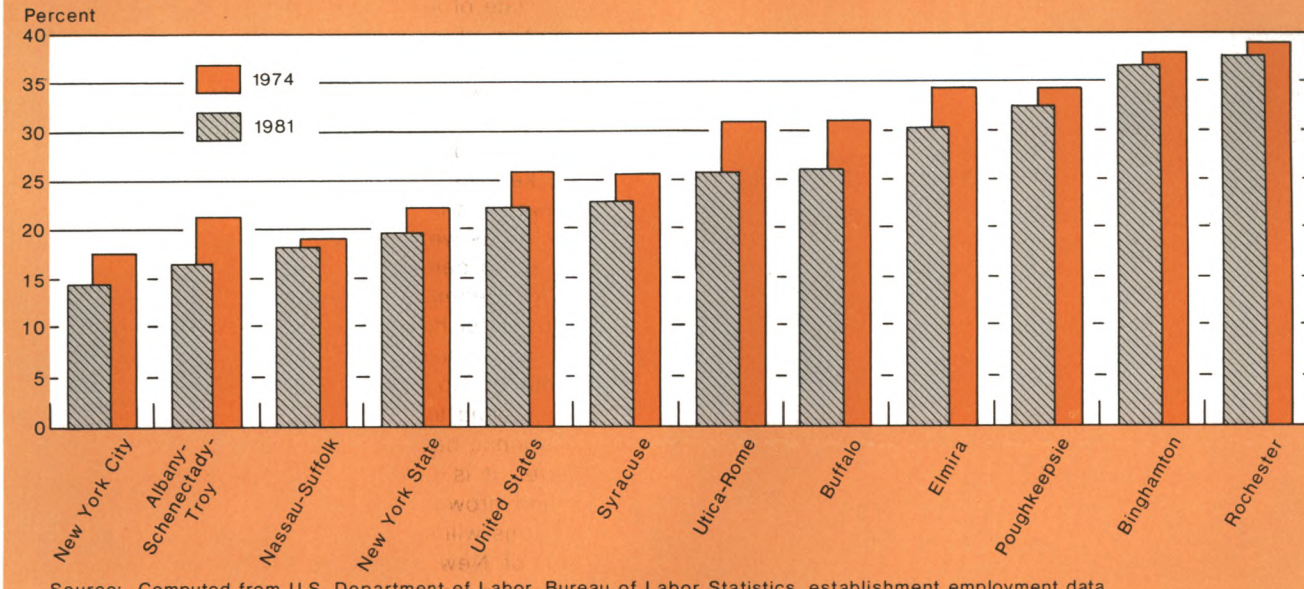


Source: Computed from U.S. Department of Labor, Bureau of Labor Statistics, establishment employment data.

Chart 4

Labor Market Employment in Manufacturing

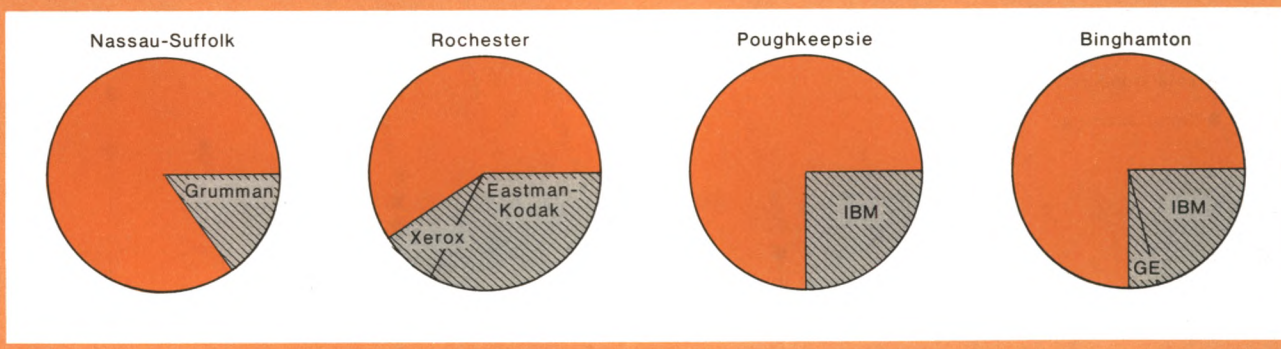
Percentage of total; 1974 and 1981



Source: Computed from U.S. Department of Labor, Bureau of Labor Statistics, establishment employment data.

Chart 5

Dominant Firms' Share of Local Manufacturing Employment in 1980



Sources: State Industrial Directories Corporation, New York State Industrial Directory, 1980 (New York, 1980) and U.S. Department of Labor, Bureau of Labor Statistics, establishment employment data.

current problems of places like Buffalo and Elmira. However, industrial policies and other efforts aimed at helping these places must be chosen with care to learn from, and not to harm, the industries and regions of the state that have been relatively successful in recent years. Continued monitoring and further analysis of economic changes in New York State will help identify policies that can balance all of these objectives.

Aaron S. Gurwitz

New Options Markets

Wide price swings have been a hallmark of financial markets in recent years. This greater volatility subjected market participants holding traditional assets to unaccustomed risks and increased their demands for instruments designed to shift risk to those better able or more willing to bear it.

This atmosphere has fostered the development of new options markets to reallocate risk. These markets offer options on Treasury bonds, notes, and bills, Treasury bond futures, gold futures, foreign currencies, stock indexes, and stock index futures. These newly established options markets, while very small at present, are potentially important. They create more flexibility in risk management than is available with existing cash and futures markets. They also provide market participants with a more efficient hedge against some contingencies that they assume in the normal course of their operations.

This article surveys the new options markets—why they have arisen, who is using them, and what purposes they serve. It also discusses how these instruments differ from conventional equity options in terms of pricing and other financial characteristics.

Risk-return characteristics of options

An option is an agreement between two parties in which one party grants the other the *right* to buy or sell an asset under specified conditions while the counterparty assumes an obligation to sell or buy that asset. The party who must decide whether to exercise the option is termed the option buyer since he must pay for the privilege. The party granting the right to buy or sell an asset is called the option seller or writer of the option. There are two basic types of options: calls and puts.

A *call option* gives the buyer the right to purchase, or "call away", a specified amount of the underlying security at a specified price up to a specified date. The price at which the security may be bought is the *exercise price* or the *striking price*. The last date on which the option may be exercised is called the *expiration date* or the *maturity date.* The price of this option contract is its *premium.*

A call option can best be described by means of a simple example. A December call option on Treasury bonds gives the holder of the option the right to purchase $100,000 par value of specified Treasury bonds at a price of $90,000 on or before the expiration date in December.[1] The price of these bonds on September 19, 1983 was $90,500. The price of the call option on that date was $2,094. If the market value of the bonds is greater than $90,000 on the expiration date, the option will be exercised. The rationale is that, even if the buyer does not want to hold the bonds, they can be resold at the market price. If the market value of the Treasury bonds is less than $90,000 at expiration, the option will not be exercised because the buyer can purchase the bonds at a lower cost in the market.

The price of an option consists of two components—*intrinsic value* and *time value*. The price of an option, if exercised immediately, is the maximum of either zero or the market price minus the exercise price. This is called the intrinsic value of the option. In the example

[1] In this example, the issue used is the $10\frac{3}{8}$ bond due 2007/12. This issue is traded on the Chicago Board Options Exchange.

above, the intrinsic value of the option is the $90,500 market price less the $90,000 exercise current price, or $500. An option must always sell for at least its intrinsic value or there will be arbitrage opportunities. Market practitioners call an option with a positive intrinsic value an "in-the-money" option. Similarly, an option with zero intrinsic value is known as an "out-of-the-money" option.

The time value of an option is the difference between the premium on the option and its intrinsic value. This is the seller's compensation for the possibility that the option will be worth more at the end of its life than if exercised immediately. In the example, the time value of the option is the difference between the total price of $2,094 and the intrinsic value, or $1,594.

A *put option* is the right to sell, or "put to" the writer, a given amount of the underlying security at a given price on or before a specific date. In the example above, the Treasury bond December/90 put option gives the buyer the right to sell $100,000 par value of Treasury bonds at a price of $90,000 on or before the expiration date. If the market value of the Treasury bonds is greater than $90,000, the buyer will not exercise the offer, as the bonds can be sold in the open market. If the market value of the bonds is less than $90,000 at expiration, the option to sell the bonds at that price is valuable.

Some market participants purchase options for much the same reason people purchase insurance—they feel the protection they are receiving against adverse developments is worth more to them than the option premium. In the case of the call option example, the buyer of the option is purchasing protection against the price of the bonds rising above $90,000. In the case of the put option, the buyer is purchasing protection against the price of the bonds dropping below $90,000.

Other market participants purchase options as a way to speculate on asset price movements. Consider an investor who owns a Treasury bond and buys a call on

Table 1

The New Options Markets

Instrument	Options on physicals	Options on futures contracts
Stock indexes	**Chicago Board Options Exchange:** S&P 100 (formerly CBOE 100) S&P 500 S&P integrated international oil group S&P Computer and Business Equipment Index	**Chicago Mercantile Exchange:** S&P 500
	American Stock Exchange: Amex Major Market Index Amex Market Value Index Oil and Gas Index Computer Technology Index	**New York Futures Exchange:** NYSE Composite
	New York Stock Exchange: NYSE Composite Index	
U.S. Government debt	**American Stock Exchange:** Treasury bills Treasury notes	**Chicago Board of Trade:** Treasury bonds
	Chicago Board Options Exchange: Treasury bonds	
Foreign exchange	**Philadelphia Stock Exchange:** Various currencies*	
Precious metals		**The Commodity Exchange:** Gold
		Mid-American Exchange: Gold†

S&P = Standard & Poor's Corporation.
*Canadian dollars, German marks, Japanese yen, Swiss francs, and pound sterling.
†Approved, not traded.

a Treasury bond future. This investor is using the options market to compound his bet that interest rates will fall (bond prices will rise). Similarly, a financial institution which has liabilities of a shorter repricing period than its assets will be favorably affected if interest rates fall and unfavorably affected if interest rates rise. If this institution bought a put option on a debt security, it would clearly be hedging. If it purchased a call option, it would be compounding its current interest rate mismatch.

Why do investors write options? Their gain is limited by the premium, while their potential loss is much larger. Options writers believe that the premium is adequate compensation for their potential loss. In fact, the premium is the equilibrating price variable, equating the quantity of options supplied with the quantity of options demanded. If the option premium were too low to compensate the writer for the risk, there would be more buyers than sellers, forcing the premium to rise.

It is important to realize that option writing need not be speculative. An investor who writes call options on an equity (covered call writing) may perceive himself as hedging, as the option increases his returns in periods of poor and moderately good stock returns and reduces it in periods of very good stock returns. Similarly, if a bank that has liabilities with a shorter repricing period than its assets writes a call option on a bond or bond future, it is actually reducing its interest rate sensitivity. If interest rates rise, the option cushions the portfolio loss as the bank receives the option premium. If interest rates fall, the bank receives the premium but trades away some of its potential gain.

New options markets

Prior to 1982, organized markets existed only for options on common stock. These equity options are traded on four exchanges: the Chicago Board Options Exchange (CBOE), the American Stock Exchange (Amex), the Philadelphia Stock Exchange, and the Pacific Stock Exchange. Put options on the securities of the Government National Mortgage Association were traded on an over-the-counter basis.

Since the last quarter of 1982 many new options markets have opened; others are in the final planning stages (Table 1). These new options are written on four types of financial instruments:

- options on stock indexes
- options on debt instruments
- options on foreign currencies
- options on gold.

The new contracts take two basic forms:

- options on so-called physicals, *i.e.*, actual commodities, securities, or indexes
- options on futures contracts.

Market participants

Since these markets are very new, it is difficult to assess who will eventually constitute the customer base. Institutions that are more conservative and less inclined to enter new markets may well turn out to be very large customers once the markets become better established.

Nevertheless, preliminary evidence indicates that the options on stock indexes and stock index futures are dominated by individuals rather than institutions. They are using the market as a method to wager bets on aggregate market movements rather than focusing attention on particular securities. Broker/dealer firms are relatively small users of options on stock indexes for their own account. Institutional money managers are just beginning to enter the market on the buy side as a hedging vehicle for their portfolio and on the sell side as a source of fee income.

By contrast, options on debt instruments appear to be dominated by institutions. Conversations with exchange officials indicate that well over half the business is generated by broker/dealer firms for their own account. The wholesale nature of the market is corroborated by evidence that almost all the transactions in the most popular of the instruments—the options on bond futures—are for ten, twenty, or fifty contracts rather than for one or two. The face value of the contracts is $100,000. Other users of options on debt instruments include savings and loan associations, commercial banks, and commodities houses.

Options on foreign currencies traded on the Philadelphia Stock Exchange appear to have generated substantial interest abroad, with more than half the business coming from Europe. Broker/dealers in the United States and abroad account for an estimated 30 percent of the business. Corporate treasurers are believed to be the largest customer group. Several banks and some professional money managers are also using the market. The contracts have also attracted some retail interest.

Options versus futures as a hedging tool

There are established futures markets in the same instruments as the new options markets.[2] However,

[2] An option gives its purchaser the right to buy (or sell) an asset at a specific price up to a specific time but, unlike a futures or forward contract, does not *obligate* the buyer to acquire (or provide) the underlying security. Consequently, the risk distribution for an option is quite different from that for a futures contract. Whatever the price of the underlying security, an option buyer will never lose more than the premium paid. The option seller can never gain beyond the premium charged. At best, the seller will lose nothing and retain the entire premium. With a futures or forward contract, the buyer may gain or lose, depending on the market price at maturity. The lower (higher) the price of the contract at maturity relative to the original price, the more the buyer will lose (gain) and the seller will gain (lose).

since options and futures have different profit profiles, options contracts can be better hedges than futures contracts for some important kinds of risk exposure. Options are ideally suited to hedge the risks of a potential transaction that is not certain to take place. Consider, for example, a U.S. firm that must submit a competitive bid in a foreign currency to provide a product but is unsure that its bid will be accepted. Here the normal business risks of competitive bidding are compounded by exchange risks. The rate of exchange is a substantial cost element in the bid price of the contract, but the firm will be reluctant to lock in these costs at the time it submits its bid—by selling its potential foreign currency receipts forward, for example—because it is uncertain about the outcome of the bidding process. However, the firm can create a perfect hedge against the contingent receivable by buying a put option in the foreign currency. If the firm's bid wins, the foreign currency can be "put" to the option seller. If the bid fails, the firm will simply not exercise the option.

In a similar vein, a bank can use options to hedge its fixed-rate loan commitments to businesses. These lines are attractive to the borrowers. If interest rates go up, the borrower will generally utilize the commitment; if rates fall, the borrower will let the commitment lapse. The bank has essentially written a put option. Banks may desire to provide this service to keep valuable customers, but they may not be so anxious to bear the full interest rate risk on their contingent liability. The bank can hedge this contingent liability by purchasing a put option on interest rates for an appropriate maturity, say, a Treasury note contract.

There are situations in which options and futures can serve similar hedging purposes. Consider a bank with a longer repricing period on its assets than on its liabilities. This institution should gain from falling interest rates and lose from rising rates. If the bank management believes that interest rates will rise more than accounted for by the term structure of interest rates, it can hedge via either futures or options. Both instruments would be attractive, since the option premium and the futures prices will look cheap in terms of the protection they provide to the bank. The choice between the two will depend on the cost of the option premium, how certain management is of their prediction of future interest rates, and the risk-return trade-off preferred by management. The use of options for such a transaction is examined in Appendix 1.

Market mechanics: margins and delivery provisions

Margin requirements are a necessary protection for the clearinghouse members. On options contracts, the buyer pays the entire premium up front and is not subject to margin calls.[3] The seller of an uncovered option is subject to an initial margin requirement. If the market moves against him, he is also subject to additional or variation margin. A specific example of margin requirements on options and their calculation is given in Appendix 2.

For options on futures contracts it is customary to hold interest-bearing assets in margin accounts. Consequently, initial margin requirements do not usually represent foregone interest for these contracts. For options on physicals, initial margin requirements must be posted in cash. Alternatively, a security position can be held in lieu of the margin. For example, for an options contract on Treasury bills, Treasury bills with a par value equal to the par value on the contract can be posted instead of the margin. This is customarily done for options on debt securities. Variation margin must, in all cases, be posted in cash.

The terms of delivery for the new options contracts include cash settlement and physical delivery. Options on futures contracts require delivery of the underlying futures contracts. Options on stock indexes require cash settlement—that is, the securities which comprise the Standard & Poor's (S&P) 100, for example, do not actually have to be delivered. Rather, the difference between the exercise price and the current price must be settled in cash. Foreign currency options require delivery of a specified amount of foreign currency.

But options on debt instruments present a unique deliverability problem that arises because of the limited life of the underlying security. Other options (equities, stock indexes, foreign exchange) are written on physicals that have an infinite life and thus are not directly affected in their characteristics by the passage of time. But debt instruments get closer to maturity as the option gets closer to expiration. This feature of debt instruments requires that options on them take one of two forms: fixed deliverable or variable deliverable.

Fixed deliverable options require that a debt instrument with specified characteristics be delivered when the option is exercised. For example, a three-month call option on a six-month Treasury bill would require that a Treasury bill with six months remaining to maturity be delivered. Contracts for fixed delivery allow for the possibility that the optioned security could have a shorter lifetime than the option itself. That is, a nine-month option on a three-month Treasury bill is possible; when the option is exercised, a three-month bill is

[3] It is interesting to note that, on futures contracts, both the buyer and seller are required to put up original margin requirements. This can be posted in interest-bearing form. If the market moves against them, either buyer or seller may be required to deposit variation margin to meet margin calls. These calls must be met in cash, as the other party can draw them out in cash.

delivered. Treasury bills on the Amex are traded on a fixed deliverable basis.

A variable deliverable option specifies the existing debt issue that is deliverable against exercise. This has been adopted for Treasury notes and bonds. For example, a one-year option on a ten-year bond spells out the specific ten-year bond to be delivered. At the expiration of the option, the bond will have nine years to maturity. Thus the maturity date of the bond must be later than the option expiration date for variable deliverable options.[4]

Market development

Why the sudden emergence of these new markets? Increased use of futures contracts and existing equity options indicated to the management of the stock and commodities exchanges that the public desired new instruments which could serve a risk transfer function. Proposals on some of these new options contracts were submitted as early as 1980. However, questions about the division of regulatory authority between the Commodity Futures Trading Commission (CFTC) and the Securities and Exchange Commission delayed the approval process, allowing other exchanges time to design similar, slightly differentiated products. The ultimate agreement, signed into law by President Reagan in October 1982, gave the SEC jurisdiction over options contracts on physical securities traded on organized securities and commodities exchanges, and options on foreign currency when traded on a national securities exchange. The CFTC has jurisdiction over options on financial futures.

The exchanges are well aware that the first to begin trading a product has a real advantage. Liquidity will tend to develop in that market. If a second exchange enters with a similar product, even if it is slightly superior in design, it must compete with a market which has already developed liquidity. Trades can be executed with greater ease in the first market, and hence gravitate there. It is extremely difficult for the second market to develop liquidity, and it generally fails. Consequently, the competitive pressure between the exchanges induces the submission of numerous proposals on similar instruments.

Yet, if there were a demand for these products, why did over-the-counter markets not develop? Regulatory approval only is necessary for options to be traded on organized exchanges. The answer is in part that the use of an organized exchange avoids the potential for abuse that is inherent in an options contract. Otherwise, the option buyer, who pays the premium up front, has very limited recourse if the writer does not uphold his obligations at the end of the contract.

Trading of standardized contracts on an organized exchange overcomes this problem because it allows for the development of a clearinghouse. On securities exchanges the clearinghouse assumes any credit risk. Thus, the option really consists of two contracts: one between the buyer and the clearinghouse and the other between the seller and the clearinghouse. On commodities exchanges, the clearinghouse member which handles the writer's account assumes the credit risk. Consequently, a buyer of an exchange-traded option does not have to pass judgment on the creditworthiness of the seller.[5]

While the clearinghouse or a clearing member thus assumes the credit risk in the contract, they can protect themselves against the risk by marking the contracts to market on a daily basis and assessing additional margin requirements as required by price movements. If the margin calls are not met, the clearinghouse can move quickly to liquidate the contracts. Two other reasons for the importance of an organized exchange is contract standardization, which allows for the development of liquidity, and a reported price, which gives option buyers and writers information on the price of the last actual trade. This information can be used to evaluate returns better on the anticipated option strategy. Since trading on an organized exchange is preferable to trading on an over-the-counter basis, regulatory approval was a crucial ingredient for market creation.

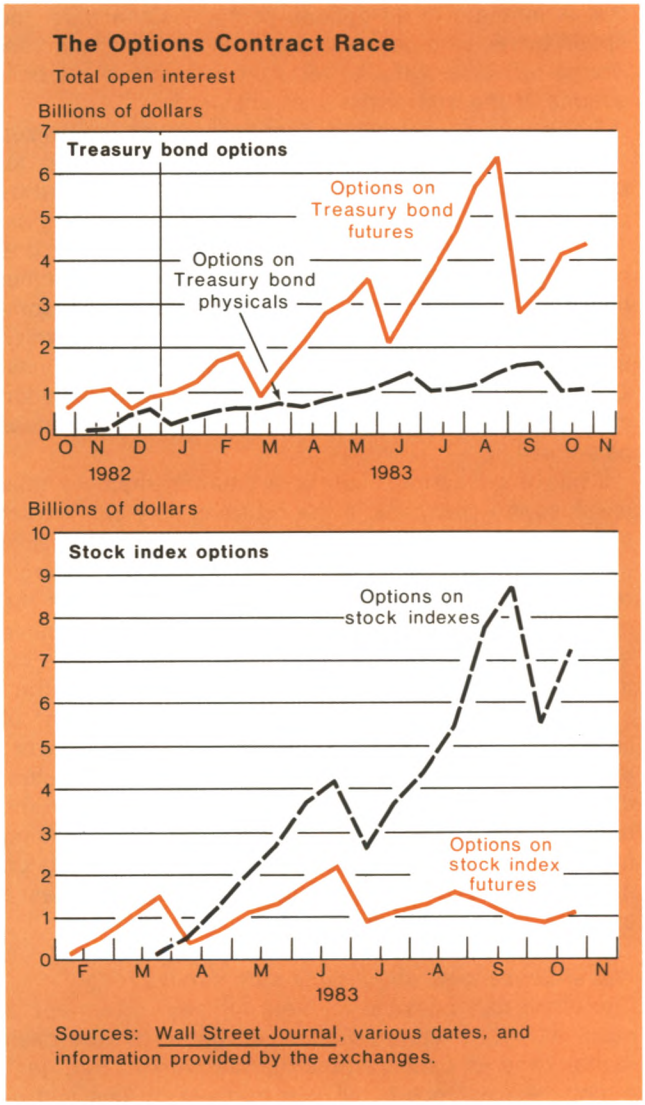
Will all these new options markets survive?

There are four possible markets for any instrument: a cash market, a futures market, an option on the cash market, and an option on the futures market. But, generally, the existence of all four markets on one instrument is redundant. A cash market, a futures market, and one options market will usually be sufficient to fulfill all risk-transfer possibilities, since the option on the cash market and the option on the futures market serve very similar functions.[6]

[4] The difference between fixed deliverable options and variable deliverable options is discussed more fully in Walter L. Eckardt, Jr., "An Analysis of Treasury Bond and Treasury Bill Options Premiums", a paper presented at the second annual options colloquium sponsored by the Amex (New York, N.Y., March 25-26, 1982).

[5] See Kenneth D. Garbade and Monica M. Kaicher, "Exchange-Traded Options on Common Stock", this *Quarterly Review* (Winter 1978-79), pages 26-40.

[6] This point can be made by considering the limit case: an option on a futures contract which expires the day the futures contract is delivered. The delivery on the option would be settled at once, providing the actual security. Here no distinction exists between an option on the futures contract and an option on the physical. In reality, the options contract expires before the delivery date of the futures contract. For example, for a December option on a bond future, the option would expire in November, resulting in delivery of a December futures contract. It is unlikely that this small difference is enough to sustain two independent markets.



If there is room for only one options market, what determines whether the option on the cash instrument or the option on the future wins out? Since there were only small differences in the start-up times of the various markets, technical or operational differences will make one market more desirable than the other. For example, if the cash market is more liquid than the futures market, or has lower transactions costs, an option on the cash market would be preferred. In the case of a commodity like gold, an option on the physical would involve the costs of assaying and delivery. Consequently, for gold the options market has developed on the futures contract. In the case of foreign exchange, spot markets are much deeper than the forward exchange markets.[7] The futures market is smaller still. In this case options are written on the spot currency contract.

Options on both cash instruments and futures do currently coexist in markets where the reasons to prefer one type of option over the other are not so clear-cut. But signs are already emerging to show which options will dominate. Options on Treasury bond futures appear to be generating more business than options on Treasury bond physicals. By contrast, the options market for stock indexes is more active than the market in options on stock index futures (chart).

Many market participants believe that the contract design of options on Treasury bond futures is slightly superior for three reasons. For one, options on futures have no coupon or dividend payments. By contrast, with an options contract on a bond or note, the buyer of a call or seller of a put must compensate the other party for accrued interest when exercise occurs. Furthermore, options on bond futures are also believed to be "cleaner" instruments because of the reduced possibility of delivery squeezes. Options on bonds are written on particular issues. Since the supply of any particular issue is fixed after the date of issuance, there is always the chance of a squeeze developing that could artificially raise the price of that bond. Options on bond futures, however, are written on the underlying futures contract, which, in turn, is written not on a particular bond issue but rather on a bond with particular characteristics. One bond (usually a high coupon bond) will always be cheapest to deliver against the futures contract. But, if there were a squeeze on this bond, other deliverable bonds would be available.[8] Consequently, the deliverable supply of Treasury bond futures will always prove more than adequate. Third, it is easier to learn the price of an underlying bond future rather than the bond itself. For option pricing purposes it is crucial to know the price of the underlying security. The price of the last bond futures trade is easily accessible, as bond futures and options on bond futures are traded on the same floor. This saves the investor the trouble of canvassing dealers to obtain a price on the security itself.

Options on stock indexes appear to be more popular

[7] A Federal Reserve Bank of New York turnover study showed that for April 1983 foreign exchange turnover in the United States was $702.5 billion. Of this, $451.0 billion (or roughly two thirds) was in spot transactions, $42.0 billion was in outright forwards, and $209.4 billion was in swaps. Foreign exchange futures turnover on the International Monetary Market is less than 10 percent of total foreign exchange turnover.

[8] Conceptually, options on bonds could be written on a bond with particular characteristics rather than on a particular bond. However, this would make certain option strategies, such as covered call writing, more difficult as the option would "play to a single debt issue" and the issue may change over the life of the option.

than options on stock index futures. Of the four markets on stock indexes, the two most successful are the S&P 100 followed by the Amex Major Market. These two markets have attracted substantial retail interest as the contract sizes on these options are much smaller than those for options on the S&P 500, the Amex Market Value, or the stock index futures. Moreover, options on stock index futures can be sold only by a CFTC registered representative. Options on stock indexes can be sold by any registered representative. Thus, a stockbroker who services retail portfolios can market the S&P 100 and the Amex Major Market Index but not the options on the futures contracts.[9]

While options on the Treasury bond futures and options on the S&P 100 appear to be doing somewhat better than their competitors, the contract race is not yet over. The markets are all relatively new, and the emergence of one contract over another takes time. But weaker markets face the threat of gradually losing liquidity through a loss of customers. Participants who remain in those markets will find over time that their trades cannot be executed promptly enough or that bid-ask spreads are too wide.

Financial characteristics of the new options

The new options, particularly on debt instruments, have financial characteristics that are quite different from those of the more familiar equity options. An equity is the instrument with the same characteristics over the life of the option. Unlike equities, debt instruments have finite lives and their effective maturity shortens as time passes. This creates the distinction between fixed deliverable options and variable deliverable options as discussed above. Both fixed deliverable and variable deliverable instruments attempt to capture some of the characteristics of options on equities. A fixed deliverable option tries to preserve the characteristics of a debt instrument (*i.e.,* its sensitivity to changes in interest rates) but must move from security to security to avoid the aging problem. The variable deliverable bond option stays with a single issue, but the characteristics of the issue age over time as the bond moves to maturity.

The other major difference between the new options and traditional equity options concerns the effects of financial variables—such as the level of interest rates—on the price of the options contract. The standard theory of options pricing holds that changes in certain financial variables, including the level of interest rates, will have definite effects on the price of an equity option. For the new options, however, in some cases the effects of such factors may be ambiguous or even may go in the opposite direction to that predicted by traditional options pricing theory.

Valuation of new options instruments

In 1973 Black and Scholes described a formula for calculating the value of a call option on a stock.[10] This model, which has received wide recognition and attention, shows that the price of a call option depends on five factors: the price of the underlying security (S), the strike or exercise price of the option (E), the volatility of the price of the underlying security (s), the time remaining to maturity (T), and the level of interest rates (r).[11] It is useful to explore the extent to which the same factors are important in the pricing of the new options markets.[12] (The results of this section are summarized in Table 2, and the relationship between put and call prices is discussed in Appendix 3.)

The effect of changes in the underlying security price or the exercise price are unambiguous. For all call options, as the price of the underlying security increases or the exercise price decreases, the price of the option must increase because the intrinsic value is higher. The effect of increased volatility is similar for conventional equity options and new options instruments as described below. However, the analysis of changes in the time to expiration and the level of interest rates is different for new options instruments than for conventional equity options.

[9] It should be noted that options on bond futures can be sold only by a CFTC registered representative, while options on bond physicals can be sold by any registered representative. However, since there is little retail interest in the options on debt securities, this does not aid the exchange trading the options on Treasury debt securities.

[10] See Fischer Black and Myron Scholes, "The Pricing of Options and Corporate Liabilities", *Journal of Political Economy* (May/June 1973).

[11] The Black-Scholes option pricing formula can be written as follows:

$$c = SN(d_1) - Ee^{-rT}N(d_2)$$

where: $d_1 = (\ln(S/E) + (r + 1/2s^2)T)/s\sqrt{T}$

and $d_2 = d_1 - s\sqrt{T}$.

In this formula, c is the value of the option, ln is the natural logrithm, e is the exponential and s^2 is the instantaneous variance of the stock price. $N(\cdot)$ is the normal distribution function.

[12] The Black-Scholes formula assumes that the stock's continuously compounded return follows a normal distribution with a constant variance; its expiration price will thus be "lognormally" distributed. While this may be a good approximation for stock indexes and currencies, it is not a good assumption for variable deliverable debt instruments. As mentioned previously, default-free bonds (other than "consols"), unlike common stock, do not have a perpetual life. As maturity approaches, a default-free bond will be valued closer to par, all other factors constant. Thus, even if interest rates remain unchanged, the passage of time alone will cause the price of a default-free bond to change. Consequently, it cannot be assumed that prices of debt instruments follow a random walk. Moreover, the variance of a bond will decline over time. A longer bond will move more in response to a 100 basis point change in interest rates than a shorter bond.

Table 2

Effects of Changes in Financial Factors on Pricing of New Options Instruments

Call options on instruments	Factor: Security price (S)	Exercise price (E)	Volatility of security price (s)	Time to expiration (T)	Level of interest rates (r)
Conventional equity or stock index	+	–	+	+	+
Foreign currency	+	–	+	+	?
Fixed deliverable debt instrument	+	–	+	?	–
Variable deliverable debt instrument	+	–	+	+	–
Futures contract	+	–	+	?	–

This table should be read as follows: a plus sign indicates that an increase in the value of a factor will increase the value of a call option on an instrument; a minus sign indicates a decrease in the option value and a question mark indicates an ambiguous effect.

Volatility

For all options, the more volatile the underlying security price, the greater the value of the option. Consider the extreme case in which there are two securities, A and B. Security A is riskless and Security B is risky, but its mean return is the same as the sure value of Security A. Assume further that the exercise price of the option is the same as the value of Security A at expiration. Hence, an option on Security A will be worthless, as the exercise price is the same as its current value. Security B has a probability one half of expiring worthless, and a probability of one half of expiring with value. Its current price will reflect this, and consequently will be positive. Consider now two risky securities with the same mean value. Security B is riskier than Security A. The argument easily generalizes, as Security B will have a greater probability of a higher value at expiration than Security A. It also has a greater probability of a lower value but, since the option cuts off the lower tail of the distribution, this does not matter. Thus, the value of options on more volatile securities, holding all other factors constant, will generally be greater.

Time to expiration

In the Black-Scholes model, an option with a longer time to expiration will be worth at least as much as another option with the same exercise price and a shorter time to expiration. The intuition is that an option with a longer time to expiration has all the attributes of an option with a shorter exercise date, as the longer option may be exercised before maturity. Once the shorter run option has expired, the longer term option can still be exercised. This is true for options on foreign currencies, options on stock indexes, and options on variable deliverable debt instruments as well.

This pricing property does not necessarily hold for options on futures and fixed deliverable options, although it will generally be the case. By way of illustration, consider the September and December call options on a futures contract. The time value of an option on a December future will, of course, be higher than that on a September future. But the September future is a different contract from the December future. Consequently, it is possible—if interest rates are currently very low and expected to rise sharply between September and December—for the option on the September future to have a positive intrinsic value, while the option on the December future has a zero intrinsic value. Thus, depending on the relative magnitudes of the time values and the intrinsic values, the option on the December future could conceivably be less valuable than the option on the September future.

Interest rates

The Black-Scholes formula shows that, as interest rates rise, the value of a call option must rise.[13] To understand this, note that holding a call option and holding the stock itself are alternative ways for an investor to capture any gain on the security price. Consequently, as rates rise, the cost of carry on the underlying security will rise and the call option will appear more attractive *vis-à-vis* the

[13] The model assumes that price movements are independent of the level of interest rates.

underlying stock.[14] And what holds for an option on a single equity will hold for an option on a stock price index, which is just a basket of many individual equities.

For options on stock index *futures*—and on futures contracts generally—there is no opportunity cost associated with holding a futures contract, as no funds need be expended until expiration. Consequently, the interest rate effect will be negative although very small.[15] This can best be described by considering a riskless world. The option buyer would be charged an amount equal to the present discounted value of the difference between the value of the futures contract at expiration and the exercise price. (In a risky world, this difference would be higher by the amount of an implicit insurance premium.) Then, as interest rates go up, this present discounted value, which is the price of the call option, would decline. Essentially, the purchaser of the call is forfeiting interest until contract expiration on the original call price, for which cash must be put up front. However, since the futures price and the exercise price are expected to be relatively close when the option is originally purchased, interest rate variations are only a second-order effect in the price changes of these contracts.

Assuming that the price of the underlying security is independent of the level of interest rates is a reasonable simplification in the case of equity options. However, it is an absurd assumption to make for options on debt instruments or on currencies. Major movements in the prices of debt instruments and exchange rates will occur *because* of changes in interest rates. For debt instruments, as interest rates rise, any cost of carry considerations will be dwarfed by the fall in the price of the underlying security.[16]

Interest rate increases as a rule will have a negative impact on the price of options on bond futures, as a rise in interest rates will most likely cause a fall in the price of the underlying futures contract. And this loss is compounded by the negative effect of higher interest rates on the opportunity cost of the call premium.

The effect of interest rate changes on the value of a foreign currency option will generally be ambiguous. For simplicity, consider the case where foreign interest rates are constant while dollar interest rates rise. The theory of interest rate parity holds that the forward premium or discount on foreign exchange should equal the differential between domestic and foreign interest rates. Then, as dollar interest rates rise, the forward exchange rate (expressed as dollars per unit of foreign currency) must rise relative to the spot rate. The interest rate parity linkage allows the value of the options contract to be written equivalently in terms of either the spot or the forward exchange rate.[17] And this equivalence in the valuation formulas for the option can be used to deduce the effect of interest rate changes on the option price. There are three cases:

- If the spot rate is unaffected by a rise in domestic interest rates, option values will rise; as in the case of a typical equity option, the cost-of-carry effect will dominate.
- If the forward rate is unaffected by a rise in domestic interest rates, option values will fall. Intuitively, one can think of the option as being written on a futures contract that expires on the

[14] A more formal argument can be made as follows: an investor buys 100 shares of stock worth $50 per share on margin. But, instead of securing a typical margin loan, he makes an initial payment of size c, and promises $4,500 in six months. The future payment is promised on a no-recourse basis with the stock used as collateral. If the stock is worth less than $4,500 at expiration, the investor will allow the lender to claim the stock. The investor has purchased a call option with an exercise price of $45 and a time to expiration of six months; c is the premium.

If the loan were riskless, the lender would charge the investor an amount which would cover the difference between the value of the stock being delivered, S, and the present value of the future payment, Ee^{-rT} (in the example above, $4,500 is the future payment). If the loan were not riskless, the lender must charge enough to purchase an insurance premium to allow for the possibility that the stock price will be less than E dollars at expiration, leaving the lender with a loss of $E-S$. Thus the price of the premium is the present value of the levered position in the stock plus the insurance premium, or $c = S - Ee^{-rT} + I$, where I is the insurance premium. As interest rates rise, the present value of the future payment is less, hence the value of the levered position in the stock increases. Thus, the value of the call option must increase.

[15] Rational optional pricing of futures contracts takes the form

$$c = e^{-rT}[FN(d_1) - EN(d_2)]$$

where: $d_1 = (\ln(F/E) + 1/2s^2 T)/s\sqrt{T}$

and $d_2 = d_1 - s\sqrt{T}$.

F is the price of the futures contract. This is the Black-Scholes option pricing formula given in footnote 11 if $F = Se^{rT}$.

[16] See, for example, George Courtadon, "The Pricing of Options on Default Free Bonds", a paper presented at a Conference on Options Pricing: Theory and Applications, sponsored by the Salomon Brothers Center for the Study of Financial Institutions (New York University, New York, N.Y., January 18-19, 1982).

[17] See Mark B. Garman and Steven W. Kohlhagen, "Foreign Currency Option Values", unpublished working paper (School of Business Administration, University of California at Berkeley, December 1982), for a more technical discussion. The authors have shown that the price of a call option on foreign exchange may be written as

$$c = e^{-r_f T} SN(d_1) - e^{-r_D T} EN(d_2)$$

where:

$d_1 = (\ln(S/E) + (r_D - r_f + 1/2s^2)T)/s\sqrt{T}$

$d_2 = d_1 - s\sqrt{T}$

r_D = domestic interest rates, r_f = foreign interest rate.

Alternatively,

$$c = e^{-r_D T}[FN(d_1) - EN(d_2)]$$

where:

$d_1 = (\ln(F/E) + (1/2s^2T))/s\sqrt{T}$

$d_2 = d_1 - s\sqrt{T}$

same date as the option. In this instance, the negative relationship existing between options on futures and interest rates will prevail.

- If both the spot and forward rates change when domestic interest rates rise, the effect on option values cannot be determined without precise knowledge of how much either exchange rate moves.

Since the third case represents the typical adjustment, the effect of interest rate changes on foreign currency options values is indeterminate.

To summarize, there are three interest rate effects at work. There is a negative effect which relates to the cost of carry on the option premium—the call premium is paid when the contract is entered into and no proceeds are received until maturity or exercise. There is a positive effect which relates to the cost of carry on the underlying security. Finally, there is a negative effect of interest rates on the security price. The second effect dominates the first, and the third effect generally dominates the second. For options on futures, only the first effect is present. For options on conventional equities and equity indexes, the first two effects are present, and the impact of interest rates is positive. For options on debt instruments, all three effects are present, and the third effect dominates. For foreign currencies, the extent to which the third effect is present depends on the relative movements of spot and forward exchange rates, thus the effect of interest rates is indeterminant.

Options in the broader financial context

As risk in the financial environment has increased, many of the traditional risk bearers are no longer willing to play that role to so large an extent. Banking institutions have moved away from their conventional activity of borrowing short and lending long: instead, they are confining the calculated interest rate risks they take to the short end of the maturity spectrum. Portfolio managers who feel they have a particular expertise in picking stocks now wish to remove the market component of their risk. Corporations are looking for ways to eliminate exchange rate risk that they had normally assumed in the course of their business. Consequently, changes have emerged in the financial system that enrich the menu of risk management techniques. The new options markets are one such example. These markets allow traditional risk bearers to lay off unwanted risks and provide alternative outlets for their customers.

It must be borne in mind that, while options provide real opportunities for market participants to lay off unwanted risk, and for sophisticated market participants to earn a return by accepting these risks, they also create the potential for unsophisticated writers of options to expose themselves to much larger risks than is prudent. The bank regulatory authorities are monitoring bank participation in these markets in an effort to assess what types of activities commercial banks should be able to engage in and what limits should be placed on these activities.

The interest in these markets from the Federal Reserve System's point of view goes well beyond regulatory rules for banks. The existence of these markets may well alter the risk-taking behavior of financial intermediaries and real sector participants. If the markets become very important, they could affect the response of the economic system to real and monetary disturbances. However, it is still too early to tell even which option markets will succeed in establishing themselves and how large they will become. Time and careful study will allow us to determine the full implications for the behavior of market participants.

Laurie S. Goodman

Appendix 1: An Illustrative Trade

To appreciate fully the flexibility of option instruments, it is useful to work out an illustrative example. Let us consider a depository institution—a bank, for instance—and examine how it could use options in asset-liability management. Let us assume that the financial institutions believe that interest rates will rise more than is expected in the current term structure. The bank has some long-term fixed rate commercial loans and mortgages and is funded by shorter term instruments. To hedge itself the bank wants to buy a put option on a bond future. If interest rates rise, the bank's higher funding costs will be offset or nearly offset by the gain on the options contract.

Meanwhile, a professional money manager across town has very different interest rate expectations. He believes that interest rates will fall more than is expected in the current term structure. He would like to collect the fee income from writing a put option on a bond future.* There is clearly room for a trade between the financial institution and the money manager.

We assume that it is December, the market price of a March futures is 70-00, and the strike price on the option is 70. The premium is $2,000 for $100,000 face value of bonds. The bank thinks there is a 75 percent probability the futures price in March will be 65 and there is a 25 percent probability the price will go up to 72. If the price goes above 70, the bank will not exercise the contract. Thus, the bank perceives this contract as having a positive expected value, as it has a 75 percent chance of making $5,000 and a 25 percent chance of making nothing. Thus, the expected value of the contract is $3,750 and its cost is $2,000.†

Meanwhile the money manager believes that there is a 25 percent probability the futures price in March will be 65 and a 75 percent probability the futures price in March will be 72. The expected cost of this contract to the money manager is $1,250, and he will receive the $2,000 premium. Thus, his expected profit is $750. Let us look at four scenarios at expiration (table).

Benefits (Losses) to Parties in Option Contract

Market outcomes	Bank (buyer)	Money manager (writer)
Futures price is 70 or above March/70 put expires worthless	−2,000 premium	+2,000 premium
Futures price is 69 March/70 put expires +1	−2,000 premium +1,000 option −1,000	+2,000 premium −1,000 option +1,000
Futures price is 68 March /70 put expires +2	−2,000 premium +2,000 option breakeven	+2,000 premium −2,000 option breakeven
Futures price is 65 March/70 put expires +5	−2,000 premium +5,000 option +3,000	+2,000 premium −5,000 option −3,000

Note that, while in scenario 1 the bank has lost the $2,000 option premium, interest rates have fallen or held steady. Consequently, the bank will have a gain on its portfolio. Therefore, while the bank would have been better off not buying the option, the hedge worked as it was supposed to. That is, the hedge provided insurance against rising interest rates while preserving the value of the bank's portfolio should interest rates fall.

In the example described above, the money manager writing the put leaves himself with an unlimited exposure if interest rates rise (bond prices fall). If the money manager has interest rate expectations as described above but wants to limit his downside risk, he could write a put option at 70 and buy a put option at 65. If the bond futures contract price comes in below 65, the money manager could exercise the March/65 put. The initial cost of the March/65 put is low, as it is fairly far out of the money; say it costs $250. The money manager would then collect $1,750 in net premium income but would have limited his possible loss to $5,000 on the option. This strategy is called a "bull put spread" (meaning the investor is bullish on bond prices).

The money manager may also have written the put option as part of a straddle. In a straddle, the writer anticipates that interest rates and bond prices will be relatively flat. Writing a straddle involves writing a put and a call option at the same exercise price for the same expiration. If the premium on a March/70 call option is $2,000, the money manager will have collected $4,000 in fee income. Thus, he will break even or make money if the bond futures contract price stays in the range of 66-74. If it moves outside that range, he will experience a net loss on the transaction.‡ Intuitively, if the call is in the money, the put will be out of the money. Since $4,000 in premium income has been collected, the money manager will lose money if the loss on either the put or the call is more than $4,000.

*It should be noted that the money manager could also have taken advantage of his interest rate expectations by buying a call option.

†It is plausible that a risk-averse bank would enter a contract which it believes had negative expected value because of its usefulness as a hedge.

‡It is not necessary to write a put and call option at the same strike price. The investor can modify the risk-return relationship by writing options with different strike prices. In each case, the maximum potential profit is the total of the premiums received. The downside break-even point is the put strike price less the total premium received. The upside break-even point is the call strike price plus the total premium received.

Appendix 2: Calculation of Margin Requirements

Margin requirements on options can best be illustrated by an example. Let us consider an investor who wishes to write a call option on thirteen-week Treasury bills on the American Stock Exchange (Amex). Margin requirements are governed by three rules:*

(1) If the option is in the money, the writer must hold a margin equal to the premium plus a fixed amount. In the case of calls on the Amex, the fixed amount is $3,500.

Example: A customer writes an uncovered thirteen-week T-bill call option with a strike price of 88. This means the bill is at a 12 percent discount (*i.e.,* the strike price for $1,000,000 face value of the bill is roughly $970,000). The market price of the bill is 90, that is, the bill is at a 10 percent discount ($975,000 for $1,000,000 face value). The option is selling at $6,250 for $1,000,000 face value of the bill. Thus, the margin requirement is:

Option premium	$6,250
Plus fixed amount	$3,500
Total	$9,750

(2) If the option is out of the money, the writer must hold a margin equal to the premium plus a fixed amount less the amount the option is out of the money.

(3) The minimum margin requirement is the option premium plus $500 per contract.

Example: In the example above, the market price of the T-bill call option falls to 85. The option is selling for $1,500. Thus, the margin requirement is:

Option premium	$1,500
Plus fixed amount	$3,500
Total	$5,000
Minus out-of-the-money amount.	−$7,500
Total	−$2,500

However, the minimum margin requirement is the option premium +$500 per contract. In this example, we have:

$1,500 option premium + $500 or $2,000.

Thus, the maintenance margin requirement is $2,000.

*Additionally, the initial deposit in a new margin account must total at least $2,000.

Appendix 3: Put-Call Parity

The text discussed the relationship between various financial factors and the call option price of new options instruments. This appendix investigates the relationship between prices on put and call options.

To gain some insight into the connection between put and call prices for equity options consider the following portfolio strategy. An investor buys a security for a price of S dollars. He finances his purchase by borrowing Ee^{-rT} dollars, promising to repay E dollars at the expiration of the option. At the same time, he buys a "European" put option for a premium of p dollars. (A European option cannot be exercised before maturity, whereas an American option can.) The initial value of this portfolio is $S+p-Ee^{-rT}$.

At the expiration of the option, the security will be worth S_1. If S_1 is less than E, the investor will exercise the option and receive the exercise price of E with which the maturing loan will be repaid. The value of the investor's portfolio at the expiration date then is zero. If S_1 is greater than E, the investor will not exercise the put option but can sell the security in the market for S_1, repay the loan, and have S_1-E dollars left over. The payoff structure of this portfolio may be summarized as follows:

Scenario	Value of put option	Value of security	Repayment of loan	Total
$S_1 < E$	$E-S_1$	S_1	$-E$	0
$S_1 \geq E$	0	S_1	$-E$	S_1-E

This portfolio strategy has been selected so that its payoff structure exactly matches that from a European call option (*i.e.*, max $(0,S_1-E)$). To avoid arbitrage opportunities, a call option must sell for a price equal to the initial price of this equivalent portfolio. Thus, the traditional put-call parity equation:

$$(1)\quad c = p + S - Ee^{-rT}$$

This equation holds for options on individual equities and options on stock indexes.

For bond options, a minor adjustment is needed to take into account coupon payments. Let G_0 be the accrued interest at the time of purchase of the option, and G_1 the accrued interest on the bond at the end of the life of the option. If the call is exercised, the buyer will receive S_1-E. The security's value will be S_1+G_1. If the put is exercised, the buyer will receive $E-S_1$. Consequently, the investor must borrow $(E+G_1)e^{-rT}$ rather than Ee^{-rT}. Put-call parity can then be rewritten:

$$(2)\quad c = p + S + G_0 - (E+G_1)e^{-rT}.$$

For futures contracts, consider a portfolio which consists of writing a call, purchasing a put, and establishing a long futures position at price F. As before, all instruments have the same expiration date and the options have the same exercise price. At expiration, the payoff where F_1 is the futures price looks like:

Scenario	Sell a call	Buy a put	Buy a futures	Total
$F_1 < E$	0	$E-F_1$	F_1-F	$E-F$
$F_1 \geq E$	$E-F_1$	0	F_1-F	$E-F$

The initial value of this riskless position is the cost of the put less the income received from the call. Discounting the portfolio earnings at maturity and setting them equal to the initial value gives

$$(3)\quad c = p + (F-E)e^{-r_D T}.$$

The relationship between puts and calls on currency options can be derived from this. If interest rate parity holds,

$$(4)\quad F = Se^{(r_D - r_f)T},$$

where r_D is the domestic interest rate and r_f is the foreign interest rate. Arbitrage actions that establish interest rate parity can be conducted by borrowing the foreign currency, buying spot exchange, and investing the proceeds instead of purchasing a futures contract. Thus, equation (4) may be substituted into equation (3) to obtain:

$$(5)\quad c = p + Se^{-r_f T} - Ee^{-r_D T}.$$

A fixed deliverable option is essentially an option on a futures contract that expires on the date the option expires. Intuitively, a three-month call option on a six-month Treasury bill requires that a bill with six months to maturity be delivered at expiration. Purchasing a three-month futures on a six-month bill also requires that a bill with six months to maturity be delivered. Essentially, fixed deliverable options instruments are very similar to options on futures contracts. The same relationship between put and call prices holds as in the case of options on futures.

February-July 1983 Semiannual Report
(This report was released to the Congress and to the press on September 7, 1983.)

Treasury and Federal Reserve Foreign Exchange Operations

During the February-July period under review, the dollar advanced against most major foreign currencies, offsetting by varying degrees the substantial declines in dollar rates that had occurred during the months just prior to the period. The dollar's rise took place at a time when the world recession was giving way to expansion and inflation generally was decelerating. But all economies were still operating far below capacity, and there was some question as to how strong the recovery might be. Also, the pace of expansion among the industrialized economies was uneven, unemployment stayed well above the levels of recent recessions, and the decline of interest rates from the high levels of mid-1982 was losing momentum. In some nations, pressures therefore remained on policymakers to take action to support economic growth and create jobs. Under these circumstances, the currencies that showed the strongest performance in the exchange markets were those of countries already pulling out of recession, like the United States, and of countries seen in the market as relatively less vulnerable to such pressures. In addition to the dollar, these currencies included the Canadian dollar, pound sterling, and Japanese yen.

At the outset the dollar showed little of the strength that was later to characterize this period. Questions remained about the durability of the economic upturn here, the outlook for U.S. interest rates, and the possible implications for the dollar of a prospective deterioration in the U.S. current account. Economic expansion in the United States appeared to be proceeding, as expected, more moderately than previous postwar recoveries and to be limited to interest-sensitive sectors of the economy, such as housing. The current account was widely forecast to drop into deep deficit, reflecting an additional drag on domestic output. At the same time, the outlook for inflation improved further in response to evident productivity increases and weak commodities prices, particularly for oil. Moreover, as the number of developing countries negotiating debt reschedulings grew, the uncertainties about how the international financial structure would withstand the working-out of these problems continued to cloud the outlook for world economic recovery. Therefore, market participants held to the view that, for a number of domestic and international reasons, dollar interest rates would soon resume their decline after a short reversal around early February and thus expected the dollar to ease back as well. This view was reinforced in mid-February when the Federal Reserve announced its monetary growth targets for 1983, which were interpreted as allowing room for both a moderately paced recovery and a further gradual decline in interest rates.

Contrary to expectations, U.S. trade figures for the early months of the year showed a smaller deficit than had been recorded during the last part of 1982. Also, short-term interest rates did not decline below mid-January levels, and the Federal Reserve kept its discount rate at 8½ percent as established in December 1982. But the improving outlook for prices and for growth contributed to a further easing in long-term interest rates and buoyed the market for equities.

A report by Sam Y. Cross. Mr. Cross is Executive Vice President in charge of the Foreign Group of the Federal Reserve Bank of New York and Manager for Foreign Operations of the System Open Market Account.

Long-term yields moved down in two stages—first during February and again in April—while record highs were being registered for major stock price indexes.

The dollar held relatively steady through mid-May, notwithstanding the strains surrounding difficult negotiations leading up to an agreement of the Organization of Petroleum Exporting Countries (OPEC) on new oil prices and production quotas as well as a major speculative attack against the currency relationships within the European Monetary System (EMS). Many market professionals, while impressed by the dollar's apparent firmness, still expected the dollar's medium-term trend to be downward because of the outlook for interest rates and current accounts. Also, talk spread for a time that the major industrial countries might be preparing to discuss a coordinated intervention effort at the Williamsburg summit. Thus, interbank dealers in foreign exchange and speculators on futures exchanges were prepared to sell dollars regularly. By contrast, press reports of substantial foreign interest in U.S. stock and bond markets at times bouyed sentiment toward the dollar.

By May, reports of large boosts in employment and in output signaled that recovery in the United States was gaining momentum. Looking ahead, a considerable improvement in consumer sentiment, the impact on spending of increasing values of financial assets, and the prospect of new tax cuts in early July, all suggested that the upswing would be far more robust than anticipated just a few months previously and might match the strength of earlier recoveries. At the same time, expectations faded that a compromise would soon be reached to cut the government's large fiscal deficits for the coming years. Moreover, the government was having to borrow an unusually large amount for a second quarter, a time when tax revenues are seasonally heavy. Also, there was mounting concern about the rapid growth of the monetary aggregates, particularly the narrowly defined aggregate, M-1. Incoming data showed that the rate of growth of M-1, after slowing in early April, had rebounded. Under these circumstances, U.S. interest rates of all maturities began to rise. Interest rates in other countries were, by comparison, relatively steady, holding on to the declines that had been achieved over the past several months. As a result, interest rate differentials against most currencies moved more decidedly in favor of the dollar during late May and the adverse differential against sterling was eliminated by mid-June.

During May and early June the dollar was pushed up again by strong professional bidding. U.S. interest rates were rising, there were no signs of coordinated intervention in the immediate aftermath of the Williamsburg summit, and after that meeting there appeared to be less foreign pressure on the United States to modify its policy mix. In addition, the increasing attractiveness of yields on government securities drew a growing amount of investment from nonresidents. Thus, the dollar's rise continued without interruption until mid-June.

After a short period of consolidation around the quarter

International Agreements on Exchange Market Intervention Policy

Excerpt from Annex to the Williamsburg Declaration (May 30, 1983)

3. Exchange Rate Policy. We will improve consultations, policy convergence and international cooperation to help stabilize exchange markets, bearing in mind our conclusions on the Exchange Market Intervention Study.

Excerpt from "Statement on the Intervention Study" (April 29, 1983)

We have reached agreement on the following:

A. The achievement of greater exchange rate stability, which does not imply rigidity, is a major objective and commitment of our countries.

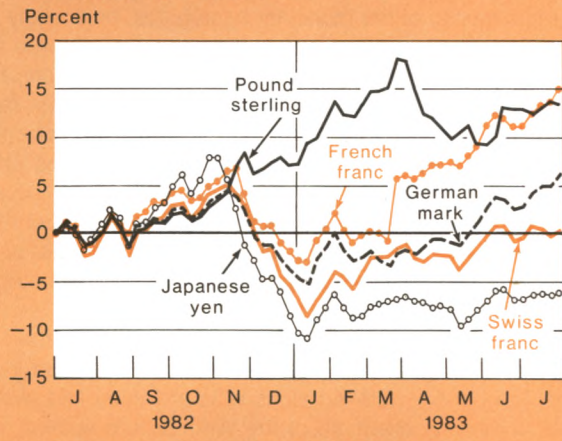
B. The path to greater exchange rate stability must lie in the direction of compatible mixes of policies supporting sustainable noninflationary growth. This will be the primary objective of a strengthened multilateral surveillance as agreed in Versailles.

C. In the formulation of our domestic economic and financial policies, our countries should have regard to the behavior of our exchange rates, as one possible indication of need for policy adjustment. Close attention should also be given to the interactions and wider international implications of policies in each of our countries.

D. Under present circumstances, the role of intervention can only be limited. Intervention can be useful to counter disorderly market conditions and to reduce short-term volatility. Intervention may also on occasion express an attitude toward exchange markets. Intervention will normally be useful only when complementing and supporting other policies. We are agreed on the need for closer consultations on policies and market conditions; and, while retaining our freedom to operate independently, are willing to undertake coordinated intervention in instances where it is agreed that such intervention would be helpful.

Chart 1

The Dollar against Selected Foreign Currencies

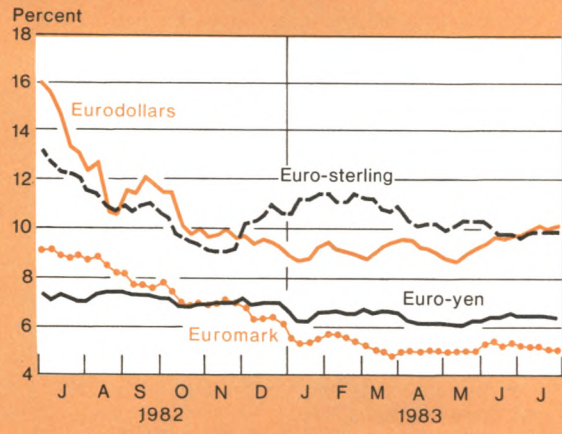


Percentage change of weekly average bid rates for dollars from the average rate for the week of June 28-July 2,1982. Figures calculated from New York noon quotations.

Chart 2

Selected Interest Rates

Three-month maturities*



*Weekly averages of daily rates.

end, the dollar's advance resumed during July. By this time, the vigor of the industrial rebound and perceived readiness of U.S. authorities to allow demand pressures to show through in higher interest rates were seen in increasing contrast to situations abroad, most particularly in continental Europe. In this atmosphere, even the publication of the largest monthly U.S. trade deficit in history for May appeared not to have dampened demand for the dollar. Instead, the dollar ratcheted upward at an accelerating rate, the movement most pronounced with respect to the German mark. Once again, professional bidding added momentum to the dollar's rise as it passed its earlier highs for the year and then surpassed its peaks of November 1982 against several major currencies. Corporations also bought dollars to cover needs which had been postponed earlier in the year.

By late July the dollar's upward movement had taken on a self-sustaining character in increasingly unsettled trading. Rate movements were sharp and sudden as market participants became reluctant to take positions, causing trading to become thin and the market to become disorderly. The U.S. monetary authorities and foreign central banks intervened in coordinated operations, which had a calming effect on the market and helped reestablish order at the time. These operations, which the U.S. authorities initiated on Friday, July 29, on a small scale, were continued during the early days of August. In total, the Trading Desk operated on four occasions during the six business days, July 29-August 5, to buy $254.1 million equivalent of German marks and Japanese yen. The operations involved purchases of $182.6 million equivalent of German marks and $71.5 million equivalent of Japanese yen, shared equally by the U.S. Treasury and the Federal Reserve.

During the six months to end-July, the dollar rose by more than 7 percent against the German mark and by larger amounts against the other EMS currencies. The dollar rose less against other currencies, by 5¾ percent in terms of the Swiss franc and by less than 1 percent against the Japanese yen and pound sterling. The dollar was down marginally against the Canadian dollar. In trade-weighted terms the dollar rose several percentage points, setting records for the floating rate period on many indexes.

In other operations during the six-month period, the U.S. monetary authorities continued to have credits outstanding to Mexico and Brazil. On February 1 the Central Bank of Brazil repaid $280 million of the $730 million outstanding on facilities made available to it earlier by the Treasury. The remaining $450 million facility was repaid on March 3. On February 28, the Treasury agreed to provide Brazil with two additional swap facilities of $200 million each in anticipation of Brazil's drawings under a compensatory financing facility and an extended fund facility of the International Monetary Fund (IMF). These swaps were drawn on February 28 and March 3 and were repaid by March 11. Thus, at that point

Table 1

Federal Reserve Reciprocal Currency Arrangements

In millions of dollars

Institution	Amount of facility July 31, 1982	Bank of Mexico special facility effective August 30, 1982	Amount of facility July 31, 1983
Austrian National Bank	250		250
National Bank of Belgium	1,000		1,000
Bank of Canada	2,000		2,000
National Bank of Denmark	250		250
Bank of England	3,000		3,000
Bank of France	2,000		2,000
German Federal Bank	6,000		6,000
Bank of Italy	3,000		3,000
Bank of Japan	5,000		5,000
Bank of Mexico:			
Regular facility	700		700
Special facility	-0-	325	269*
Netherlands Bank	500		500
Bank of Norway	250		250
Bank of Sweden	300		300
Swiss National Bank	4,000		4,000
Bank for International Settlements:			
Swiss francs-dollars	600		600
Other authorized European currency-dollars	1,250		1,250
Total	30,100	325	30,369

*Size of facility was reduced as repayments were made.

Brazil had repaid in full all Treasury swaps made available to it since October 1982. In December, the Bank for International Settlements (BIS), acting with the support of the U.S. Treasury and the monetary authorities of other nations, provided the Central Bank of Brazil with a $1.2 billion credit facility, which was subsequently increased to $1.45 billlion. As part of a liquidity-support arrangement for the BIS provided by the participating monetary authorities, the Treasury through the Exchange Stabilization Fund (ESF) agreed to be substituted for the BIS for $500 million of the credit facility in the event of delayed repayment by the Central Bank of Brazil.

Funding for Mexico was provided through the Bank of Mexico's regular swap facility of $700 million with the Federal Reserve and also through special swap facilities totaling $1.85 billion in cooperation with other central banks through the BIS. The U.S. portion of the latter facility consisted of $600 million by the Treasury and $325 million by the Federal Reserve. In February, Mexico drew the remaining portion of the special facility, receiving $44.3 million from the Treasury and $25.8 million from the Federal Reserve. On February 28, the Bank of Mexico fully repaid the remaining $373 million outstanding under the Federal Reserve's regular reciprocal currency arrangement, which had been drawn last August before other arrangements had been put in place. On May 31, Mexico prepaid outstanding swaps under the special facilities, of which $104 million was paid to the Treasury and $56 million to the Federal Reserve. Drawings of $496 million and $269 million were outstanding from the Treasury and the Federal Reserve, respectively, as of July 31 but were subsequently repaid upon maturity late in August.

In April, the BIS, acting with the support of the U.S. Treasury and the monetary authorities in other countries, agreed to participate in an international financial support package for Yugoslavia. The Treasury, through the ESF, as part of a liquidity-support arrangement for the BIS provided by the participating monetary authorities, agreed to be substituted for the BIS for $75 million in the event of delayed repayment by Yugoslavia. By the end of the period,

partial repayments on this facility had reduced the Treasury's contingent commitment to $57 million.

On May 12 and on July 26, the U.S. Treasury redeemed at maturity the last two German mark-denominated securities equivalent to $667.9 million and $607.3 million, respectively. These represented the final redemptions of foreign currency notes, public series, which had been issued in the Swiss and German markets with the cooperation of the respective authorities in connection with the dollar-support program of November 1978.

In the period from February through July, the Federal Reserve realized no profits or losses from exchange transactions. The ESF and the Treasury general account gained $17.0 million and $128.2 million, respectively, in connection with redemptions of German mark-denominated securities. As of July 31, cumulative bookkeeping, or valuation, losses on outstanding foreign currency balances were $803.3 million for the Federal Reserve and $850.8 million for the ESF (Valuation gains and losses represent the increase or decrease in the dollar value of outstanding currency assets and liabilities, using end-of-period exchange rates as compared with rates of acquisition.) The above losses reflect the fact that the dollar strengthened since the time the foreign currencies were purchased.

The Federal Reserve and the Treasury have invested foreign currency balances acquired in the market as a result of their foreign exchange operations in a variety of investments that yield market-related rates of return and have a high degree of quality and liquidity. Under the authority provided by the Monetary Control Act of 1980, the Federal Reserve invested some of its own foreign currency resources in securities issued by foreign governments. As of July 31, the Federal Reserve's holdings of such securities were equivalent to $1,328.1 million. In addition, the Treasury held the equivalent of $2,046.5 million in such securities as of the end of July.

German mark

The German mark had participated in the generalized rise in currencies against the dollar around the turn of the year and had firmed within the EMS. By the beginning of February, however, the mark had eased back across the board, trading at DM 2.4735 against the dollar, as expectations of a continued decline of the dollar weakened. Within the EMS, it drifted down to the middle of the narrow band, as speculative buying of marks in anticipation of a realignment subsided pending early-March elections in Germany and France. Nevertheless, the sharp swing in Germany's current account back into surplus and further deceleration of inflation during the past year had generated expectations in the markets that the mark would again be revalued in an imminent change in EMS currency relationships.

Soon after the opening of the six-month period, speculative pressures reemerged as the election dates approached, and the mark again came into strong demand. By mid-February it had moved to the ceiling of the EMS after opinion polls predicted that the five-month-old Kohl government would get a mandate from the electorate and have sufficient control of Parliament to pursue its conservative economic policies. In early March, when the election results confirmed the predictions of the polls, the demand for marks increased. With the currency at the top of the EMS, both the Bundesbank and other participating central banks had to intervene heavily to keep the mark within its upper limits. As the pressures intensified, several other EMS countries whose currencies were pinned to the bottom of the EMS supplemented market intervention with other actions to discourage speculation. Thus, speculative bidding for the mark against non-EMS currencies intensified, lifting the mark some 4 percent against the dollar to its high for the period of DM 2.3685 by March 14 and by similar amounts against other major non-EMS currencies. In the realignment of March 21, the mark's central rate was adjusted upward by 5.5 percent. Other EMS currencies were revalued by smaller amounts or devalued, with the result that, in terms of the bilateral central rates, the mark was revalued by about the same amount on a trade-weighted basis.

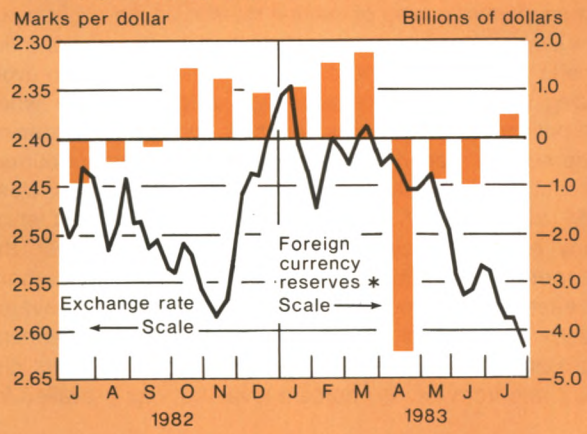
Meanwhile, Germany's recession had bottomed out late in 1982 and business confidence was improving, but the pace of recovery was still expected to be insufficient to curb a continuing rise in unemployment. The government was committed to fiscal restraint to achieve a long-standing German objective of reducing the size of the fiscal deficit relative to GNP. Already the government had made some progress in imposing cuts in social expenditures.

Under these circumstances, the Bundesbank had taken advantage of the drop in inflation and the improvement in the current account to ease monetary conditions. Early in the year it had acted out of concern over a possible reversal of the downtrend of interest rates abroad and the risk that the mark's recovery had stalled, providing liquidity through open market operations and increasing banks' rediscount quotas but not lowering interest rates. Effective March 18, however, it took the more visible step of cutting its discount and Lombard rates by 1 percentage point, to 4 percent and 5 percent, respectively, to signal its intention to lend support to the economy. But, by this time, the domestic money market had become quite liquid and short-term market rates had declined, partly because of the liquidity effects of the heavy foreign exchange intervention before the realignment. Moreover, the scheduled transfer of Bundesbank profits to the federal government in April was also going to inject liquidity. Consequently, the Bundesbank tempered its interest rate action with some cutback in banks' rediscount quotas. German interest rates nonetheless continued to ease, both absolutely and relative to those in the United States. Thus, by end-March the adverse interest differential in the Euro-

Chart 3

Germany

Movements in exchange rate and official foreign currency reserves



Exchange rates shown in this and the following charts are weekly averages of noon bid rates for dollars in New York. Foreign currency reserves shown in this and the following charts are drawn from IMF data published in International Financial Statistics.

*Foreign exchange reserves for Germany and other members of the European Monetary System, including the United Kingdom, incorporate adjustments for gold and foreign exchange swaps against European currency units (ECUs) done with the European Monetary Fund.

markets for three-month maturities, for example, had widened to almost 4½ percentage points, a level not seen since July 1982.

After the realignment, the mark moved to the bottom of the new EMS band and also fell back to early-February levels against the dollar. Speculative inflows and commercial leads and lags were unwound. In addition, capital was attracted abroad. Although interest rates in other EMS countries and the United States were temporarily easing, interest differentials were still adverse to the mark and no longer offset by the prospect of early exchange rate appreciation. Also, there was talk of possible liquidation of some OPEC investment in marks to meet current payments. Thus, EMS central banks bought large amounts of marks to keep the German currency within its lower intervention limits. In addition, with the mark declining against most non-EMS currencies, the Bundesbank sold dollars. By end-April, Germany's foreign currency reserves dropped more than they had risen during the previous two months to show a net $1.1 billion decline from January's $40.6 billion level.

By mid-May, business confidence in Germany had faltered. On the one hand, the benefits of decelerating inflation were becoming more apparent. A drop in the inflation rate to below 3½ percent had paved the way for a very moderate increase in the key pay agreement for metal workers and an even lower 2.6 percent average wage increase for public service employees. In addition, publication of first-quarter figures confirmed there had been some revival in interest-sensitive sectors of the economy, such as investment goods and consumer durables. On the other hand, exports—the sector that traditionally leads Germany out of recession—had shown almost continuous weakness since mid-1982. The trade figures for April revealed a significant drop both in exports and in the trade surplus, suggesting that the strength recorded for the first quarter reflected little more than a speedup of shipments to other EMS countries in anticipation of the EMS realignment. Henceforth, export demand was seen as being depressed, not only by the weakness of markets among the developing countries and OPEC, as before, but also as a result of the larger than expected revaluation of the mark in the March realignment and the effects of new austerity measures in France. Moreover, the scope for providing more impetus to the economy by further reducing interest rates was rapidly disappearing. Central bank money growth was still running well above the Bundesbank's target range of 4-7 percent for the year, even after reversal of the foreign exchange inflows of February-March. And, abroad, the outlook for interest rates in the United States was bringing into question hopes that the ten-month-long downswing in world interest rates would continue.

Under these circumstances, the outlook for the mark became increasingly overshadowed by that of the dollar which was buoyed by prospects of a vigorous economic recovery, strong corporate profits, and increasingly attractive yields on fixed-income investments in the United States. As interest rates in the United States moved up after mid-May, rates in Germany held generally steady, with the Bundesbank allowing German banks to borrow from its Lombard facility heavily and for long periods of time. As a result, interest differentials adverse to the mark began to widen once more, surpassing the levels of late March by mid-June and increasing further throughout July. In addition, a number of political factors weighed on sentiment toward the mark. The Williamsburg summit passed without apparent agreement on European initiatives pertaining to interest rates and exchange rates. Meanwhile, reaffirmation of the NATO decision to place Pershing II and cruise missiles in Germany underscored the potential for public debate over a variety of national security issues.

Thus, the mark continued to decline against the dollar, falling by mid-July below its November 1982 low, and generally traded near the bottom of the EMS. Market partici-

pants took little apparent note of newly published figures that pointed to a marked upturn in industrial production and improvement in Germany's trade and current account figures for June. Instead, at end-July the mark's drop accelerated, as trading became increasingly hectic, to touch a seven and a half-year low of DM 2.6600. Throughout the last two and a half months of the period, the Bundesbank regularly sold modest amounts of dollars at the fixing but was perceived in the market as not providing strong resistance to a further drop in the exchange rate against the dollar. Meanwhile, other EMS central banks bought marks either in compulsory interventions at the limits of the 2¼ percent band or to rebuild reserves.

By end-July, trading conditions had deteriorated considerably. As the mark's decline relative to the dollar cumulated and major market makers became less willing to take the positions needed to smooth the flow of orders coming into the market from their customers, the market became more subject to sudden rate movements and widening spreads between bid and offered rates. The U.S authorities entered the market on July 29 to purchase marks as part of an intervention operation that continued into the subsequent week and was coordinated with other central banks. For its part, the U.S. authorities purchased a total of $182.6 million equivalent of marks during a period of six business days to counter disorderly trading conditions.

Primarily as a result of intervention operations, Germany's foreign currency reserves declined a further $1.4 billion after April. For the whole six-month period, they fell $2.5 billion to $38.1 billion. The mark ended the period at DM 2.6500 against the dollar, down on balance 7 percent from its early-February level. As measured by the Bundesbank's trade-weighted index, however, the mark appreciated by ½ percent, mainly because of the mark's appreciation *vis-à-vis* other EMS currencies.

In mid-May and in late July, the U.S. Treasury repaid at maturity the final two German mark-denominated obligations issued in conjunction with the November 1978 dollar defense program. These repayments totaled $1.3 billion equivalent.

Japanese yen

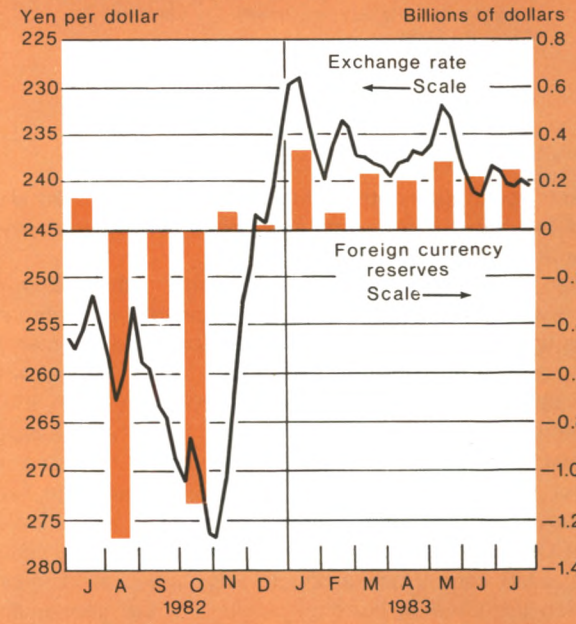
A recovery of the Japanese yen against the dollar, which had brought the currency up some 19 percent from its November 1982 low by early January, stalled just before the period under review. Although the yen remained firm as compared with European currencies, it eased back against the dollar to ¥240.90 at the beginning of February. As a result, market participants were again disappointed in their expectations that Japan's strong current account position, low inflation, and cautious economic policies would set the stage for the yen to recapture more of the ground lost against the dollar during the preceding two years.

For some time the yen's weak performance against the dollar had been regarded by the Japanese monetary authorities as substantially reducing their scope for responding to the weakness of domestic economic activity. Fiscal policy was felt to be constrained by concern over the budget deficit and a commitment to narrow the borrowing gap. Monetary policy was felt to be constrained by the risk that any further easing of interest rates in Japan might again stimulate outflows of capital which had been a major influence in the yen's weakness. The authorities wished to avoid adding pressure on the exchange rate at a time when international attention was focused on Japan's widening trade surplus. Japan had emerged with the largest current account surplus of the major industrialized countries, close to $7 billion in 1982. In the recessionary environment which many countries faced around the turn of the year, the prospect that Japan might experience a further sharp increase in its export penetration this year aggravated already severe trade frictions with its major trading partners. The Bank of Japan, therefore, chose not to lower its discount rate from the 5½ percent level that had prevailed for

Chart 4

Japan

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

over a year, and Japanese market rates eased little even as interest rates in most other financial centers declined substantially after mid-1982.

During February and March, expectations about the near-term course of Japanese interest rates shifted frequently. On numerous occasions, expectations developed that the official discount rate would be cut. Economic growth continued to slow, and output in Japan was slipping to relatively low levels of capacity. Japan's low inflation, high real interest rates, and the outlook for modest wage increases in the spring labor offensive all suggested that there still might be scope for measures to stimulate domestic demand. Nevertheless, the Bank of Japan repeatedly stated that the yen's exchange rate prevented it from lowering its lending rate. With the outlook for interest rates uncertain and with Japan's economy looking stagnant as compared with the more vigorous performance of the U.S. economy, foreign investors became skeptical that Japan's stock and bond markets would make a strong showing relative to those abroad.

In addition, conditions in world oil markets and speculation surrounding the EMS realignment affected trading in the Japanese yen for the first three months of the period. Although Japan was seen as benefiting from declining prices for its oil imports, market attention focused on the immediate, unfavorable impact on Japan's capital account of the possibility that OPEC nations might liquidate their holdings in Japanese capital markets. Indeed, inflows of capital from OPEC countries were considerably diminished and contributed, along with substantial overseas investments by Japanese institutional investors, to an increase in Japan's net long-term capital outflow. The yen was also caught up at times in the EMS pressures around mid-March, since the yen was used to some extent as a vehicle for speculation against those currencies expected to be revalued.

The yen, therefore, showed little trend against the dollar through late March. Although at one point in February it rose to ¥231.20, by the quarter end the yen was trading back around ¥240. The yen declined about 3 percent against the mark just before the realignment of the EMS. However, in the subsequent unwinding of speculative positions, the yen recouped most of that loss in just a few days.

At end-March, with the approaching close of the fiscal year and Parliamentary action on the budget, public attention focused increasingly on the continued sluggishness of the Japanese economy. Real growth had amounted to 3.3 percent in the fiscal year just ending—a disappointing figure by traditional standards—with the rate of growth decelerating noticeably throughout the year. Export demand remained weak, reflecting the worldwide recession, increasing barriers to Japanese goods, and import cutbacks by developing countries. Japan's current account surplus continued to widen, most importantly because imports were depressed by the low level of domestic demand. The yen's earlier appreciation and weak commodities prices had contributed to an improvement in Japan's terms of trade. Although this helped strengthen the corporate sector's financial position, industry remained cautious about embarking on new investment projects as long as final demand was flagging. Thus, loan demand remained weak and the Bank of Japan scaled back its projection for new lending by city banks for the coming quarter.

Under these circumstances, calls for an interest rate cut were increasingly heard from private as well as some government sources, and talk spread that the government would soon announce measures to support economic growth. On April 5, the government presented an eight-point program, involving primarily a speedup in the disbursement of previously budgeted public works spending. But the Bank of Japan still viewed the exchange rate as too weak to permit a discount rate cut and thus disappointed hopes that a drop in interest rates would reinforce the government's program.

During April and into early May, the yen drew support from the prospect that Japanese interest rates would remain stable. In addition, the approaching release of a seven-nation intervention study and the upcoming Williamsburg summit focused attention on official exchange rate policies. Market participants interpreted statements by Bank of Japan Governor Maekawa and others as presaging a move to a more active international intervention policy. They also anticipated that the Japanese government might choose to support its currency before the Williamsburg summit so as to defuse the trade issue.

By May 11, these factors helped boost the yen to a high of ¥230.35 against the dollar. Speculation in favor of the yen on Chicago's International Monetary Market (IMM) became quite heavy at times and was an important component of the run-up in the yen, with open interest in yen contracts hitting successive records. But the overhang of these positions soon became a source of concern, as fears arose that a sudden decline in the yen might be triggered by the need to cover them. In addition, a renewed rise in U.S. interest rates and the completion of the Williamsburg summit without any obvious change in official foreign exchange operations exerted a drag on the yen, which dropped back to a low of ¥243.60 by mid-June. Nevertheless, the yen had shown a steady advance against the German and other Continental currencies, rising more than 6 percent *vis-à-vis* the mark during the prior two and a half months.

After mid-June the improvement in Japan's external sector began to receive more attention in the exchange markets. A bottoming-out of exports, together with the continuing low level of imports, led to a widening of Japan's current account surplus to a seasonally adjusted annual rate of $20 billion for the first five months of 1983. In the meantime, the quickening pace of recovery

in the United States, where the import of manufactured goods was forecast to rise significantly, suggested there would be a further expansion of Japan's exports. Moreover, political developments in Japan provided background support for the yen during this period, as the ruling party's victory in June Parliamentary elections confirmed that the government's international and economic policies would not be subject to major change.

Consequently, the yen moved up against the dollar during the latter half of June and held generally steady during July as the dollar advanced against the Continental currencies. But, when the yen became caught up in the pressures of a rapidly rising dollar at the month end, the Japanese authorities sold dollars as a coordinated intervention operation got under way in which the U.S. authorities bought $71.5 million equivalent of yen. These purchases during the

Table 2

Drawings and Repayments by Foreign Central Banks and the Bank for International Settlements under Regular Reciprocal Currency Arrangements

In millions of dollars; drawings (+) or repayments (−)

Bank drawing on Federal Reserve System	Outstanding July 1, 1982	1982 III	1982 IV	1983 I	1983 II	1983 July	Outstanding July 31, 1983
Bank of Mexico	200.0	+1,400.0 − 900.0	−217.4	−482.6	-0-	-0-	-0-
*Bank for International Settlements (against German marks)	-0-	-0-	+124.0 −124.0	-0-	-0-	-0-	-0-
Total	200.0	+1,400.0 − 900.0	+124.0 −341.4	−482.6	-0-	-0-	-0-

Data are on a value-date basis.

*BIS drawings and repayments of dollars against European currencies other than Swiss francs to meet temporary cash requirements.

Table 3

Drawings and Repayments by the Bank of Mexico under Special Swap Arrangements

In millions of dollars; drawings (+) or repayments (−)

Drawings on	Outstanding July 1, 1982	1982 III	1982 IV	1983 I	1983 II	1983 July	Outstanding July 31, 1983
United States Treasury special temporary facility for $1,000 million	*	+ 825.0 − 825.0	*	*	*	*	*
Drawings on special combined credit facility:							
†Federal Reserve special facility for $325 million	*	+ 89.8 − 43.8	+211.2	+ 67.8	− 56.0	-0-	269.0
†United States Treasury special facility for $600 million	*	+ 166.8 − 81.3	+392.2	+122.3	−104.0	-0-	496.0
Total	*	+1,081.6 − 950.0	+603.5	+190.0	−160.0	-0-	765.0

Data are on a value-date basis. Because of rounding, figures may not add to totals.

*Not applicable.

†Size of facility was reduced as repayments were made during 1983.

first days of August were shared equally between the Federal Reserve and the U.S. Treasury.

Although the yen closed the six-month period at ¥242.90, near its low against the dollar, it registered a net decline of less than 1 percent since end-January. With the yen relatively steady against the dollar, it showed an almost uninterrupted advance against other currencies after mid-March. It ended July almost 7 percent higher on balance against the mark, thereby challenging its 1978 high against that currency. The Japanese authorities intervened little in the exchange markets through the end of July, with the $1.25 billion increase in foreign currency reserves since January to $20.7 billion primarily reflecting interest receipts on their currency holdings.

Swiss franc

Coming into the period under review, the Swiss franc was trading well above its previous-autumn levels against all currencies except the Japanese yen. After leading the recovery of European currencies against the dollar that had begun in mid-November, it had held up better than others after the dollar's turnaround in early January to trade around SF 2.0250 against the dollar and about SF 0.82 in terms of the German mark.

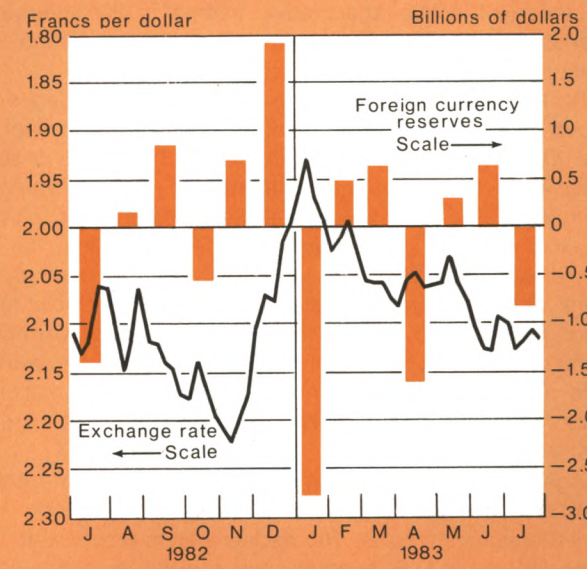
By February, there was a perception in the market that the Swiss authorities might not have the leeway that they had during much of the previous year to ease monetary conditions. Inflation, at least at the consumer level, had receded less in Switzerland than in Germany, Switzerland's major trading partner and competitor in third markets. The growth of central bank money had begun to rise, coming close to the central bank's 3 percent target for 1982, and the authorities had adopted the same target for the coming year. Consequently, there was seen to be rather little scope for interest rates in Switzerland to decline from the very low levels of last fall, while interest rates abroad had dropped substantially. As a result, the large adverse interest differentials that had fostered heavy capital outflows and had contributed to last year's weakness of the franc were narrowing considerably.

There were other reasons as well why market participants anticipated that capital outflows from Switzerland might not be so large as in 1982. Foreign official and corporate borrowers, especially Japanese entities, continued to borrow in Swiss francs throughout the first half of 1983. The spot rate on occasion was pushed lower when the proceeds of new issues were converted into foreign currencies. But, at the same time, the sheer size of earlier borrowings was seen as increasing the potential that the Swiss franc might come into strong demand sometime in the future. If, for example, Swiss interest rates were to rise substantially more than rates in other markets or if the dollar were to decline, earlier borrowers might bid for francs to cover their liabilities. Thus, the attitude of market professionals toward the Swiss franc had come to incorporate a decided sense of two-way risk.

Chart 5

Switzerland

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

Sentiment toward the franc was also favorably affected by other factors. The country's trade deficit had narrowed by $1 billion to yield a surplus on current account of $3.4 billion last year, and most forecasts called for a similarly sized surplus for 1983. The competitiveness of Swiss exports had actually improved somewhat, reflecting in part last year's decline of the franc relative to the German mark, which had not been fully reversed. More importantly, the Swiss government's fiscal discipline compared favorably with that of other countries. Thus, Switzerland appeared to have come through the difficult adjustments of recent years with fewer economic dislocations, as well as fewer political divisions, than most countries. Moreover, Switzerland's traditional role as a safe haven and its relative political stability made the franc an attractive currency for investment, particularly when contentious political campaigns were under way in a number of neighboring countries.

For a time during February and March, these favorable factors were overshadowed by intensified bidding for German marks in anticipation of an EMS realignment. With

the mark rising strongly across the board, the Swiss franc dropped steadily as it became one of the currencies against which long mark positions were established. In all, the franc declined nearly 6 percent against the mark to SF 0.8663 on March 14, its lowest level in one and a half years. Against the dollar, the Swiss franc swung widely under the influence of active speculative trading in the interbank market and on Chicago's IMM before settling around the level of SF 2.0750 in mid-March.

By late March, however, the Swiss franc had begun to move back up against the mark as positions taken prior to the March 21 realignment of the EMS were reversed. Meanwhile, the franc's traditional interest rate disadvantage narrowed. The Swiss National Bank lowered its official lending rates by 1/2 percentage point on March 17, in coordination with a larger reduction by the German central bank. But Swiss money market interest rates actually rose during the second half of March, while those in most other centers were declining. With some slowing of the previous rate of foreign borrowing in the Swiss capital market, the franc gained steadily against the German mark in a trend that was to continue.

Against the dollar, the Swiss franc edged up more gradually through mid-May before declining in June, along with other foreign currencies. The decline was in response to the renewed rise in U.S. interest rates and the revised outlook for U.S. economic recovery. Compared with other Continental currencies, however, the franc declined more modestly. By then, short-term interest rates in the Swiss market had advanced almost to the levels prevailing in Germany, thereby eliminating the traditional negative spread between the two markets. The increased interest rates reflected market participants' wariness that the Swiss National Bank might tighten the supply of banking reserves in response to an apparent overshooting of its monetary target in the first five months of the year. Such speculation persisted even after central bank officials pointed out that the year-over-year rise in central bank money so far was a statistical anomaly that need not be offset later in the year and, furthermore, that the central bank would accept an overrun by as much as 1 percentage point.

The Swiss franc declined relative to the dollar as the dollar began its steep run-up late in July. It dropped to a low of SF 2.1530 on the last day of trading before closing at SF 2.1420, some 5 3/4 percent below the opening six months earlier. But, against the German mark, the franc continued rising to close 1 1/2 percent higher than at end-January and some 6 1/2 percent above its lowest point in mid-March. Trading at SF 0.8083, the franc was approaching levels that previously had brought into question the competitiveness of industry in Switzerland relative to that in Germany. The Swiss authorities did not intervene in the exchange markets until after the end of the six-month period under review, although they continued to use foreign currency swaps to provide liquidity to the banking system. The country's foreign exchange reserves showed little change, easing back $400 million on balance to $11.8 billion at end-July.

Sterling

Sterling was affected during the period under review by developments in world petroleum markets and by uncertainties surrounding the United Kingdom's general election. Prospects of potentially large drops in oil prices were seen as having considerable bearing on Britain's external and fiscal positions. The current account surplus which had helped sustain comparatively high nominal and trade-weighted values of sterling during the previous two years had already dwindled, and the nonoil components were forecast to deteriorate sharply in the coming year—only partly because the immediate outlook for growth in the United Kingdom was somewhat better than for its European neighbors. The government had recently provided some fiscal relief, largely to industry, at a time when the domestic economy was still struggling to emerge from three years of recession. A significant reduction of oil tax and royalty receipts would have raised the possibility that the government might exceed its target for public-sector borrowing, thereby undercutting progress toward the fiscal and monetary discipline that had been a hallmark of its strategy to curb inflation and to restore private initiative in the economy. Meanwhile, expectations had developed that the government might choose to hold an election before its mandated date in 1984. It was anticipated that economic policy in general and exchange rate policy in particular would be important campaign issues. The government was expected to take credit for bringing inflation down to 4-5 percent. But, with the outlook for world trade pessimistic and the domestic economy not strong enough to bring the unemployment rate below 12 percent, there was already considerable concern about Britain's competitive position. A major opposition party was calling for a large devaluation of the pound, as well as for a sharp acceleration of public spending and substantially lower interest rates. Talk spread that even the government might accept some modest easing of the exchange rate.

By late January, the pound had eased against the dollar to $1.5210, while settling around 81 according to the Bank of England's trade-weighted measure. Sterling had fallen in late 1982, when debate on the competitive issue first flared up. Selling pressure against the currency had been countered with sometimes forceful intervention by the Bank of England and some backing-up of interest rates that interrupted a pronounced downtrend over the preceding year. Britain's foreign exchange reserves had declined for several months, reaching $9.8 billion by end-January.

During February and March, sterling again came on offer, after the failure of OPEC's January meeting to produce

agreement on oil prices and production quotas left open the question whether the widely anticipated oil price drop would be limited and proceed in an orderly fashion. The pound fell irregularly on various reports of the protracted OPEC negotiations, as well as of the British National Oil Company's own price negotiations. Even after a mid-March agreement by OPEC on prices and production ceilings, the market remained skeptical that the details of the agreement would be adhered to.

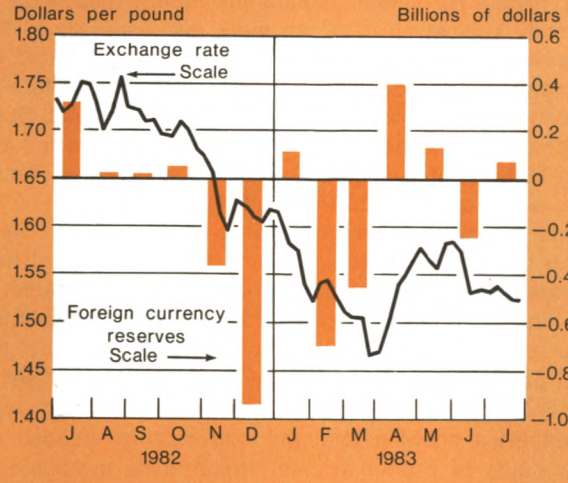
Adding to the pressures on sterling at times were the activities of trading professionals and their customers in anticipation of a realignment of the EMS. With the pound already vulnerable to selling pressure and the sterling market unencumbered by exchange controls, the British currency was sold against those viewed as sure to be adjusted upward within the European currency arrangement. As a result, large short sterling positions began to be established against the German mark by early March in a pattern that continued until the EMS realignment was announced on March 21.

The Bank of England was seen in the market as cushioning but not resisting this decline, which was regarded as reflecting largely external developments. Moreover, outflows from sterling were not mirrored as before in a rise in British interest rates. In fact, by mid-March, money market interest rates in the United Kingdom had actually fallen somewhat.

Chart 6

United Kingdom

Movements in exchange rate and official foreign currency reserves



See footnotes on Chart 3.

The clearing banks took advantage of a temporary firming of sterling exchange rates in mid-March to cut their base lending rates by 1/2 percentage point, and the Bank of England immediately followed with similar reductions of its money market intervention rates.

The sterling market remained generally unsettled through the end of the first quarter in response to the continuing uncertainties about oil prices, pressures within the EMS, and newspaper speculation that the government was unconcerned about the exchange rate. It fell to its low for the period of $1.4508 against the dollar on March 28 and to 77.9 on the Bank of England's index. At these levels, the pound was some 15 percent below its mid-November value both against the dollar and in effective terms. Against the German mark, the pound had declined nearly 44 percent in over two years to a record low of DM 3.53 on March 24. Meanwhile, Britain's foreign exchange reserves declined a further $1.1 billion during February and March.

At end-March, sterling turned around as signs of adherence to the OPEC arrangements were accumulating. The British National Oil Company had annóunced its own price reductions, which were more modest than some predictions and which did not give rise to competitive action by OPEC producers of closely comparable qualities of crude oil. Soon there began to be a reversal of many of the large short sterling positions that had been established during the previous two months, and some commercial entities also moved to cover sterling payments that had been delayed.

During April and early May, other factors also contributed to a further strengthening of sterling. Britain's economic recovery appeared to become more assured, with evidence of further rises in domestic sales and production. Reported inflation fell to its lowest rates in fifteen years. And the current account stayed in modest surplus during the first quarter. Under these circumstances, talk that the government might decide to hold a general election as early as June was viewed as increasingly favorable for sterling. Thus, the pound continued to benefit from the reversing of professional short positions, from new positioning in favor of the currency, and from shifts into sterling-denominated securities by international investors. It proceeded to advance, albeit more slowly after May 9 when the announcement of June general elections focused market attention on the immediate uncertainties of an election campaign. On the last day of May, sterling reached the highest level of the six-month period at $1.6145 against the dollar and 88.0 on a trade-weighted basis before easing to around $1.51 and 84.0, respectively, by mid-June.

From mid-June to late July, the sterling market became more settled with the spot rate about in the middle of the range over which it had traded during the preceding couple of months. The election results assuring continuity in the economic and financial policies of the Thatcher administration and a firming of world oil prices suggesting that the new

price structure would hold dispelled the principal uncertainties that had clouded sterling's prospects early in the period. The pound's retreat from its late-May highs reduced concern that it was at levels incompatible with Britain's ability to compete and to maintain the momentum of its economic recovery.

Meanwhile, the investment flows that had bolstered the pound at times during the spring also tapered off. Money market interest rates in the United Kingdom had eased somewhat further which, together with the firming of U.S. rates since mid-May, left sterling assets without an interest rate advantage over U.S. investments. The Bank of England had endorsed the decline in British interest rates by reducing its intervention rates on two occasions—mid-April and mid-June—for a total of approximately 1 percentage point, and the clearing banks had followed with similar reductions of their base lending rates. For a time, market participants anticipated that rates might be lowered further. But, after the government reaffirmed its resolve to control inflation and after new evidence showed monetary aggregate growth to be accelerating, the view became accepted that no more cuts in rates were in the offing.

Sterling held relatively steady against the dollar during July, when the dollar rose against most other currencies. As the period closed, the pound was trading at $1.5150, 1/2 percent lower than its level at the beginning of February. In trade-weighted terms, it was 5 percent higher than six months earlier at 85.4 on the Bank of England's index; against the German mark, sterling had gained nearly 6 1/2 percent to trade at DM 4.018. Britain's foreign exchange reserves rose on balance after March to close the six-month period down $800 million from end-January levels at $9.0 billion.

French franc

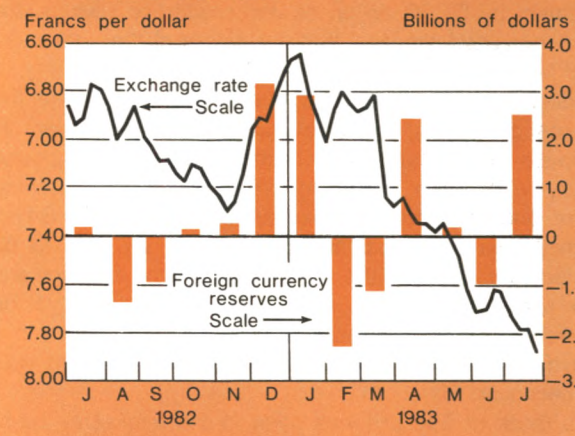
Early in 1983, France's relatively high rate of inflation, wide government deficit, and large current account deficit weighed heavily on market sentiment toward the French franc. Even after a temporary freeze on wages and prices, the year-to-year increase in consumer prices had not fallen much below 10 percent and inflationary expectations remained unfavorable. The government was struggling to hold to its target for the central government deficit of 3 percent of gross domestic product (GDP). And the current account deficit had more than doubled to $12 billion for the whole of 1982.

The French authorities had adopted several measures during the preceding months to deal with these problems. But market participants were skeptical that much progress would be achieved, particularly if it should require an undercutting of earlier efforts to curb unemployment and to stimulate economic growth. In spite of the need for restraint, the French authorities introduced several measures during the fall and winter to spur investment and employment and acted to lower domestic interest rates as soon as exchange market conditions permitted. Concern deepened that the economic performance of France was diverging in important ways from that of many other European countries, where inflation was down sharply and current accounts were moving back toward surplus.

Chart 7

France

Movements in exchange rate and official foreign currency reserves



See footnotes on Chart 3.

Under these circumstances, market participants had come to expect that a new EMS realignment would occur soon after the elections in France and Germany scheduled for early March. For several months the franc traded close to its parity against the German mark and generally in the upper half of the EMS band. The franc was supported by intervention of the Bank of France and by sales of foreign currency which French enterprises borrowed abroad. Such borrowing was estimated by Finance Minister Delors to have been $8.8 billion during 1982. By end-January the French franc stood at FF 7.0100 against the dollar and FF 2.83 against the mark. France's foreign currency reserves were $17.6 billion at end-January, and the government had arranged a $4 billion syndicated loan in the Euromarket.

During much of February the franc edged up against the dollar and moved along with the mark toward the top of the EMS band. The pressure against the franc, while offset in the spot market by Bank of France intervention, was nevertheless showing through. Nonresidents speeded up their sales of French francs, which were increasingly financed by borrowing in the Euro-franc market and were reflected in a widening of the discount on the franc in the forward market. Meanwhile, expectations of a downward

adjustment of the franc rate also contributed to a heavy buildup of imported goods inventories by French enterprises and a deterioration in France's trade account.

In early March, pressure against the French franc intensified. News of a sharply wider trade deficit for January, together with the results of the first round of municipal elections in France and the decisive victory for the new government in Germany's national elections, prompted further selling of francs. On March 7 the Bank of France allowed the franc to fall to the floor of the EMS. At the same time the cost of overnight financing in the Euro-franc market was bid up to several thousand percent per annum, causing some speculators to close out short positions against the franc. Although the Bank of France was then able to scale back its intervention in the spot market, the accumulated support provided had been substantial, as is partially reflected in the $3.4 billion decline in French foreign currency reserves for February-March.

After lengthy negotiations over the March 18 weekend, the franc's parity was devalued 2.5 percent as part of an overall realignment of EMS currencies. The franc was, in effect, devalued by 8 percent against the mark, 6 percent against the guilder, 5 percent against the Danish krone, and 4 percent against the Belgian franc. It remained unchanged *vis-à-vis* the Italian lira and was effectively revalued 1 percent against the Irish pound. The French government announced that, to reduce the trade deficit and to help bring down inflation, it was prepared to adopt further austerity measures. In addition, it would seek a large, medium-term loan from the European Community (EC). On March 25 the French government announced the details of a new program which aimed at reducing domestic demand by FF 65 billion (about 2 percent of GDP). The program included a mandatory loan to the government based on income and wealth taxes paid in 1982, an income tax surcharge to reduce the deficit of the social security system, a special gasoline tax to compensate for declining oil prices and other revenue-raising measures, as well as a limitation on the amount of foreign currency French tourists may take abroad. In addition, the money supply growth target for 1983 was lowered from 10 percent to 9 percent. The government projected that, as a result of the program, economic growth for the year would be reduced to nearly zero and inflation cut to 8 percent.

The French franc had been pulled up by other EMS currencies before the realignment and was trading on March 18 at around FF 6.90 against the dollar. When the exchange markets opened the following Monday, the EMS currencies as a group fell sharply against the dollar, and the French franc settled around FF 7.25. Nevertheless, the franc emerged firmly at the top of the newly aligned EMS band, where it was to trade through late April. The exchange markets were impressed by the scope and decisiveness of the government's measures, in particular the decision to pass its program by decree rather than going the more lengthy route of legislation. As a result, speculative positions were unwound and commercial leads and lags swung quickly back in favor of the franc. These reflows were reflected, in part, in a sharp drop in Euro-franc interest rates to their lowest rates since the start of the year. Moreover, with the franc now at its upper intervention point in the EMS, the Bank of France bought large amounts of other EMS currencies, thereby rebuilding official reserves. At end-April, French reserves had climbed $2.5 billion to $16.7 billion.

By May, the reflows back into the French franc were largely completed while hurdles still had to be surmounted to meet the government's economic objectives. Efforts to curb inflation were being undercut to some extent as the franc dropped against the dollar, since France received none of the benefit of declining oil prices on its domestic price structure. Some disappointing trade figures had already made it clear that the target recently set for the 1983 external deficit would be difficult to achieve. On the domestic side, the austerity program was still being met by political opposition.

Under these circumstances the Bank of France was careful about letting interest rates ease, and by summer they were still sufficiently high to attract deposits from investors abroad. The monetary authorities operated on both sides of the market, adding on balance small amounts of foreign currencies to reserves. The government went ahead with its plan to borrow ECU 4 billion from the EC's balance-of-payments facility in a series of transactions undertaken in June and July. Moreover, the political leadership reaffirmed on a number of occasions the need for rigorous economic policies this year and next.

Thus, by the end of July, the franc was still trading in the upper half of the EMS band and at FF 3.00 against the mark. It continued to decline along with the mark against the dollar, closing the period some 14 percent down from end-January levels at FF 7.9900. But France's foreign currency reserves increased further during the last half of the six-month period to close the period at $18.5 billion, up $900 million from end-January levels and $4.2 billion from their low point of end-March.

Italian lira

Coming into 1983, the economic situation in Italy was showing modest improvement; there had been some progress in bringing down inflation and containing the growth of imports. But these results had been achieved at the cost of a sharp drop in output, and the prospects for further improvement were still unclear. Inflation differentials *vis-a-vis* most of Italy's trading partners had actually widened since the modest scaling-back in Italy's rate of inflation could not match the more sizable reductions of inflation in most other industrialized countries. Export volumes had declined

by more than could be explained by contractions in Italy's major export markets. Efforts to contain rapidly growing fiscal deficits were being frustrated both by recession at home and repeated failure to get Parliamentary approval for increased taxes and revenues. The overshooting of the government deficit contributed to a rapid expansion of total domestic credit which had significantly exceeded its target for 1982. Under these circumstances, the Bank of Italy concluded that it had no room to ease monetary policy and was one of the few central banks not to lower the official discount rate after August 1982. As a result, interest rates in real terms had actually increased somewhat.

The attraction of relatively high interest rates kept the lira trading firmly near the top of the narrow EMS band, a position it was to keep through February. The Bank of Italy took advantage of this relative strength to rebuild its foreign currency reserves to a level of $13.7 billion at end-January 1983. Against the dollar the lira was trading at Lit 1,418.00 by the opening of the six-month period.

Early in March, when a realignment of the EMS arrangement appeared to be imminent, market participants came to expect that the Italian authorities might seek to protect the competitiveness of the country's exports by negotiating a downward adjustment of the lira's central rate should the French franc be devalued. Between March 3 and March 10 the lira came on offer as commercial leads and lags turned quickly against the currency. The spot rate dropped from the top of the 2¼ percent band to a position well below the narrow band, using the greater leeway available to the lira. The Bank of Italy supported the currency with sales of dollars and, to a lesser extent, of EMS currencies. These operations are partly reflected in a $700 million decline in the country's foreign exchange reserves for March. Meanwhile, the lira had also declined somewhat against the dollar to Lit 1,424.00.

On March 21, as part of the overall realignment, the lira's central rate within the EMS was adjusted downward 2½ percent, leaving the parity unchanged relative to the French franc and with adjustments similar to those for the franc against the other EMS currencies. In the exchange market, the lira moved to trade well above the new narrow band maintained for the other currencies. Following the realignment, there were sizable flows into lire as leads and lags were unwound, seasonal inflows began to show through, and Italy's relatively high interest rates became attractive again once a devaluation was not a near-term prospect. The Bank of Italy took advantage of the lira's comfortable position within the joint float to recoup more than earlier losses of foreign currency reserves, contributing to a rise of nearly $2 billion in foreign exchange reserves for the month of April.

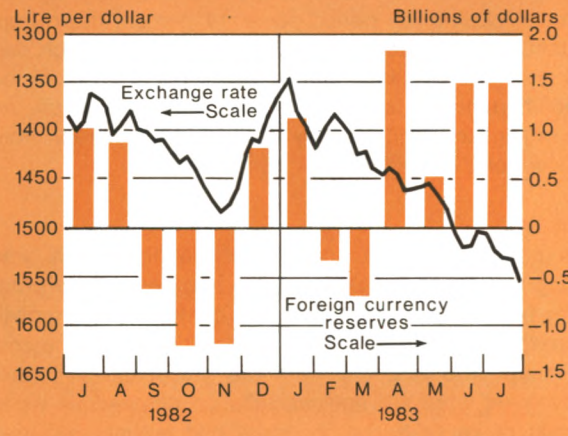
Soon after the realignment, market interest rates in Italy began to ease. Although output had stabilized, it remained at a low level. There was little expectation of an early economic recovery, and unions and employers pushed aggressively for lower interest rates. Commercial banks cut their prime rates twice during the spring by a total of 1¼ percentage points to 18¾ percent, and there were similar reductions of Treasury bill auction rates. But the news on price performance was still disappointing. The consumer price index was rising at an annual rate of about 16 percent during the first quarter, well above the government's goal of 13 percent or less. The Bank of Italy did not join other EMS central banks in reducing official rates during March. But on April 8 it lowered the discount rate by 1 percentage point to 17 percent.

Even so, interest differentials remained strongly in favor of the lira. Moreover, Italy's current account was strengthening further. Italy's trade deficit narrowed considerably during the first half of 1983, compared with the same period of 1982. Increasing tourist receipts and declining service costs on Italy's external debt were expected to generate further gains for the Italian current account balance during 1983. These developments helped buoy the lira even as prospects for action to bring Italy's public-sector deficit under control faded. The government collapsed in early May before all the measures to contain the deficit could be passed by Parliament, and it was unclear whether a new coalition government would take strong measures either to cut spending or to raise taxes in the current depressed economic environment.

Chart 8

Italy

Movements in exchange rate and official foreign currency reserves



See footnotes on Chart 3.

Table 4

Drawings and Repayments by the Central Bank of Brazil under Special Swap Arrangements with the United States Treasury

In millions of dollars; drawings (+) or repayments (−)

Drawings on United States Treasury special facilities for	Outstanding July 1, 1982	1982 III	1982 IV	1983 I	1983 II	1983 July	Outstanding July 31, 1983
$500 million	*	*	+ 500.0 − 500.0	*	*	*	*
$280 million	*	*	+ 280.0	− 280.0			
$450 million	*	*	+ 450.0	− 450.0	*	*	*
$250 million	*	*	+ 250.0 − 104.2	− 145.8	*	*	*
$200 million	*	*	*	+ 200.0 − 200.0	*	*	*
$200 million	*	*	*	+ 200.0 − 200.0	*	*	*
Total	*	*	+1,480.0 − 604.2	+ 400.0 −1,275.8	*	*	*

Data are on a value-date basis.

*Not applicable.

The lira continued to trade above the EMS narrow band through July while moving down with other European currencies against the dollar. The easing of pressures on the external account permitted the Italian authorities to build up their foreign currency reserves and to increase the amount of foreign exchange Italian tourists may export. By end-July the lira was trading at Lit 1,573.00 against the dollar, down almost 11 percent over the six-month period under review and down 3½ percent against the German mark. Meanwhile, Italy's foreign exchange reserves stood at $18.6 billion, up $4.8 billion over the period.

European Monetary System

The currencies of the EMS were trading steadily against each other at the beginning of February, but in a configuration which reflected widespread market expectations that continued divergence in economic performance among the member countries made another realignment inevitable. These expectations were based on observations that, in most cases, differentials in inflation and current account performance had increased slightly since the realignment of June 1982. Inflation had decelerated more sharply in Germany and the Netherlands than in other EMS countries. At the same time, German and Dutch current accounts had moved strongly into surplus, while other countries, even those whose current accounts had improved, remained in sizable deficit.

To be sure, the authorities in several participating countries had implemented policies during 1982 to reduce inflation and to improve current accounts, but the effects were only beginning to show through. The Belgian government, using emergency powers, had imposed a broad austerity program to slash government spending, wage costs, and the trade deficit. In Denmark a new government had abolished wage indexation and reversed a stimulative fiscal policy, while the central bank had kept interest rates relatively high. In Ireland, the authorities had in place restrictive fiscal and monetary policies and the exchange rate had appreciated against sterling, the currency of Ireland's major trading partner. In France, however, and to a lesser extent in Italy, progress toward achieving better balance in the economy was not yet sufficient to relieve concern in the markets about the currencies' near-term outlook.

In all EMS countries, unemployment was high and generally still rising, reaching levels of over 16 percent in some countries. To varying degrees in all countries the authorities were embarked on medium-term efforts to reduce large and persistent structural fiscal deficits. But recession was adding to the difficulties of achieving planned budgetary savings. Pressure therefore was on monetary policy to provide support to the domestic economies, and the question remained among market participants whether the general move toward restraint could be sustained long enough to produce more uniform economic performance.

Under these circumstances, the Dutch guilder stayed virtually at the top of the 2¼ percent narrow band early in February, with the German mark and the Danish krone close behind. The French franc was held close to its bilateral central rate relative to the mark, while the Irish pound fluctuated below the middle, and the Belgian franc remained at or near its lower intervention point. Except for the French franc, there was only modest intervention in support of the currencies within the narrow EMS band. The Italian lira, buoyed by relatively high interest rates in Italy, was fluctuating within the wider limits available to that currency to trade slightly above the 2¼ percent intervention limits of the others.

During February, however, the currency relationships came under increasing pressure, as speculation grew that a realignment might occur soon after early-March elections in France and Germany. The mark and guilder became pinned to their upper intervention points. The French franc moved along with the mark until March 7, when the French franc was permitted to drop to its lower intervention point. By this time, other currencies, too, had come under pressure. The Danish and Irish currencies fell to the bottom of the EMS band, and the Italian lira traversed the whole width of the narrow band to trade about 2 percent below it. To defend the Belgian franc, the Belgian National Bank raised official interest rates by 2½ percentage points, effective March 9,

Table 5

United States Treasury Securities, Foreign Currency Denominated

In millions of dollars equivalent; issues (+) or redemptions (−)

Issues	Amount of commitments July 1, 1982	1982 III	1982 IV	1983 I	1983 II	1983 July	Amount of commitments July 31, 1983
Public series:							
Germany	3,171.3	−1,231.9	−664.1	-0-	−667.9	−607.3	-0-
Switzerland	458.5	-0-	-0-	−458.5	-0-	-0-	-0-
Total	3,629.8	−1,231.9	−664.1	−458.5	−667.9	−607.3	-0-

Data are on a value-date basis. Because of rounding, figures may not add to totals.

Table 6

Net Profits (+) or Losses (−) on United States Treasury and Federal Reserve Current Foreign Exchange Operations

In millions of dollars

Period	Federal Reserve	United States Treasury: Exchange Stabilization Fund	United States Treasury: General account
Third quarter 1982	-0-	− 2.3	+89.4
Fourth quarter 1982	-0-	+ 4.3	+16.0
First quarter 1983	-0-	+ 0.5	+38.3
Second quarter 1983	-0-	+ 17.0	+58.1
July 1983	-0-	-0-	+70.1
Valuation profits and losses on outstanding assets and liabilities as of July 31, 1983	−803.3	−850.8	-0-

Data are on a value-date basis.

and then on March 14 the authorities significantly tightened exchange controls, particularly affecting commercial leads and lags. Meanwhile, a sudden and sharp increase in short-term Euro-French franc interest rates effectively curtailed speculation by nonresidents selling the French franc short.

In response to these developments, the focus of speculative activity shifted toward those currencies expected to be revalued. Bidding for marks and guilders quickly intensified against both dollars and other non-EMS currencies, with the result that the upward pressure on the stronger currencies lent support to the EMS as a group against the dollar. The central banks in Germany and the Netherlands took advantage of the strength of their currencies, as well as the improvement in their current accounts and in their price performance, to lower interest rates and thereby to lend support to their domestic economies. By March 18, the Netherlands Bank dropped its official lending rates in two stages for a total of 1 percentage point, and the Bundesbank lowered its official interest rates that day by 1 percentage point as well. As a result of these and earlier declines in interest rates, short-term market rates had eased in the two countries to their lowest levels since early 1979. Dutch interest rates had declined even more rapidly than German rates over the preceding year and were as much as 1 percentage point below those for comparable maturities in Germany.

Meanwhile, the EMS central banks intervened heavily, both in EMS currencies and in dollars. In fact, total EMS intervention in the six weeks through March 18 considerably exceeded that for any comparable period since the inception of the currency arrangement. Countries whose currencies were under the heaviest pressure suffered sizable reserve losses and established large debtor positions in the European Fund for Monetary Cooperation (FECOM), while Germany had the opposite experience.

On March 21 the seventh realignment became effective. Four currencies were revalued—the mark by 5.5 percent, the guilder by 3.5 percent, the Danish krone by 2.5 percent, and the Belgian franc by 1.5 percent—and three were devalued—the French franc and the lira by 2.5 percent and the Irish pound by 3.5 percent. In effect, these changes left the trade-weighted values of the Danish krone and the Belgian franc about unchanged and offset an earlier appreciation of the Irish pound against sterling, leaving that currency at about its 1982 level overall. Pursuant to the realignment, the French government indicated it would adopt austerity measures to restore external equilibrium.

Immediately after the realignment, speculative positions were reversed and commercial leads and lags were unwound. These reflows out of marks and guilders helped drag the entire EMS down *vis-à-vis* non-EMS currencies, with the result that several of the devalued currencies hit new lows against the dollar. Within the EMS, however, the reflows pushed the French, Irish, and Danish currencies all close to the top and the Italian lira moved well above the narrow band. With the mark and guilder now at the lower limit of the new band, most participating central banks had an opportunity to reconstitute reserves and reduce FECOM debt, most of which was repaid by end-April.

As the reflows proceeded, policy adjustments were possible in a number of countries which could then catch up with the generalized decline in interest rates. The authorities in Italy, Belgium, Denmark, and Ireland permitted an easing in domestic interest rates, confirmed in most cases by cuts in official lending rates. Among the largest declines were those in Belgium, where the central bank lowered its lending rates by 5 percentage points in four steps, and in Denmark, where the central bank lowered its discount rate twice for a total of 2½ percentage points. In addition, foreign exchange controls were relaxed in Belgium and Denmark. The Belgian authorities removed one of the restrictions imposed prior to the realignment requiring Belgian enterprises to convert promptly foreign currency receipts from current account transactions. The Danish authorities eased some long-standing exchange restrictions on capital transactions. By contrast, the German and Dutch authorities stemmed the earlier downtrend in their interest rates. In fact, market rates in the Netherlands backed up sharply to levels above those in Germany. Then, effective May 3, the Netherlands Bank validated part of the increase by raising its discount rate by 1 percentage point back to the level that had prevailed at the start of the six-month period.

Following these actions, the Belgian franc and Danish krone eased in the EMS toward the bottom and the middle, respectively, while the guilder edged up toward the middle. But the other currencies were little changed during the four and a half months after the March realignment, with the German mark staying close to its lower intervention point against either the French franc or the Irish pound at the top. The adjustments in currency relationships that did occur took place without strain through end-July, the continued improvement in trade accounts and inflation figures lending credibility to the 1982 austerity programs in both Belgium and Denmark. Against the dollar, however, the EMS currencies as a group moved lower, closing the six-month period under review down 7 to 14 percent on balance. For the EMS countries as a whole, foreign currency reserves changed little on balance over the period. Within the group, however, reserves of Italy, France, and to a lesser degree Belgium rose while those of Germany and the Netherlands declined.

Canadian dollar

Early in 1983, the Canadian economy was just beginning to emerge from recession. For Canada the drop in output had been deeper than for most other industrialized countries and the unemployment rate was still near its peak of 12.8 percent. In addition, the downturn in inflation had come

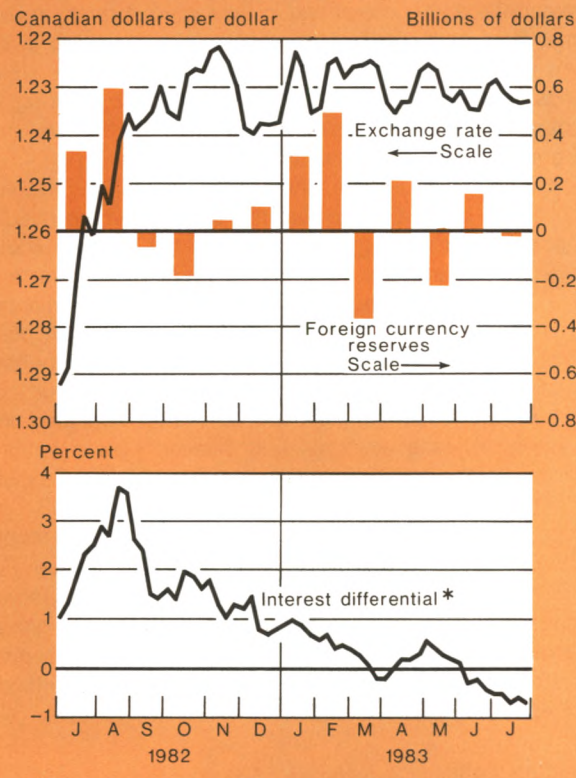
later than for most countries, with the annual rate of increase for the consumer price index edging just below double-digit levels by the turn of the year.

Although the severity of the adjustments taking place in Canada had given rise to an active debate over the appropriate priorities for economic policy, the Canadian authorities remained committed to the need to promote cost and price stability. A public-sector wage and price restraint program had been implemented. Fiscal policy remained cautious. Initiatives by the government during the winter to boost employment and to stimulate investment had been matched largely by cuts in planned expenditures elsewhere, although the financing requirements of both the federal and provincial governments had increased mainly for cyclical reasons. In addition, monetary policy continued to be aimed at exerting continuous downward pressure on inflation to provide a basis for sustained economic growth. In the conduct of this policy, the Bank of Canada had announced in November 1982 that it was withdrawing the target range for the expansion of the specific monetary aggregate, M-1, since the aggregate's relationship to interest rates and total spending was no longer sufficiently reliable. In the meantime, the monetary authorities indicated they would look at other financial and economic variables, including the value of the Canadian dollar.

Chart 9

Canada

Movements in exchange rate, official foreign currency reserves, and interest differential



* Canadian finance paper minus Eurodollars. Weekly averages of daily rates.

See exchange rate footnote on Chart 3.

Against this background, the Canadian dollar held comparatively steady against the U.S. dollar during the six-month period under review, fluctuating generally within a 2 percent band around Can.$1.2300, a level to which it had recovered during the fall of 1982. In effect, it also rose on balance against most other currencies.

From the beginning of the six-month period, the Canadian dollar drew support from a marked improvement in Canada's current account position that had become evident in 1982. A sharp drop of imports, reflecting the slowdown in Canada's domestic economy, together with a modest expansion in exports, had combined during 1982 to swing the current account into significant surplus for the first time in more than a decade. Trade figures early in the year suggested that Canada's net export position was strong enough to hold on to an overall current account surplus for the first quarter of 1983. At the same time there were a number of conversions by Canadian residents of funds borrowed in markets abroad where interest rates were lower than in Canada.

As a result, the Canadian dollar rose on balance through early March and fluctuated to a high of Can.$1.2210. The Canadian authorities, after having taken advantage of opportunities prior to the period to rebuild their foreign currency reserves to U.S.$2.9 billion, continued on balance to add to reserves. In addition, short-term interest rates eased during February and then held generally steady during most of March even as rates for comparable maturities in U.S. dollars temporarily firmed. As a result, Canada's traditionally favorable interest rate gap narrowed through most of March and, at the three-month maturity, actually turned negative for several days around the quarter end.

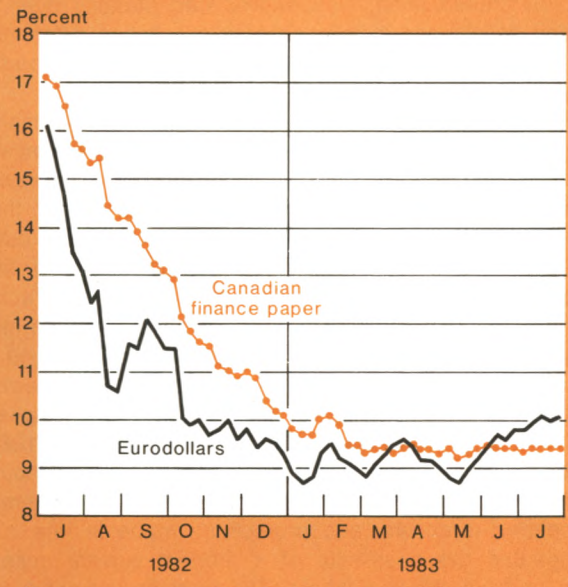
Early in April, sentiment toward the Canadian dollar briefly became more cautious. With the erosion of Canada's normal interest rate differential and the domestic economy still operating far below capacity, market participants came to question whether the Canadian authorities would allow interest rates to back up if U.S. rates were to continue to rise. In addition, there was uncertainty about the stance of fiscal policy to emerge from the budget, which was to be announced after midmonth, in view of the continuing pressures for stimulus and talk within the government of the need to create jobs.

In the event, the Bank of Canada restrained the liquidity

Chart 10

Interest Rates in Canada and the Eurodollar Market

Three-month maturities*



*Weekly averages of daily rates.

positions of Canadian banks, and short-term interest rates moved up slightly from late-March levels. In the meantime, U.S. interest rates resumed a downward course so that interest rate differentials came back in favor of the Canadian dollar. In addition, the government's announcement of its budget for the 1983-84 fiscal year was well received by the business community and the exchange markets generally. It did include a Can.$4.8 billion medium-term recovery program to spur investments and to promote jobs, largely over the next two years. But the market was impressed by provisions that would offset most of the cost of the program, albeit with a delay, including a temporary increase in the federal sales tax in subsequent years when the economy is expected to be more robust. Following this announcement, the Canadian dollar moved off its mid-April low near Can.$1.2400.

By late in the second quarter, the economic situation in Canada was clearly improving. Inflation was dropping steadily, with the year-on-year rate of increase in the consumer price index down to 5.4 percent by May and major wage settlements providing for the smallest increases in four years. The current account balance remained in surplus, bolstered by strong demand for Canada's exports of agricultural products and automotive parts. These favorable developments occurred at the same time that the domestic economy was rebounding strongly, spurred by consumption and housing. By late June, forecasters were revising upward their growth projection for the current year. In this climate, talk circulated in the exchange markets that foreign investment inflows into Canada had picked up.

Under these circumstances, Canadian interest rates did not match the prolonged advance of U.S. interest rates after mid-May. Indeed, short-term interest differentials turned negative for the Canadian currency again by early June and widened progressively through end-July. Nevertheless, the Canadian dollar held up better than other currencies against the dollar, as the U.S. currency strengthened across the board during June and July. The Canadian dollar was sufficiently strong that the spot rate eased only modestly from its early-May levels to close the six-month period under review at Can.$1.2330, up slightly from the beginning of the period. During this period, the Bank of Canada added to foreign currency reserves, which rose U.S.$300 million over the six-month period to the relatively high level of U.S.$3.2 billion.

Mexican peso

By February, Mexico's external financial crisis, which developed in 1982, was at a major turning point. On the one hand, a number of actions had been taken to arrest further deterioration in Mexico's financial position. The newly elected de la Madrid government had begun to implement a stringent austerity program designed to redress the external imbalance, to curtail inflation, and to reduce sharply the huge government deficit. In December, the IMF had approved an extended fund facility for Mexico. Negotiations were proceeding, although incomplete, with foreign banks on a $5 billion jumbo loan to help ease immediate liquidity strains and to cover the expected 1983 current account deficit. The rate of domestic economic activity had slowed, and the large current account deficit had begun to decline.

On the other hand, major problems and uncertainties remained. Inflation continued at around 100 percent per annum, clouding prospects for a deceleration of wages sufficient to break the wage-price spiral. Large spending cuts, needed to bring the public-sector deficit down from 17 percent of GNP in 1982, had only just begun to materialize. Although public-sector interest payments were current, a program had not yet been agreed upon for restructuring these debts. Meanwhile, no proposals had been made to deal with accumulated arrears that had developed in private-sector external debt service and import payments.

Reflecting the progress already achieved, the Mexican peso was trading steadily in early February in the offshore

interbank market at Mex.$148.50, close to the onshore "free market" rate established late in 1982 as part of a move to relax exchange controls. But soon thereafter uncertainty deepened and the peso, while remaining at Mex.$147.90 in the onshore "free market", declined to about Mex.$171 in offshore interbank trading. The drop in world spot oil prices threatened to force OPEC to reduce oil prices, a move that would lead Mexico to follow suit, weakening the outlook for Mexico's oil export earnings. About the same time, progress stalled on the $5 billion bank financing. During February, the Bank of Mexico drew down the final amounts available on the $1.85 billion joint BIS-U.S. swap facility. In this connection, Mexico received $44.3 million from the Treasury and $25.8 million from the Federal Reserve. In addition, the Federal Reserve renewed until end-February the outstanding balance of $373 million on the regular Federal Reserve-Bank of Mexico swap facility, originally drawn in August 1982. The swap was then repaid on February 28.

Beginning in late February, several important issues began moving toward resolution. The $5 billion jumbo loan agreement became a certainty on February 27, and $433.7 million in bridge financing was arranged for disbursement ahead of the signing of the jumbo loan in early March and the initial drawing under the jumbo agreement. The Mexican authorities announced the first of five schemes to deal with short-term private-sector foreign credits, the foreign currency to be delivered later when available. This marked the first concrete step by the authorities on principal amounts of private-sector debt. Shortly thereafter, OPEC reached agreement on a new pricing and production structure, and prices of Mexican oil exports were lowered by $2.75 per barrel in line with the OPEC agreement. PEMEX oil shipments and earnings rebounded quickly, which, together with funds becoming available from the jumbo credit, eased the immediate strain on Mexican liquidity. In early May, the IMF informed the commercial bank group advising Mexico on its external debts that the country had come within the IMF's first-quarter limit on the current account deficit, despite the shortfall in oil revenues. In fact, Mexico had a current account surplus in the first quarter, due mainly to severely depressed imports. In this environment, the peso strengthened in the offshore interbank market from late March into early May.

For the remainder of the period under review, the peso traded firmly in the offshore interbank market close to the rate in the Mexican "free market". The latter remained unchanged at Mex.$147.90 from January 24 through June 21 and was adjusted higher twice to Mex.$147.60 at the end of the period. The "controlled rate", established along with the "free rate" for foreign debt, trade, and other eligible transactions, was depreciated steadily over the period as planned to take account of inflation differentials *vis-à-vis* Mexico's major trading partners. It stood at Mex.$123.83 at end-July.

The steadiness of the peso reflected growing market perception that the government's adjustment program was on track and that Mexico's liquidity position was improving. Early in May, for the first time in more than a year, there were market reports that private capital transferred out of Mexico earlier was beginning to move back. Later in May, the IMF released the second extended fund facility tranche of $325 million, which was used to make an initial payment on the joint BIS-U.S. swap facility. And, on June 22, official creditors signed a multilateral agreement to reschedule interest arrears and medium- and long-term principal payments falling due through the end of 1983.

More important was evidence of gains in areas thought to be most intractable. The current account improvement exceeded forecasts, and projections made in late June suggested the possibility of a modest current account surplus for 1983 as a whole. The government deficit had been reduced even more sharply than planned. In late July, the Bank of Mexico said it would soon begin disbursement under the private-sector short-term debt schemes set up in the spring and would announce later in the summer a scheme to deal with medium- and longer term private credits. Significant progress was also made in the area of wages and inflation. Agreements in the spring wage negotiations limited increases to 15 percent, far below the 50 percent requested by union leaders to restore lost purchasing power. Reflecting the moderation in wages and increasing slack in the Mexican economy, the rate of increase in consumer prices dropped from about 10 percent per month at the turn of the year to less than 4 percent in June. Thus, in major areas the Mexican adjustment program appeared to be well ahead of the schedule set eight months earlier. After the close of the period, on August 23, the Bank of Mexico repaid all remaining amounts due at maturity on the joint BIS-U.S. swap facility.

Subscriptions to the *Quarterly Review* are free. Multiple copies in reasonable quantities are available to selected organizations for educational purposes. Single and multiple copies for United States and for other Western Hemisphere subscribers are sent via third- and fourth-class mail, respectively. All copies for Eastern Hemisphere subscribers are airlifted to Amsterdam, from where they are forwarded via surface mail. Multiple-copy subscriptions are packaged in envelopes containing no more than ten copies each.

Quarterly Review subscribers also receive the Bank's Annual Report.

Library of Congress Catalog Card Number: 77-646559

Federal Reserve Bank of New York
33 Liberty Street
New York, N.Y. 10045

Return Postage Guaranteed