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The Quarterly Review is published by the Research and Statistics Function of the Federal Reserve Bank of New York. Remarks of E. GERALD CORRIGAN, President of the Bank, on the economy and some banking issues begin on page 1. Among the members of the staff who contributed to this issue are JOHN WENNINGER (on M1 revisions and cones versus tunnels, page 7); A. STEVEN ENGLANDER (on commodity prices in the current recovery, page 11); DANIEL E. CHALL (on New York City's "skills mismatch", page 20); and ROBERT T. McGEE (on explaining the differences among state unemployment rates, page 28).

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A Look at the Economy and Some Banking Issues

I am pleased to have the opportunity to meet with you today. For most of the past forty years, my distinguished predecessors at the New York Fed have shared with this audience their views on the important economic and financial issues of the day. With that tradition firmly in mind, it seems fitting that this is my first public address as president of the New York Fed.

In my remarks today, I want to first turn my attention to the economic situation and then to comment on a number of issues relating to banking, including the pressing—indeed urgent—need for banking legislation. I will conclude with a few brief observations on the role of the Federal Reserve Bank of New York as I assume the Presidency of that institution.

Even today—after three years of modest rates of advance in wages and prices and after a deep and protracted recession—the legacies of inflation are still with us as, for example, in the inflation premium which remains embedded in long-term interest rates.

Judgments about the economic situation require some perspective; a sense not only of where we are, but also a sense of from where we have come and where we are going. It seems to me that such a perspective—a capacity and a willingness to take that longer and more penetrating look—is particularly important in the current setting.

Remarks of E. Gerald Corrigan, President, Federal Reserve Bank of New York, before the 57th Annual Mid-Winter Meeting of the New York State Bankers Association on Thursday, January 31, 1985.

It was not all that long ago that the United States' economy and the economy of much of the world was being ravaged by rapidly escalating inflation. That process of mounting inflation took its slow, insidious but inevitable toll on the most basic structural elements of our economy. Even today—after three years of modest rates of advance in wages and prices and after a deep and protracted recession—the legacies of that earlier period of inflation are still with us as, for example, in the inflation premium which remains embedded in long-term interest rates.

Structural improvements in the underpinnings of our economy suggest that non-inflationary growth can be extended, not just for a few more quarters but well into the future.

Fortunately, there is little evidence at hand to suggest that a resurgence of inflationary pressures is likely in the near term, even as we enter the twenty-seventh month of the current economic expansion. In fact, most indicators of overall economic activity are encouraging. The pace of real economic growth here in the United States seems to have regained an appropriate degree of momentum following the pause in growth in the summer and fall; inflationary pressures, as mentioned earlier, seem well contained at the moment; and, most of our markets for financial instruments as well as for goods and services seem to be performing relatively well with few signs of the congestion or bottlenecks that can often be symptoms of trouble down the road. There are, of course, some exceptions to this encouraging picture and I will comment on them shortly.

While some of the gains in economic performance over the past few years have been importantly influenced by cyclical forces, I believe one can now assert with some conviction that these improvements also reflect structural or more permanent improvements in the underpinnings of our economy. Let me cite a few examples:

- prompted in part by foreign competition, there is widespread evidence that businesses of all sizes have become serious about the business of business. Cost containment, productivity enhancement, and improved quality are the rule, not the exception.
- there is increasing evidence of a determination to strengthen balance sheets in ways that, among other things, take account of the reality of a less inflationary environment.
- inventory management and control techniques and attitudes have been strengthened.
- consumers seem far more ready to search out lower prices and higher quality.
- in a wide arena of activities—from trucking to banking—we seem more prepared to let markets do more and governments do less.
- restraint on wage and salary increases has out-paced even once optimistic expectations, especially in industries where structural adjustments are taking place.
- finally, there are now straws in the wind—and perhaps more—to suggest that we are ready at last to tackle the harsh realities of truly massive structural budget deficits.

Some suggest a policy of aggressive monetary expansion would somehow yield real growth well in excess of what most observers expect for 1985. While I can readily appreciate the attraction of this point of view, I believe that such a strategy is simply too risky.

If I am correct in postulating that these forces suggest that structural improvements in our economy are taking place, they also suggest that non-inflationary growth can be extended, not just for a few more quarters but well into the future. Seizing that opportunity is obviously in our interest. But I am prepared to argue that, if we do not seize it, the costs could be high indeed. I say that for several reasons:

- unemployment is still high, particularly considering the phase of the current economic expansion.
- several key sectors of our domestic economy have not shared in the current recovery and thus are especially vulnerable to any generalized falloff in economic activity.
- protectionist attitudes are on the rise.
- credit quality problems remain very much with us, again, especially considering the fact that we are

in the third year of a business expansion.

- the debt burdened less developed countries remain vitally dependent on non-inflationary growth in the United States and in the world economy more generally.
- finally, and perhaps most importantly, a falloff in economic activity would aggravate the budget deficit and erode the political will to reduce its “structural” component.

It may not be easy to finance even moderate rates of economic growth unless some actions of size and substance to reduce the deficit are forthcoming in the near term.

Given the premium on growth arising from these factors, and the apparently subdued inflationary pressures in the economy, some might suggest the case for a policy of aggressive monetary expansion that would somehow yield real growth well in excess of what most observers expect for 1985. While I can readily appreciate the attraction of this point of view, I believe that such a strategy is simply too risky.

For one thing, let us not lose sight of the fact that we cannot fine tune the economy. Therefore there can be no assurance that—even now—aggressively expansionary monetary policies would translate into higher real economic growth rather than higher prices. Let us also not lose sight of the fact that by historical standards the current rate of inflation is by no means low. In fact even modest rises in the rate of inflation would quickly put us back in the danger zone for both inflation and inflationary expectations.

Beyond that, we must recognize that there are constraints on the capacity of the economy to grow at rates well in excess of its long-range trend rate of expansion—especially as the process of expansion matures. For the moment those constraints are not so much a matter of plant or even labor market capacity. Rather, the constraint that we must be sensitive to is the capacity of our credit markets to support rapid growth. Vigorous expansion in the private economy in 1985 or beyond would, of course, have to be financed in a setting in which the flow of internally generated funds is already ebbing and will probably ebb further. Unfortunately—given the budget deficit—there is precious little room to finance private expansion in the near term. Indeed, it may not be easy to finance even moderate rates of economic growth unless some actions of size and substance to reduce the deficit are forthcoming in the near term.

Let me put the current credit market situation in some perspective. At the risk of an oversimplification and using well rounded numbers, our current situation is one in which savings flows amount to about nine and one-half percent of the Gross National Product. Of that total, about seven

percentage points is being generated domestically and about two and one-half percentage points—or more than 25 percent of the total—represent foreign savings.

The demands for those savings flows start, of course, with the government itself since the government is always first in line at the credit window. Unfortunately, in the current setting, the financing requirements associated with the operations of the Federal Government are almost five percent of GNP. Thus, the Federal government is consuming about 50 percent of the available saving flows. Keeping in mind that fully 25 percent of those flows are coming from abroad, the hard, if not brutal, fact of the matter is that there simply is not much room to finance new cars, new houses and new factories.

Given the budget deficit and our dependence on foreign capital flows, the balance in our credit markets is very delicate. Any marked increase in domestic private credit demands or sudden diminution of foreign savings flows could put significant upward pressures on interest rates. While superficially it would seem the Fed could “solve” this problem by pumping out more money, this so-called “solution” would be fleeting. The markets would very quickly see the inflationary implications in this, with the result being more rapid inflation and the very pressures on interest rates we sought to avoid. Stated differently, the case for a basic and continuing discipline in the money and credit creation process—a discipline sprinkled with an appropriate dose of flexibility and common sense—is in no way diminished by our current situation—if anything, that case becomes more compelling.

In considering the work yet to be done, nothing looms larger than the need to reduce the budget deficit. And, no single thing we can do holds the promise of greater rewards for both the internal and external sides of our economy.

At the same time, the case for prompt and significant action to reduce the budget deficit becomes all the more urgent, particularly in the face of our staggering trade and current account deficits. The importance of effecting an orderly adjustment in those external deficits cannot be overstated. While the need for orderly adjustment is clear and pressing, solutions do not come easily particularly since sudden and sharp adjustments—say, in the exchange rate—would not be accompanied by correspondingly sharp improvements in the trade and current account deficits in the short run.

Thus, what we need is an adjustment process that gets at both the supply and demand sides of the credit market situation we face. That is, an approach that starts with reducing the budget deficit, thereby relieving—in an orderly

way—pressures on interest rates and exchange rates. This, over time, will work in the direction of curbing our external trade deficit while at the same time reducing our dependency on foreign savings—an adjustment which becomes workable in a context in which government financing requirements are reduced. More rapid economic growth in the other industrialized countries of the world can complement that process of adjustment. Not by accident, the prospect for achieving that more rapid growth abroad will be enhanced in a setting in which there will be less need for other countries to raise their interest rates to guard against inflation and capital outflows induced by weak currencies. It is, of course, easy to suggest this approach but it is not so easy to put it into action. And, there are no assurances that all the pieces will fall neatly into place. Yet, it seems clear to me that such an approach is the only reasonable alternative available to us.

In stressing the importance of reducing our budgetary deficits I know I run the considerable risk of beating the proverbial dead horse—although, in this case the horse is all too lively. Surely, it will be pointed out that need to reduce the deficit is widely, if not universally accepted. And, the point can also be made that there seems to be some considerable momentum behind the deficit reduction effort at this time. I accept both of those points, but I am not yet persuaded that we fully appreciate the consequences of a failure to act and to act now.

To come full circle, we find ourselves in a situation in which our economy is doing rather well and in a situation in which many of the building blocks for sustained prosperity seem to be fitting into place. Yet, with all that promise and potential we have some weak spots, some risks, and some work to be done. In considering the work yet to be done, nothing looms larger than the need to reduce the budget deficit. And, no single thing we can do holds the promise of greater rewards for both the internal and external sides of our economy. In such a setting and in a context in which we maintain that basic discipline in monetary policy of which I spoke earlier, that elusive goal of a growing yet stable economy and a correspondingly strong currency will be within reach.

There is a need for a greater element of prior restraint in the credit decision-making process.

Few in the private sector have as large a role or as much at stake in achieving that happy vision as do our bankers. On the one hand, the credit decisions you make and the discipline you bring to the credit decision-making process have an important bearing on the way in which the economic and financial system functions and on the psychology of the marketplace. And, on the other hand, if weakness

and instability do develop in the economy, those weaknesses will ultimately wash up on your doorstep in the form of performance problems in your own institutions.

Because of this, the case for higher standards of prudence and caution is inescapable.

The tasks you face in balancing the essential goals of growth and profitability with the dictates of prudence and caution were never easy. But, in the intensely-competitive and progressively less regulated marketplace of 1985 and beyond, that task becomes all the more difficult. For this reason there is a need for a greater element of prior restraint in the credit decision-making process. By "prior restraint" I mean a renewed willingness to forego that extra percentage point of growth or to forego reaching out for that one last loan, only to have that loan show up in the non-performing list several quarters later. The market—working through the price or interest rate mechanism—can ultimately provide that discipline. The danger, however, is that absent an appropriate degree of prior restraint, the discipline growing out of higher debt servicing costs will reflect itself in distressed borrowers, past-due loans or even charge-offs.

A strong economy and a renewed measure of prior restraint in the credit-making process are important in their own right. But they also complement the need for a continuation of the already substantial progress that has been made in strengthening bank balance sheets; perhaps I should extend that comment to cover "off-balance" sheets since that's where so much of the activity is these days.

Amidst all the problems in the financial system and all the headlines of the past year or two, I often have the sense that the story which goes untold or unheard is the progress that has been made in strengthening bank balance sheets. That strengthening is well reflected, for example, in higher capital positions and in more conservative attitudes toward loan loss provisions, reserves and charge-offs.

Bank supervisors are confronting a very difficult balancing act: namely, how to strengthen the bank supervisory process while at the same time making it more flexible.

If that is a fair assessment, I think it also is fair to suggest that there is a lingering question of whether that process has gone far enough and whether it will stick. One thing, however, is clear. The nature of banking has changed: when a loan, in effect, includes proceeds to pay the interest on a project for several years after the project is finished or when funding and trading practices entail around-the-clock operation in numerous instruments and numerous markets,

the potential for surprises is greater. Because of this, the case for higher standards of prudence and caution is inescapable. The supervisory authorities have a role to play in fostering those higher standards as, for example, in calling for higher levels of capital and in calling for more emphasis on assessing and controlling risk in new lending, financing and funding instruments.

Yet, there is a point beyond which the supervisor cannot and should not go. For example, no good purpose would be served by supervisory policies which might have the effect of grinding the credit-making machinery to a halt. Similarly, no good purpose would be served by a supervisory process that becomes so enmeshed in the details of bank management that it undermines the incentives of individual institutions or the marketplace more generally. For these reasons I want to stress that responsibility for ensuring that the balance sheet rebuilding process goes far enough and does, in fact, stick is first and foremost the task of bank managers and not bank supervisors, although we both have a role in that process.

As things now stand, the understandable compulsion of institutions to seize every loophole in law and regulation to achieve some strategic business purpose threatens to reach a point of *de facto* restructuring of the financial marketplace such that even the most basic of doctrines—such as the separation of banking and commerce—may be irreversibly breached.

Bank supervisors are also confronting a very difficult balancing act: namely, how to strengthen the bank supervisory process while at the same time making it more flexible. Achieving those dual goals of a stronger yet more flexible, supervisory apparatus will not be easy, especially in the current environment. I would like to be able to offer to you a blueprint as to how we can best achieve those objectives but I'm afraid I don't as yet have one. As we go about the process of trying to create that blueprint, however, several things strike me as being very important, including the following:

- bank supervisors cannot be expected to pinpoint all future problems;
- the emphasis should be on supervision, not regulation;
- we cannot allow the legitimate demand for disclosure and market discipline to overwhelm the integrity of the process whereby banks and their supervisors can freely go about the business of solving problems;
- more attention needs to be focused on the goals of the supervisory process rather than on the legitimate and alluring organizational questions relating to the structure of banking and financial regulation.

These are important issues to you, to us, and to the public at large. It is precisely because they are so important that efforts aimed at reform be well conceived and well executed. Here, too, bankers and bank supervisors have a strong common interest.

There are activities—some high on the “wish list” of individual institutions—which raise difficult questions concerning possible conflicts of interest, risk and ultimately ownership and control of banks.

Bankers and bank supervisors also have a common interest in the pressing—indeed urgent—need for the Congress to enact broad based new banking legislation. The case for legislative reform is powerful, resting as it does on the grounds of efficiency and competitive equity. But it is also compelling because of other, even broader aspects, of sound public policy. As things now stand, the understandable compulsion of institutions to seize every loophole in law and regulation to achieve some strategic business purpose threatens to reach a point of *de facto* restructuring of the financial marketplace such that even the most basic of doctrines—such as the separation of banking and commerce—may be irreversibly breached.

While the case for closing loopholes is clear, the case for a progressive easing of restrictions on bank product and geographic diversification is equally important. I, as an individual, and the Federal Reserve more generally, have repeatedly spoken out—in Congressional testimony and elsewhere—in favor of authorizing banks to enter into a range of new activities in ways that are consistent both with safety and soundness needs and with preserving the impartiality of the credit decision-making process. For example, bank participation in the underwriting and distribution of revenue bonds, mortgage-backed securities, the distribution of mutual funds, as well as broker or agency activities in insurance and real estate can be readily accommodated in ways that pose no major problems from a public policy perspective. However, there are other activities—some high on the “wish list” of individual institutions—which raise more difficult questions concerning possible conflicts of interest, risk and ultimately ownership and control of banks. The characteristics of these activities—which would include the underwriting and dealing in corporate securities, some forms of insurance underwriting and real estate investment—would seem to me, at the very least, to call for a “go slow” approach. That is, an approach which is based on a very careful analysis of the issues and one which provides not only safeguards to protect against risk and conflict of interest concerns, but also one which places tight initial limits on the size and scope of these activities, at least until we are all more comfortable

with our abilities to contain the potential problems they pose.

Yet, even that approach—with its limits and safeguards—raises important policy questions, not the least of which relates to how to best dovetail the legitimate Federal concerns arising, for example, out of Federal deposit insurance and lender-of-last-resort functions, with the time-honored traditions of the dual banking system. Some form of Federal pre-eminence arising from safety and soundness considerations seems necessary but we must be careful to insure that such override does not frustrate the valuable and constructive innovations that we have witnessed at the state level.

Another area of contention relates to geographic expansion or interstate banking. With appropriate limitations and safeguards, I am an advocate of interstate banking. And, as you know better than I, interstate banking is, in many respects, a reality. Yet, in many areas of this country few issues can make the blood boil faster than can the prospect of some large New York, Chicago, or California bank acquiring control of local banking organizations. The concerns that underlie those attitudes go back to the very origins of this country. Because they are so deeply rooted, those concerns will not fade easily. For that reason, it seems to me that a building block approach may be the answer to interstate banking. There are several vehicles which could be used to achieve that purpose. However, from my vantage point, the specific vehicle chosen is not as important as the end result, which should be some specific date when all Federal geographic restrictions on interstate banking except for those based on safety and soundness or the need to avoid excessive concentration, should be lifted. From my vantage point, the sooner that “specific date” the better but, here too, we must all keep in mind what is realistic.

The ultimate strength of the Bank rests in its roots being planted firmly in the community. That means a free flow of dialogue on the pressing issues of the day must be high on our agenda.

To summarize, our Federal banking laws are in desperate need of reform and we need to get on with that task promptly. New legislation must incorporate contemporary definitions of banks and thrifts. It should also include a progressive extension of bank products into some or all of those areas I mentioned earlier, as well as a measured Federal response to intense pressures for regional and ultimately nationwide banking. Within that framework there are also opportunities to clarify legislative issues relating to the role of the states and to bring about some important simplifications in the supervisory process, particularly as it applies to bank holding company applications.

Hopefully, a legislative remedy along these lines is within reach, even if the process of legislative compromise produces a bill which does not entail all the items on everybody's wish list. For my part, I believe failure to act this year could render the prospects for orderly and progressive change moot, with results that would make none of us very happy. So, I would urge all market participants—banks and non-banks alike—to resist what I would consider shortsighted temptations to expend energies exploiting the present glaring loopholes in our banking laws rather than pressing for forward looking legislation.

Let me now conclude with a few words about the Federal Reserve Bank of New York. The Bank is perhaps a bit mysterious and certainly is imposing even in its physical characteristics. Yet, there cannot be—either to us or to you—an imaginary fence around that grand Florentine structure on Liberty Street. The ultimate strength of the bank rests in its roots being planted firmly in the community. That means a free flow of dialogue on the pressing issues of the

day must be high on our agenda. Consistent with that, the New York Fed is commencing a number of efforts which reflect our natural interest in the marketplace that surrounds us. These initiatives include a major study of factors driving bank profitability and equity performance in banking. They also include a comprehensive review of new financial instruments and markets with emphasis on the implications of these developments for risk to individual institutions and to markets generally. Efforts such as these will require a considerable amount of dialogue between us and with other market participants.

Dialogue does not guarantee consensus, but it does help to ensure that as we go about discharging our public responsibilities with the sense of purpose and integrity which should be expected of the central bank, we will have the most informed judgments possible. We approach our tasks with an open door and an open mind, and at the same time with a steady eye on the public interest, as we are given the wisdom to see it.

M1 Revisions, and Cones versus Tunnels

In presenting the 1985 monetary targets to Congress this February, Chairman Volcker noted that the conventional cone charts for the monetary aggregates—which are very narrow early in the year but widen as the year progresses—could lead the financial markets to attach policy importance early in the year to short-run movements in the monetary aggregates that in fact have no significance. Chairman Volcker's prepared statement presented the 1985 targets both in terms of the conventional cones and in terms of tunnels or bands drawn with a constant width throughout the year.¹ (Chart 1 compares the 1984 and 1985 M1 targets as cones and tunnels.) As this note shows, the monthly M1 growth rates have been subject to a large degree of revision, particularly over the first four months of the year. For that reason it might be especially useful for market participants to view the annual M1 target as a tunnel rather than as a cone.² The starting point will be

a look at the revisions to M1 for 1984 that the Board of Governors staff recently released.

Monthly M1 growth was quite erratic in 1984. On a first-published basis, M1 was quite strong in January, May, June, and December, but very weak (or declining) in April, July, August, and October. For the year as a whole, monthly M1 growth, as first published, averaged 5.1 percent with a standard deviation of six percentage points. In February, the Board staff released revisions to the M1 series for 1984. As the monthly series now stands, the average growth rate is 5.7 percent in 1984 with a standard deviation of 5.2 percentage points. The growth rates for the four strongest months were all reduced and similarly, for the months M1 was weak or declining, the growth rates increased. This, of course, contributed largely to the reduction of the standard deviation.

Was the volatility in M1 growth for 1984, as well as the reduction in volatility resulting from the revisions, out of line with past experience? The answer to this question is not straightforward. Comparing this year's M1 volatility with earlier years is difficult because the statistics for earlier years have been revised more than once. Each February, the Board staff revises not only the previous year's M1 growth rates, but the statistics for prior years as well. Nevertheless, some idea of how much the monthly M1 growth rates have been revised over time can be obtained by comparing the first-published with the current series. The volatility of M1 growth in 1984 on a first-published basis can also be compared with earlier years by using a series of first-published growth rates compiled for several years.

¹Any pictorial presentation of the annual target ranges, of course, is arbitrary. For more detail, see Chairman Volcker's statement before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, February 20, 1985, pages 22-23 and Attachment IV.

²Even if revisions and random variation were spread evenly over the year, a case could be made that tunnels would be more useful than cones because they would not give increased emphasis in the early part of the year to such developments. Over the first four months of the year, the average difference between the upper or lower limits of the tunnel chart and the upper or lower limits of the cone chart is \$5.9 billion. Through April, M1 could grow 2.1 percentage points more rapidly than the upper limit of the cone chart and still not exceed the upper limit of the tunnel chart, or M1 could grow 2.1 percentage points more slowly than the lower limit of the cone chart and still not be below the lower limit of the tunnel chart.

On a first-published basis, the standard deviation of the monthly M1 growth rates in 1984 was somewhat less than the average standard deviation over the thirteen-year period from 1972-84 (Table 1, second column). Four of the previous twelve years, however, did have less volatility than 1984 had on a first-published basis. 1980 stands out as the year with the most volatility in M1 growth—a year marked by the credit restraint program, a short but sharp recession, and wide fluctuations in interest rates.

Subsequent revisions to the first-published M1 series have generally reduced the volatility of the monthly M1

growth rates by about 30 percent (Table 1, column 4). On average, the standard deviation of the current series is 1.7 percentage points less than that of the first-published series (2.0 percentage points if 1980 is excluded). For some years the difference has been as much as 4 percentage points (Table 1, third column). Again 1980 stands out. It is the only year for which subsequent revisions have increased the volatility of M1, illustrating how difficult it was to sort out seasonal from other influences on M1 growth that year.³

Subsequent revisions change the pattern of the monthly M1 growth rates basically for two reasons:

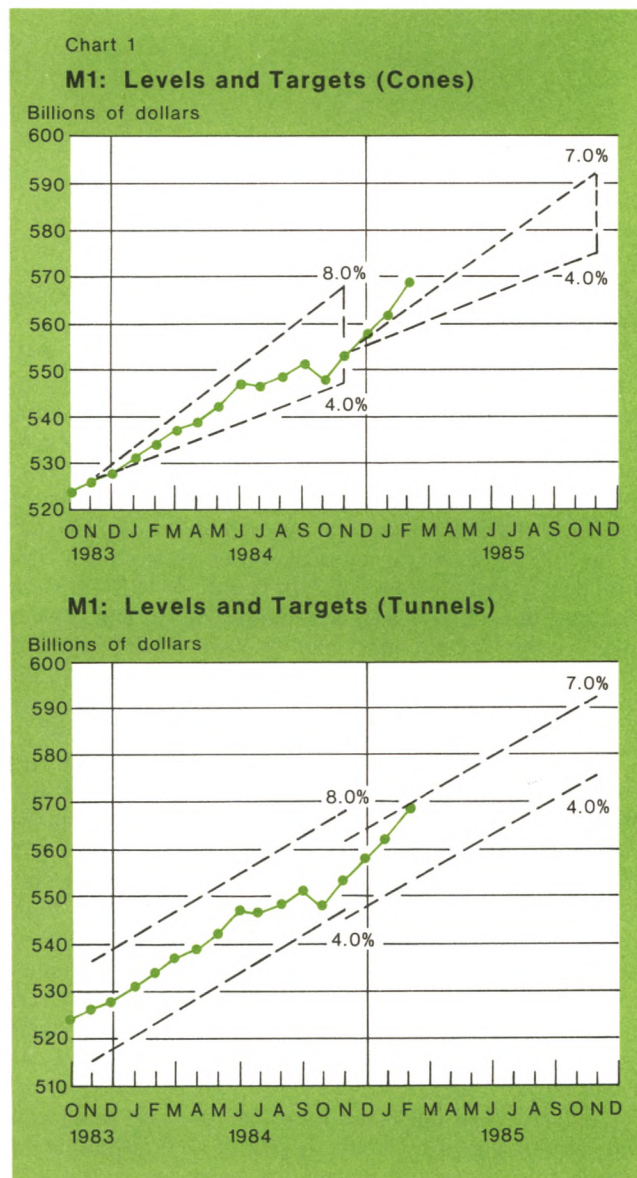
- Revisions to the seasonal factors which change the pattern of M1 growth within the year, but do not change the average growth rate for the year as a whole.
- Benchmark revisions which incorporate additional data not available each week or month that can affect the average growth rate for the year as a whole, as well as the pattern of M1 growth within the year.⁴

A general idea of how important these two factors have been overall can be obtained by looking at the correlation between the current series and the first-published and also by looking at the average absolute difference between the two series. The R^2 obtained from regressing current M1 growth on first published is fairly high (0.67) over the 1972-83 period (Table 2, column 1). The correlation for individual years, however, can vary considerably. For example, for 1980 the R^2 is very high at 0.98, but for 1974 there is virtually no correlation between the first-published statistics and the current M1 series. In general, more recent years tend to have higher correlation than earlier years. What this suggests is that the more times a given year has been revised, the less the current pattern of M1 growth within a given year resembles the first-published pattern.

On average, over the 1972-83 period, the monthly M1 growth rates have been revised by about 3.0 percentage points (Table 2, column 2). Compared with this, the 1.7 percentage-point revision for 1984 looks rather small. But this is only the first time 1984 has been revised. Subsequent revisions could make the difference considerably larger. For example, last year when 1983 was revised for the first time, the monthly growth rates changed by an

³For more detail, David A. Pierce and William P. Cleveland, "Intervention Analysis and Seasonal Adjustment of the Monetary Aggregates: The 1980 Credit Control Experience", Special Studies Paper 163, Federal Reserve Board, May 1981.

⁴Definitional changes, such as occurred in 1979 when interest-bearing checking deposits (for example, NOW accounts) were included in M1, also can affect how the current series compares with the first published.



average of 3.2 percentage points. After this year's revision, the average absolute difference has increased to 4.9 percentage points. Such large changes raise questions about how much importance should be attached to a single month's M1 growth when it is first released.⁵

In addition to looking at the size of the revisions for individual years, it is also possible to look at the magnitude of the revisions for each month across years. Some months have been revised considerably more than the average of 3.0 percentage points (Chart 2). In particular, January, February, and April (which occur early in the year when the spread between the upper and lower limits of a cone chart is very narrow) have been revised by the greatest amounts and are between 4.4 and 5.2 percentage points different, on average, from the values that were first published. It is not clear why January and February have been revised so much, although changes over time in the speed and timing of the post-Christmas rundown in money balances could play a role. The revisions to April probably reflect the difficulties associated with adjusting for the timing and varying amounts of tax payments.⁶

In any event, these months have extremely large seasonal variation to begin with (Chart 3). For each month the average difference between the seasonally adjusted and not seasonally adjusted monthly M1 growth rates provides a rough measure of underlying seasonal variability for which the seasonal factors adjust. The not seasonally adjusted rundown in money balances over the January-February period (the seasonal factors have added, on average, 26.5 percentage points to M1 growth over those two months) is the sharpest for any two-month period, and the 56 percentage point seasonal swing (from subtracting to adding) from April to May is the largest for any consecutive two months. It is not surprising, given the magnitude of these seasonal movements, that January, February, and April would have the largest revisions over time.

Thus far the revisions have been examined in terms of averages for years or across the months of the year. The magnitudes of the revisions in terms of particular months are also quite impressive. January 1973 was first published as zero; it now stands at 11.9 percent. November 1978 was first released as -4.6 percent; currently it is 6.0 percent. April 1983 has changed over time from -3.1 percent to 8.2 percent, while May of that year has decreased from 26.3 percent to 15.9 percent.

⁵Even three-month growth rates are revised considerably. The average absolute difference between the current and first-published series is 2.1 percentage points over the 1972-83 period.

⁶For more detail on this and other aspects of M1 seasonal factor revisions, see Timothy Q. Cook, "The 1983 M1 Seasonal Factor Revisions: An Illustration of Problems That May Arise in Using Seasonally Adjusted Data for Policy Purposes", *Economic Review*, Federal Reserve Bank of Richmond, March/April 1984.

That is, even double-digit revisions to the monthly M1 growth rates are possible.

In general, it appears that months which deviate the furthest from the mean when first published are revised the most. To illustrate this, the differences between the

Table 1

Standard Deviations of Monthly M1 Growth, 1972-84

Year	(1) Current	(2) First-published	(3)=(1)-(2) Difference	(4) Difference as a percent of first-published
1972	3.4	4.7	-1.3	-27.7
1973	4.5	5.1	-0.6	-11.8
1974	1.7	4.5	-2.8	-62.2
1975	6.1	8.0	-1.9	-23.8
1976	3.9	5.4	-1.5	-27.8
1977	2.6	6.6	-4.0	-60.6
1978	3.8	6.7	-2.9	-43.3
1979	5.5	6.9	-1.4	-20.3
1980	12.7	10.7	+2.0	+18.7
1981	6.8	8.1	-1.3	-16.0
1982	8.8	9.3	-0.5	-5.4
1983	3.8	9.0	-5.2	-57.8
1984	5.2	6.0	-0.8	-13.3
Average	5.3	7.0	-1.7	-27.0
(Excluding 1980)	(4.7)	(6.7)	(-2.0)	(-30.8)

Table 2

Comparison of Current M1 Series with First-Published

(Monthly Growth Rates, 1972-84)

Year	(1) R ² , current on first-published (monthly)	(2) Average absolute difference
1972	0.38	3.1
1973	0.33	3.1
1974	0.08	3.3
1975	0.76	2.8
1976	0.65	2.7
1977	0.27	3.9
1978	0.52	4.2
1979	0.71	2.8
1980	0.98	2.1
1981	0.81	2.8
1982	0.94	1.9
1983	0.71	4.9
Entire period	0.67	3.1
1984	0.82	1.7

Chart 2

Average Absolute Difference Between Current and First-Published Monthly M1 Growth Rates

1972-84

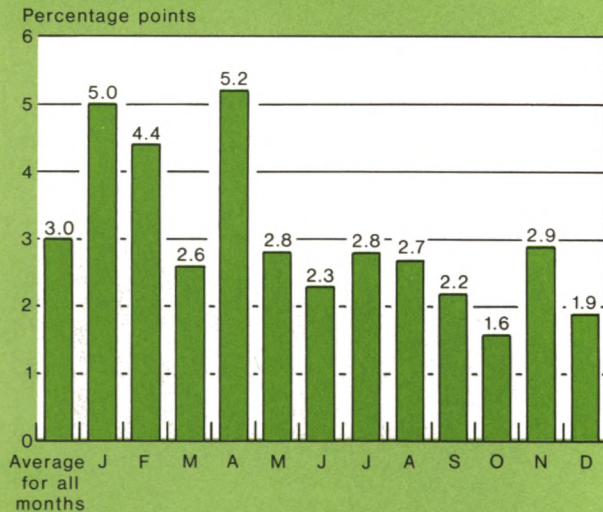


Chart 3

Average Difference Between Seasonally Adjusted and Not Seasonally Adjusted Monthly M1 Growth

1972-84

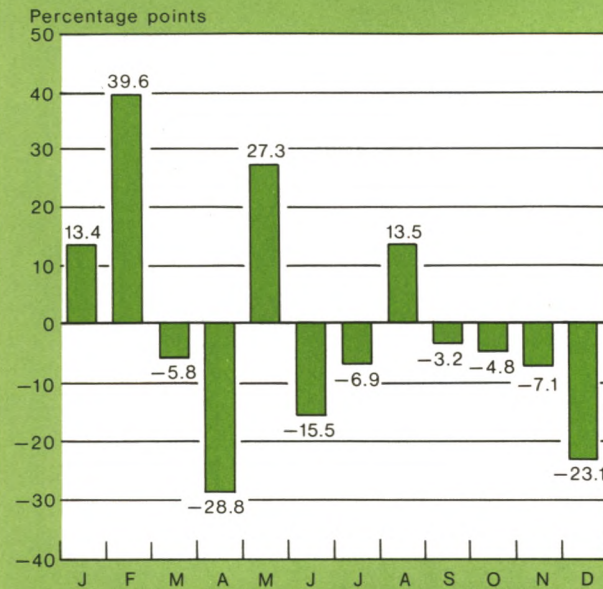


Table 3

Average Absolute Revisions to M1 Growth Rates, 1972-84

Number of standard deviations of first-published M1 growth rates from mean	Number of observations (percent of total)	Average absolute revision
+ or - 0 to 1/2	58 (37.2)	2.4
+ or - 1/2 to 1	47 (30.1)	2.7
+ or - 1 to 1 1/2	30 (19.2)	3.5
+ or - 1 1/2 to 2	13 (8.3)	4.8
+ or - 2 or more	8 (5.1)	5.6
Total	156 (100)	3.0

current and first-published monthly M1 growth rates were classified according to how many standard deviations the first-published statistics were from the mean for the total period of 6.2 percent (Table 3). As the number of standard deviations from the mean increases, the number of observations falls (as would be expected statistically), and the average size of the revisions increases from 2.4 percentage points to about 5.6 percentage points. In other words, first-published "outliers" have been revised by about twice as much as first-published growth rates that were near the mean.

Thus, whether viewed in terms of the large revisions to "outliers" or in terms of the 3.0 percentage point average absolute revision over 1972-84, the lesson seems to be that monthly M1 growth rates are quite unreliable as first published. They are likely to look considerably more smooth and to change substantially as they are revised over time.⁷ Since this applies in particular to three of the first four months of the year, when the spread between the upper and lower limits of a cone chart are very narrow, it appears that the tunnel approach might reduce the tendency in the financial markets to attach policy importance to short-run movements in M1.

⁷For a more technical presentation of these results, see David A. Pierce, "Trend and Noise in the Monetary Aggregates", *New Monetary Control Procedures*, Volume II, Board of Governors of the Federal Reserve System, February 1981.

John Wenninger

Commodity Prices in the Current Recovery

In the first eight quarters of this expansion non-oil commodity prices rose only about 6½ percent according to the International Monetary Fund (IMF) commodity price index, less than one quarter of the average gain over comparable expansion periods in the 1970s. In the second half of 1984 these prices actually fell 6½ percent, an unusually large decline so early in an expansion. This price weakness has generated some concern that commodity price behavior has shifted relative to the past and may be signalling the onset of deflation in both finished goods prices as well as in primary commodity prices.

This article argues that non-oil commodity price movements have, in fact, been consistent with the behavior of their underlying determinants, despite the volatility of commodity prices throughout this expansion. Specifically, the factors behind the relative overall weakness in this expansion are lower inflation in the industrial countries, and, to a lesser extent, the stronger dollar.¹ For the second half of 1984, several of the same factors, but in much different proportions, lie behind the fall in commodity prices. The steep rise in the dollar and unexpectedly good overall agricultural harvests provided the main impetus to the decline, with slowing output growth and continued declines in inflation adding some downward pressure. Together these short-term economic and agricultural factors explain almost all of this expansion's movements in commodity prices, leaving

little basis from which to conclude that commodity prices are either signalling or causing any impending deflation.

In what follows below, the recent behavior of commodity prices is first placed into a cyclical and longer term context. Then follows a detailed analysis of the determinants of commodity price behavior in this expansion. The article closes with a brief discussion of the medium-term price prospects for a few important commodities.

Recent commodity price movements in perspective

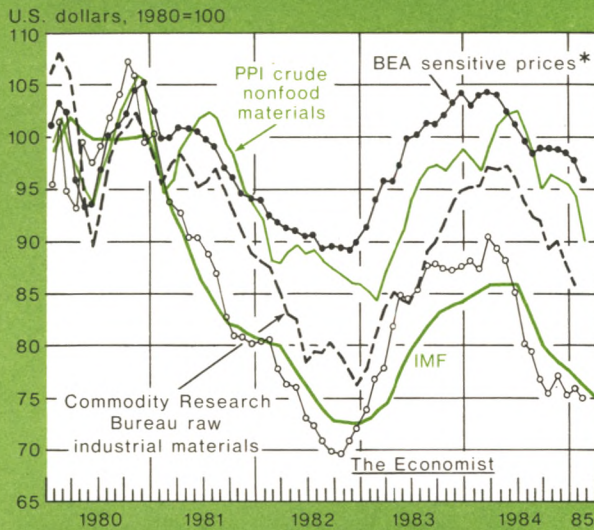
Although the composition and weighting of commodity price indexes varies greatly, all indexes with prices measured in U.S. dollars have displayed similar movements since 1980 (Chart 1).² The severe 1981-82 recession lowered commodity prices 10-35 percent, but all or most of those declines were reversed during the initial stages of the current expansion. By mid-1984 all the indexes began to decline sharply once again, with prices 5-15 percent lower at the end of 1984 than at the peak reached during this expansion. The food, beverages, metals, and non-food agricultural materials subcategories all peaked close to or during the first half of 1984. Although commodity prices have tended to move broadly together in the past, their recent correspondence—both across the various indexes and their internal subcategories—has been stronger than usual.

¹More stable coffee production in this expansion is a major factor in the indexes which include coffee prices. Severe frost damage led to a 400 percent increase in coffee prices from 1975-I to 1977-I.

²Appendix 2 presents the composition and weighting of the indexes. The discussion in the text focuses primarily on the IMF commodity price index which is a broadly based index of internationally priced commodities, weighted by their share in non-oil commodity exports by 98 non-industrialized countries.

Chart 1

Commodity Price Indexes



*Constructed from the Bureau of Economic Analysis's changes in producer prices for 28 sensitive crude and intermediate materials.

Sources: United States Department of Commerce, Bureau of Economic Analysis; United States Department of Labor, Bureau of Labor Statistics; Commodity Research Bureau; International Monetary Fund; and *The Economist*.

The attention given to commodity prices has focused mainly on their post 1980 weakness and, particularly, on their plunge in the second half of 1984. Such a narrow focus ignores three factors which must be balanced against this picture of apparent weakness. First, prior to the decline in mid- and late-1984, commodity prices in this expansion had risen at a nearly record pace. Second, in both nominal and real terms, 1980 commodity prices (against which most comparisons are made) were unusually high relative to post-war trends. Third, much of the weakness in commodity prices, particularly in 1984, disappears when the indexes are adjusted for the appreciation of the dollar.

The features which distinguish commodity price behavior in this expansion include not only the weakness in the second half of 1984, but also the strength shown in the first stages of this expansion. During the initial five quarters, commodity prices grew extremely rapidly, even when compared to expansions in the 1970s (Table 1). With record or near-record gains relative to earlier expansions, some analysts at the beginning of 1984 were even predicting a strong

resurgence of inflation at least partially on this basis. The gains were also broadly distributed across commodity categories. Unlike the 1975 expansion, for example, both food and nonfood items advanced rapidly.

Over the next few quarters, however, commodity prices fell sharply enough to reduce the cyclical gains to well below 1970s levels (Table 2). Such drops had occasionally occurred in one index or another in earlier expansions, but never as early and never in all simultaneously. Thus, both the breadth and the steepness of the 1984 decline were unusual.

The drop in commodity prices has been even more pronounced in real terms, notwithstanding widespread disinflation in industrial countries. Relative to the overall U.S. Producer Price Index (PPI), for example, the IMF index is about 35 percent lower than in 1980 as compared to about 25 percent in nominal terms (Chart 2).

But a longer-term perspective suggests that the post-1980 declines may be restoring more normal relationships between the prices of commodities and those of manufactured goods. Much attention was paid to the energy price rise of the 1970s, but other commodity prices also rose very sharply in the 1970s and remained high in historical terms through 1980 (Chart 3).³ In fact, between 1948 and the early 1970s real commodity prices had been drifting downward by about 10 percent per decade, just as manufactured goods prices were drifting downward relative to the overall prices of goods and services. Compared to these earlier trends, current real commodity prices—at levels of about 80 percent of the 1961-68 average—do not appear very weak.

Of course, this is not to say that the precipitous drop in real prices since 1980 has not had significant effects on primary commodity producers, or that one should give undue weight to extrapolations which are based on only twenty years or so of data. Judgments about the 'natural' or equilibrium levels of real prices are highly speculative. However, one would expect that a persistent period of relatively high real prices would induce medium- and long-term efforts at capacity expansion among producers and efforts at conservation among consumers. And with such forces already in place, commodity prices were likely to have been especially sensitive to the fall in demand caused by the weak growth of the early 1980s.⁴ Thus, one can argue that some correction to the high real prices of the 1970s was probably inevitable.

³The World Bank's price index of 33 non-energy commodities is used as it is the longest series available on internationally-traded commodities.

⁴Correspondingly, if weak prices persist for another few years, there is some risk of an upsurge in prices should demand conditions suddenly tighten in the late 1980s.

Table 1

Commodity Prices Five Quarters into Expansion

(Trough = 100)

Index	1958-II	1961-I	1970-IV	Expansion Beginning	
				1975-I	1982-IV
IMF					
All commodities	99.1	98.3	106.0	103.8	119.6
Non-food, non-beverage commodities.....	106.3	98.6	106.7	112.2	114.6
Commodity Research Bureau					
All commodities	101.7	96.7	103.0	101.1	122.6
Raw industrial materials	114.4	97.3	105.0	112.0	123.7
BEA sensitive materials prices	109.5	99.3	109.3	113.9	115.2
BEA producer prices for 28 sensitive crude and intermediate materials.....	110.2	100.3	115.2	120.3	116.4

Sources: International Monetary Fund, Commodity Research Bureau, Department of Commerce, Bureau of Economic Analysis.

Table 2

Commodity Prices Eight Quarters into Expansion

(Trough = 100)

Index	1958-II	1961-I	1970-IV	Expansion Beginning	
				1975-I	1982-IV
IMF					
All commodities	100.6	101.0	121.8	134.5	106.4
Non-food, non-beverage commodities.....	112.2	98.2	119.3	122.9	103.8
Commodity Research Bureau					
All commodities	100.7	95.4	116.6	105.5	116.1
Raw industrial materials	113.9	95.1	121.5	119.5	114.9
BEA sensitive materials prices	107.0	98.4	120.2	121.6	110.2
BEA producer prices for 28 sensitive crude and intermediate materials.....	105.7	99.8	127.2	131.4	111.4

Sources: International Monetary Fund, Commodity Research Bureau, Department of Commerce, Bureau of Economic Analysis.

Table 3

Commodity Price Increases During First Two Years of Expansion: 1982 vs. 1975

(Percent change)

Increase in IMF commodity price index	First eight quarters of		Difference
	1982 expansion	1975 expansion	
Actual	6.4	34.5	-28.1
Predicted	6.6	35.5	-28.9
Slowing attributable to: [*] (In percent)			
Inflation			44
Value of the dollar			18
Interest rates			1
Coffee production			56
Industrial production growth			-20

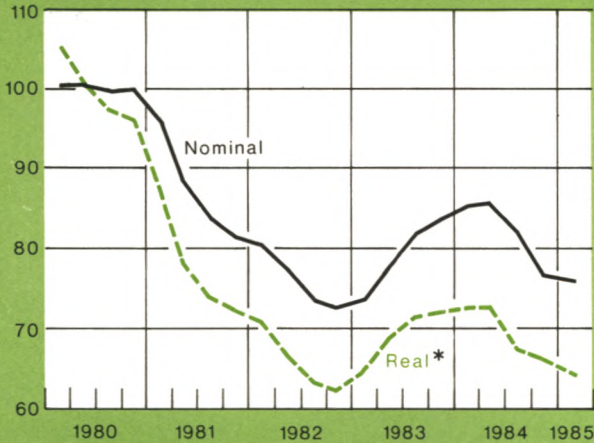
^{*}Positive value indicates contribution to slowing of commodity price growth.

Chart 2

Real and Nominal Commodity Prices

IMF Commodity Price Index

U.S. dollars, 1980=100



*Commodity prices deflated by United States Producer Price Index.

Sources: International Monetary Fund and United States Department of Labor, Bureau of Labor Statistics.

The weakness in commodity prices is also much less apparent when prices are measured in Special Drawing Right (SDR) terms or in foreign currencies, rather than in U.S. dollars (Chart 4).⁵ In SDR terms and in European currencies commodity prices are currently higher than in 1980. The 8.3 percent drop in US dollar terms over 1984 translates into only a 2.5 percent decline in SDR terms. In most European currencies, commodity prices actually increased in 1984 and, in the cases of the pound and other weak currencies, significantly so. Even with respect to the yen, which has been the strongest major currency relative to the U.S. dollar since 1980, the recent decline in commodity prices has been comparatively modest.

Explaining recent commodity price behavior

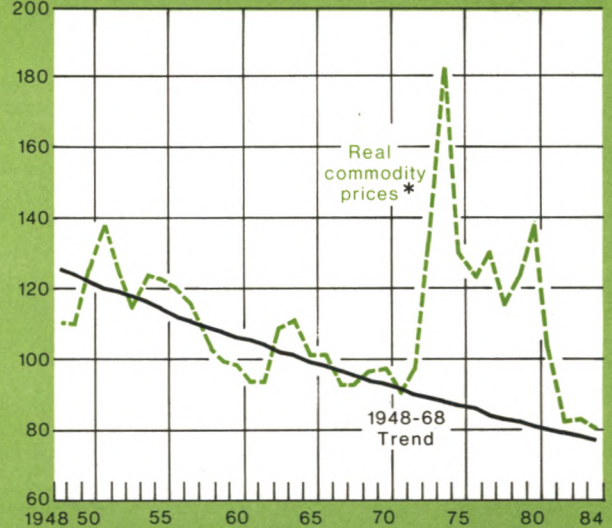
Fluctuations in economic activity, exchange rates, and general price inflation are obviously key factors in determining commodity prices, but their quantitative significance in explaining recent movements remains a question. Given the past relationship between these

⁵The Special Drawing Right is a basket of currencies with the relative weight of each currency based on the country's exports of goods and services. The composition and weights are adjusted periodically. Since 1981, the currencies and weights are the U.S. dollar (42 percent), Deutsche mark (19 percent), French franc (13 percent), Japanese yen (13 percent), and British pound (13 percent).

Chart 3

Post War Trends in Real Commodity Prices

U.S. dollars, 1961-68 average=100



*World Bank commodity price index deflated by United States Producer Price Index.

Sources: International Bank for Reconstruction and Development and United States Department of Labor, Bureau of Labor Statistics.

economic factors and commodity prices, should we have expected either the weak gains in this expansion relative to the 1975 expansion or the 1984 fall in commodity prices? The analysis presented here leads to the conclusion that the historical relationship has actually held up very well, and that commodity price movements are largely explained by the fact that their determinants, economic and agricultural, have shown wide swings in this expansion.

Econometric analysis

The effects of output growth, inflation and the exchange rate on five commodity price indexes were assessed with econometric equations (Appendix 1).⁶ In general, the results were very similar for each index and suggest that commodity price growth speeds up by just over two percentage points for every percentage point gain in either industrial production or inflation in the six major industrial countries (United States, Japan, West Ger-

⁶The specification is adapted from one developed at the IMF. See Ke-Young Chu and Thomas K. Morrison, "The 1981-82 Recession and Non-Oil Primary Commodity Prices", IMF Staff Papers, March 1984.

many, France, Italy, United Kingdom). A one percent increase in the trade-weighted value of the U.S. dollar will lower commodity prices by about one percent. Direct effects from interest rate movements are much smaller and seem to have little influence. Several of the estimates also explicitly include a variable to reflect fluctuations in coffee production, which can at times exert major effects.⁷ In general, all these findings are in line with earlier studies.

These results are used to study price gains in the first two years of both the 1975 and the current expansions.⁸ As might be expected, given the overall volatility of commodity prices, the predictive ability of the equation can be erratic on a quarterly basis. However, it tracks surprisingly well over longer spans (Table 3). Indeed, the increases in commodity prices in the first two years of both expansions are almost entirely explained by output growth, inflation, the exchange rate, and coffee production.

Coffee production differentiates the two most significantly, accounting for about half of this expansion's weakness relative to 1975.⁹ But even after eliminating the effect of coffee, this expansion's gains are still about 14 percent lower than those in 1975. The rapid drop in industrial country inflation accounts for most of the remaining weakness. The value of the dollar explains a relatively small proportion of the overall differences between the two expansions because the dollar also appreciated on average during the first eight quarters of the 1975 expansion. As against this weakness, slightly stronger average industrial production growth in the major six industrial countries has propped up commodity prices to a mild extent.

The picture changes greatly when we consider the second half of 1984. The preeminent factor explaining the decline in prices in the second half of 1984 is the exchange rate, which appreciated about 10 percent (Table 4). Slowing industrial production growth and inflation also contributed some downward impetus, but less than half as much as the exchange rate.¹⁰

In order to focus on the economic determinants of

⁷Four of the indexes include coffee prices, with weights varying from 10 percent to 19 percent of the total index. Both coffee production and prices are highly volatile.

⁸In particular, growth in the IMF commodity price index was projected in-sample for the 1975 expansion and out-of-sample for the 1982 expansion. The conclusions hold in general for the other indexes.

⁹The coffee factor may also be capturing other weather effects to some small degree. In Brazil, for example, the wheat, soybean, corn, and cocoa regions are adjacent to the coffee growing region.

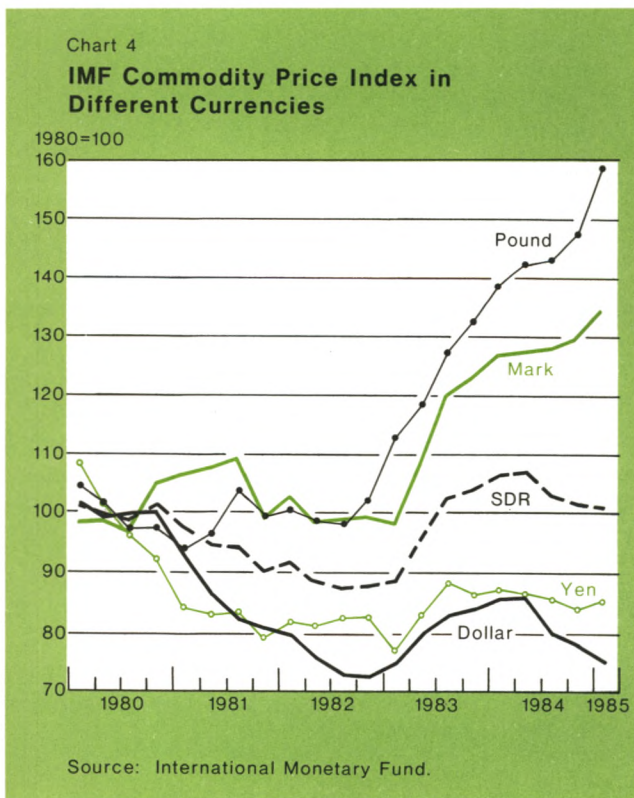
¹⁰Coffee prices weakened in the second half of 1984, although Table 4 suggests that they should have been increasing. Eliminating this coffee effect would remove slightly less than half the discrepancy between the actual price drop of 20 percent and the predicted drop of 10 percent.

commodity price movements, the same out-of-sample projections were done for the IMF commodity price index excluding food and beverages (Table 4, column 2). The results confirm the basic consistency of 1984 behavior with past experience. The projected decline of 14.7 percent in the second half of 1984 is very close to the actual value. As with the all-commodities index, the sharp rise in the dollar accounted for the bulk of the price decline.

Other Factors

The fact that the equation for all commodities underpredicts the late 1984 weakness in prices much more than does the equation for commodities excluding food and beverages hints strongly at another influence on commodity prices. Apart from coffee, food prices contributed an unexpectedly large downward impetus to overall commodity prices in the second half of 1984.

With the ending of the Payment-in-Kind (PIK) program and an anticipated return to normal weather conditions, analysts expected 1984 U.S. and world agricultural production to increase sharply. By May 1984 the United States Department of Agriculture was predicting a very good year by 1970s standards, and certainly good when compared with 1983 levels (Table 5). And, as the U.S.



harvest came in and revised estimates of foreign production became available, production estimates rose sharply. Coming on top of an already wide gap between expected production and consumption, this new information added downward pressure to prices for these commodities. Indeed, the relationship between price movements and production estimates is even closer than suggested by Table 5. Estimates of oilseed production were pushed up through the summer, the period during which oilseed prices slid fastest. Grain production estimates were revised slightly downward between May and August during which time prices were relatively stable. Only in the last few months of 1984 did the full extent of the production surge become clear, and it was in late 1984 that grain prices dropped sharply.

Agricultural production movements also help explain some of the movements in commodity prices earlier in this expansion. As markets recognized the production impact of the unexpectedly high PIK program sign up and the bad weather, prices soared in mid-1983,

pushing commodity prices up at near record rates. Toward the end of the year, good foreign harvests and the strong dollar sharply curtailed foreign demand and stabilized prices until information on the new crop year began to drive prices down.

Again, statistical analysis supports the argument that agricultural fluctuations were responsible for much of the rapid initial rise in commodity prices in this expansion. First, it is useful to note that, excluding food and beverages, commodity prices rose by less than 15 percent early in the expansion, as compared to almost 20 percent when they are included (Table 6). Second, when food and beverages are excluded, the observed behavior of commodity prices early in this expansion is very consistent with the out-of-sample projections from the econometric equation. In contrast, including food and beverages leads to a large underprediction of price growth, again pointing to these components as major factors in the unusually strong overall commodity price increases which were observed. Apart from this source,

Table 4

The Decline in Commodity Prices During the Second Half of 1984

(Percent change at annual rate)

	All commodities	All commodities excluding foods and beverages
Actual	-20.1	-15.6
Predicted	-9.5	-14.7
Slowing attributable to: [*] (In percent)		
Inflation	22	17
Value of the dollar	79	67
Interest rates	6	4
Coffee production	-31	†
Industrial production	24	11

^{*}Positive value indicates contribution to slowing of commodity price growth.

†Not included.

Table 5

World Production and Consumption of Agricultural Commodities

Commodity	1983/84		Production 1984/85		Consumption 1984/85
	Actual	May 1984 Estimate	January 1985 Estimate	January 1985 Estimate	
Grains	1486	1597	1613	1587	
Cotton	68	73	82	70	
Oilseeds	166	182	185	182 [*]	

Grains and oilseeds in million metric tons. Cotton in million 480 pound bales.

^{*}Production minus estimated change in stocks.

Source: United States Department of Agriculture.

the main upward impetus came from the rapid increase in industrial production, which more than offset the effects of the appreciation of the dollar during 1983.

This analysis indicates that the cyclical movements of commodity prices are readily explainable by short-run economic and agricultural fluctuations. However, the long-run prospects for commodity prices are probably determined by gradual movements in fundamentals which are not easily captured in the statistical approach used above. Thus, in assessing the outlook for commodity prices for any period beyond a few years, long-term factors should be integrated as far as possible.

The outlook for commodity prices

A slowing of the ascent of the dollar and somewhat faster growth in Europe would produce some moderate upward pressures on commodity prices over the short term. However, there are commodities whose long-term price prospects remain relatively weak. For example, the metals included in the various indexes tend to be heavily used in "smokestack" industries, which are in decline in many industrialized countries. The Bureau of Mines estimates that the trend growth of U.S. demand for the metals used as components in the various indexes is generally much lower than for the economy as a whole (Table 7). (The exceptions are zinc and aluminum.) In fact, consumption of the most heavily weighted items—tin, copper, and iron—is expected to fall in the medium term. The basic reason for this decline in demand is wider availability of lighter and cheaper substitutes. Plastic tubing, for example, is a substitute for copper pipes, fibre optics take the place of copper cable, and aluminum and plastic are replacing iron and tin.

Partially offsetting the long-term reduction in demand for these traditional metals is the growth in demand for more esoteric minerals used in preparing medicines (e.g., lithium), high grade metals (e.g., chromium), and so on. However, none of the major indexes includes any of these goods, as their value in international trade is small at present. Thus, it is difficult to assess the degree to which increasing demand for these metals is offsetting the diminishing demand for traditional metals.

Some sources of pressures on other individual commodity prices can be identified. Declining oil prices make synthetics (such as rayon, acrylic, and polyester) cheaper substitutes for wool and cotton. Similarly, polyester cord appears to be replacing natural fibers in many uses. To the extent that oil prices remain weak, there may be continued pressure on the prices of such

Table 6

Growth in Commodity Prices During First Five Quarters of Current Expansion

(In percent)

Growth	All commodities	All commodities excluding food and beverages
Actual	19.6	14.6
Predicted	12.0	12.7

Table 7

Expected Growth in U.S. Metal Consumption

(In percent)

Metal	Average annual change from 1979 to 1990
Aluminum	3.9
Copper	-0.9
Iron ore	-4.2
Iron and steel	-0.1
Lead	-1.4
Nickel	1.0
Tin	-2.4
Zinc	3.6

Source: United States Department of the Interior, Bureau of Mines, Mineral Commodity Summaries 1984, 1985.

commodities. Sugar prices have been hurt by worldwide chronic overproduction, dumping from protected markets, and competition from artificial sweeteners. In these cases, as with metals, one would expect some revival of prices with greater economic growth, but the amplitude of the response may be smaller than in the past.

Conclusion

This analysis suggests that the decline in commodity prices during the second half of 1984 should not be surprising, given the dollar's rise and the slowing of both inflation and economic activity in major industrial countries. Fluctuations in agricultural production were also significant in both the rapid climb in commodity prices in 1983, as well as the subsequent fall in 1984. Thus, while the low level of commodity prices has obviously imposed hardships on producers, there appears to be no evidence that commodity prices are moving any differently now relative to their underlying determinants than in the past, or that they are heralding the onset of deflation.

A. Steven Englander

Appendix 1: Econometric Estimation

The specification of Chu and Morrison was adapted and used to explain movements in five commodity price indexes. The indexes are broadly similar, but differ in composition, weighting and the markets at which prices are quoted. It is reassuring, therefore, that the basic results are robust across all the indexes (table). The basic specification is:

$$\text{PCOM} = a + b * \text{CIP2} + c * \text{CPPI} + d * \text{CEX} + e * \text{DINT} + f * \text{DCOF}$$

where:

PCOM is the annualized quarterly percent change in the commodity price index,

CIP2 is the annualized two quarter growth in weighted industrial production in the United States, Japan, West Germany, the United Kingdom, France, and Italy,

CPPI is the annualized weighted wholesale price inflation rate in these six countries,

CEX is the annualized percent change in the trade weighted U.S. dollar exchange rate,

DINT is the acceleration in interest rates (*i.e.*, the first difference of the change in the three month Eurodollar rate), lagged one quarter, and DCOF is the percent deviation from trend coffee production growth.

The estimation period was 1970-II to 1982-IV except for *The Economist* index whose estimation period began in 1976-II because of data availability. In general, the coefficients on industrial production growth and the exchange rate are the most stable, at about 2 and 1, respectively. The inflation effect is slightly more variable, but also appears to center at about 2. (Two-stage least squares estimation, using instruments for industrial country wholesale price inflation, gives very similar results.) The interest rate acceleration term is statistically significant only for the IMF indexes, but is quite stable across all indexes and in regressions on subcomponents of the indexes. The coffee effect is surprisingly strong, given that the variable is constructed by interpolating annual data.

Coefficients of Commodity Price Index Equations

Explanatory Variable	IMF	IMF ex food and beverages	The Economist	UNCTAD	World Bank
Industrial production growth (CIP2) ..	2.4*	2.5*	2.0†	2.1*	1.6*
Inflation (CPI)	2.1*	1.6*	2.2†	2.7*	4.4*
Exchange rate appreciation (CEX) ..	-0.9*	-1.1*	-0.8†	-1.1*	-1.0*
Interest rate acceleration (DINT)	-2.9†	-3.2†	-2.6	-2.0	-2.4
Coffee deviation (DCOF)	-0.8*	‡	-0.7†	-1.0*	-0.3
Constant	-10.7	-8.9	-8.8	-13.7	-26.0
Adjusted R ²	0.63	0.48	0.45	0.60	0.66
D.W.	2.1	1.45	2.4	2.2	2.3
Standard error	18.8	23.2	20.2	22.0	23.0

*Significant at 1 percent.

†Significant at 5 percent.

‡Not included.

Appendix 2: Commodity Weights as a Percent of Total Index

Components	IMF	The Economist	UNCTAD	World Bank	Commodity Research Bureau	BEA Sensitive Materials Prices	PPI-Crude Nonfood Materials
Foods & Beverages	49.6	48.8	50.0	58.3	40.5	0.0	0.0
Cereals	8.1	9.1	4.5	7.5	9.0	*	*
Meat	5.8	4.5	0.8	1.9	9.0	*	*
Sugar	6.6	5.9	4.2	10.9	4.5	*	*
Bananas	2.4	*	0.9	1.5	*	*	*
Orange juice	*	*	*	1.3	*	*	*
Pepper	*	*	0.3	*	*	*	*
Oils & oilseeds	8.5	11.3	25.0	8.6	13.5	*	*
Coffee	12.2	12.9	10.2	18.7	*	*	*
Cocoa	3.6	4.0	2.6	5.1	4.5	*	*
Tea	2.4	1.1	10.4	2.8	*	*	*
Non-food, Nonmetal							
Raw Materials	22.5	21.0	25.0	18.4	36.0	82.6	70.4
Cotton	7.7	4.1	8.1	5.1	4.5	6.7	8.8
Wool	6.4	3.8	0.8	*	4.5	0.4	*
Rubber	5.2	3.0	6.3	5.4	4.5	1.1	1.9
Hides	1.8	1.5	0.6	*	4.5	1.4	3.8
Jutes	0.9	0.1	0.4	0.3	4.5	0.1	*
Sisal	0.4	0.1	0.3	*	*	*	*
Timber & logs	*	7.1	8.4	4.8	*	63.6	15.1
Oils & oilseeds	*	1.3	*	*	*	*	*
Wastepaper	*	*	*	*	*	1.2	2.7
Sands & gravel	*	*	*	*	*	8.1	21.9
Tobacco	*	*	*	2.8	*	*	15.3
Potash	*	*	*	*	*	*	1.7
Print cloth	*	*	*	*	4.5	*	*
Burlap	*	*	*	*	4.5	*	*
Tallow	*	*	*	*	4.5	*	*
Rosin	*	*	*	*	4.5	*	*
Metals	27.9	30.0	25.0	23.3	22.5	17.4	29.6
Copper	13.6	9.8	8.3	7.8	4.5	3.8	7.4
Iron ore	5.8	*	5.2	4.1	4.5	9.5	5.8
Tin	3.1	2.4	3.0	3.5	4.5	*	*
Aluminum	2.8	10.5	3.3	2.3	*	2.7	3.6
Zinc	1.0	2.3	1.1	0.8	4.5	*	*
Nickel	0.8	3.3	*	0.7	*	*	*
Lead	0.8	2.0	0.5	0.8	4.5	*	*
Other non-ferrous	*	*	3.5	3.3	*	1.4	*
Iron and steel scrap	*	*	*	*	*	*	12.8

Prepared by Joann Martens, Federal Reserve Bank of New York.
*Not included.

New York City's "Skills Mismatch"

Even with the dramatic improvement in New York City's economy since 1977, many City residents with low levels of education remain unemployed or out of the workforce. Suburbanites, many of them well educated, appear to hold a growing share of the City's jobs. Many analysts believe these are fundamental labor force problems stemming from a "mismatch" between the skills held by City residents and those required by its available jobs.

Some of these observers have attributed the pattern largely to the decreasing size of the City's manufacturing sector and to deficiencies in its school system. From this "mismatch" model, many of them have concluded that the City's labor force problems should be attacked by creating manufacturing jobs and upgrading the City's schools.¹ But although the contraction of the manufacturing sector has clearly reduced the employment prospects of many less-educated City residents, tabulations from the 1980 Census and the 1983 Current Population Survey cast doubt on the efficacy of these recommendations and on how the "mismatch" model has been interpreted in their support.

Several pieces of evidence suggest that subsidizing manufacturing and upgrading the City's elementary and secondary schools might not successfully reduce the

City's "mismatch". First, manufacturing firms hire as many commuters (as a percentage of their workforce) as do firms in the services industries or those in the finance, insurance, and real estate (FIRE) sectors. Second, the declining job share of less-educated workers since 1980 cannot really be explained by changes in industrial composition, but rather reflects broad-based changes in every industrial category. Third, the relative severity of the City's "mismatch" problem does not stem from the particular employment practices of its firms. A much more direct cause is the City's above-average concentration of persons who never finished high school.

But simply improving the elementary and secondary schools may not substantially reduce the magnitude of the City's labor force problems. Relatively few of the City's high school dropouts were born in New York State; in fact, half of them were born outside the fifty states. This suggests that the educational shortcomings of the City's workforce may have been largely caused by problems in *other* school systems.

Nor would policies directed toward increasing manufacturing's share of total employment substantially reduce the imbalance. Nearly two-thirds of manufacturing jobs are held by persons with at least high school diplomas. So even if the City could *double* the manufacturing share of total employment the proportion of jobs for dropouts would not be increased dramatically.

The manufacturing decline and high school dropouts

Many observers have pointed to the massive decline of the manufacturing sector over the last two decades as

The author would like to thank Samuel Ehrenhalt, Emanuel Tobier, and Mark Willis for comments on earlier drafts. I am also grateful to Julie Rappaport for excellent research assistance. Any remaining errors are my own.

¹See, for example, the panel discussion about New York City's labor market problems in *The New York Times*, January 20, 1985, Section 4, page 6E.

justification for policies that encourage manufacturing in New York City. While the evidence presented here raises some doubts about how well these policies would address the "skills mismatch", the profound impact of the manufacturing deterioration on the City's economy is well known. Manufacturing employment fell by 43 percent between 1970 and 1984, in a steady slide little affected by national recessions or recoveries (Chart 1). For the first half of that period total employment fell continuously, until a surge in the finance, insurance, and real estate industries and in business-related services sparked a dramatic turnaround. Even so, employment in the City has grown since 1977 at only half the rate prevailing nationally. Much of this shortfall can be explained by the loss of manufacturing jobs.

Furthermore, New York City residents have had even slower job growth. Employment in New York City firms rose by 7 percent between 1977 and 1984, but the number of employed City residents grew by only 1 percent (Chart 2).² And Census data indicate that City firms hired more suburban residents between 1970 and 1980, despite a decline in the total City employment.

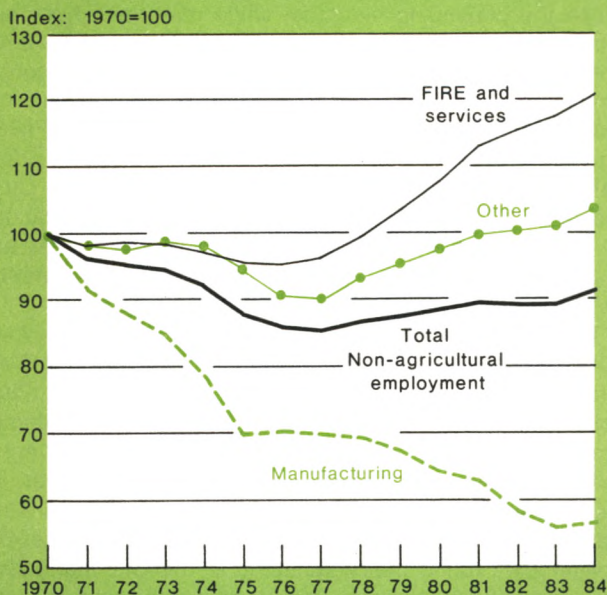
City residents without high school diplomas, moreover, continue to have a hard time finding work; less than a third of the City's high school dropouts (over the age of 25) held jobs in 1983. The huge job losses since 1970 in the manufacturing sector appear to have contributed to the employment problems of many unskilled New York City residents. Based on the educational composition of the workforce in 1980 (Chart 3), the loss of 100,000 manufacturing jobs reflected something on the order of 37,000 lost jobs for dropouts and 21,000 lost jobs for college graduates.³ In contrast, of the 300,000 jobs gained in the FIRE and services industries (gross of the declines in other sectors), probably only 42,000 new jobs went to dropouts, with nearly three times as many going to college graduates. On balance, then, about half of the 200,000 net job gains probably went to college graduates, but under 3 percent to dropouts.⁴ In other words, the large gains in the FIRE and services sectors probably created as many jobs for dropouts as were lost in manufacturing, but that group

²Analysis is based on 1983 benchmark data. Preliminary information from 1984 benchmark figures suggests slightly smaller gains for employed City residents.

³The industrial breakdowns are derived from the Public Use Microdata Sample from the 1980 Census (Box 1). In this and all following comparisons, "services" refers to business, repair, and professional services only. Personal, entertainment, and recreational services are omitted.

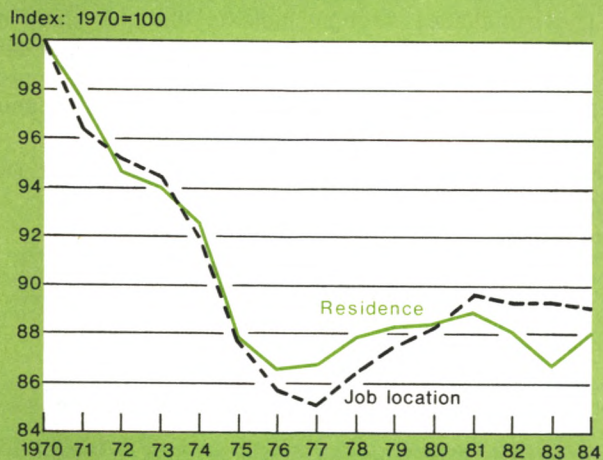
⁴Other industries not directly related to the manufacturing-to-FIRE and services shift accounted for a net job gain of about 35,000 over this period.

Chart 1
New York City Job Levels in Selected Industries



Source: New York State Department of Labor, Division of Research and Statistics.

Chart 2
New York City Employment
By job location and by residence



Sources: United States Department of Labor, Bureau of Labor Statistics and New York State Department of Labor, Division of Research and Statistics.

most likely received only a minimal share of the substantial overall net employment gains.⁵

Industrial shifts and commuting

While the continuing industrial shifts may have hurt the job prospects of unskilled New Yorkers, it is important not to extend the “mismatch” model too far. A commonly heard argument, for example, is that the decline of manufacturing coupled with the increases in the FIRE and services sectors probably gave jobs to highly educated suburbanites at the expense of unskilled City residents. But an important part of this characterization is incorrect: manufacturing firms actually hire just as many commuters (as a proportion of City employment) as do firms in the services and FIRE sectors.

This is an unexpected finding. After all, even with New York’s relatively high concentrations of central office sites, manufacturing firms hire more dropouts and blue collar workers than FIRE and services firms, and these employees are by far more likely to be City residents than college graduates and executives.⁶ Moreover, a New York State Labor Department analysis of Census data on commuting practices in the New York metropolitan area found that commuting to the City increased by nearly 50,000 between 1970 and 1980—even though the number of jobs in the City actually fell.⁷

But the 1980 Census also shows that for dropouts, high school graduates, and college graduates, manufacturing workers with a given level of education were *more* likely to commute than similarly educated workers in the FIRE and services industries. So overall, 23 percent of City manufacturing employees lived outside the five boroughs; in the FIRE and services industries, the proportion of commuters was 20 percent (Chart 4).

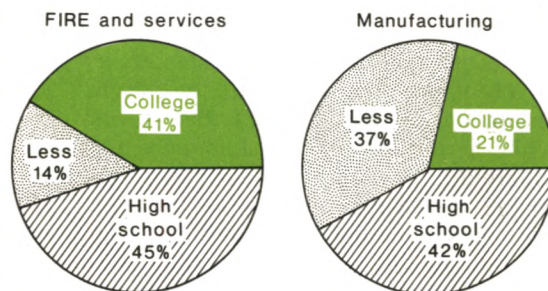
These statistics strongly indicate that the shifts of industrial composition did not in and of themselves reduce the residents’ share of City jobs. Furthermore, the analysis suggests that subsidies specific to manu-

Chart 3

Education Distributions in FIRE and Services and Manufacturing

By highest level completed

New York City Jobs, 1980*



*Workforce over age 25.

Source: United States Department of Commerce, Bureau of the Census, Public Use Microdata Sample, 1980.

facturing, as well as regulations discouraging the conversion of manufacturing properties for use in the FIRE and services sectors, might have very little effect on the proportion of City jobs held by City residents.

Declining job shares for dropouts, 1980-83

The proportion of New York City employed residents (wherever employed) without high school diplomas fell from 28 percent in 1980 to 22 percent in 1983, while the population share of dropouts was virtually unchanged, at 40 percent.⁸ Although no entirely satisfactory explanation for this decline is available, the data do suggest that only a very small part can be attributed to the shrinking employment proportion of manufacturing firms.

Declining job prospects for dropouts, in fact, are actually very broadly based. Tabulations based on the Census and the Current Population Survey show that the employment share of workers without high school diplomas fell in every major industrial category. Among all City residents, this group’s share of manufacturing employment fell from 44 to 36 percent; for FIRE and

⁵These numbers do not estimate *actual* changes in jobs for dropouts and college graduates because they hold constant the workforce composition in each industry. As much as 80 percent of the manufacturing decline—a disproportionately large share—was among factory production workers. Samuel M. Ehrenhalt, “Changing Configurations in the Regional Labor Market”, New York City Council on Economic Education, May 1984. But the point remains that over several years massive industrial shifts *per se* had substantial impacts on the New York economy.

⁶Over a third of college graduates working in New York City lived in suburban areas, while only 7 percent of dropouts were commuters.

⁷“Commuting in the New York City Metropolitan Area 1970 and 1980”, BMLI Report No. 9, New York State Department of Labor, Division of Research and Statistics, June 1984. Commuters’ share of City jobs may have grown further since 1980. See Samuel M. Ehrenhalt, “Changing Configurations”, *op. cit.* However, it is also important to note that commuting is not especially prevalent in the New York City area, compared with other cities.

⁸Employment shares are compared here by place of residence because no place-of-work information was provided in the Current Population Survey (Box 1).

Box 1: Data Sources

All educational and occupational statistics for 1980 in this article, as well as other comparisons of industrial characteristics, are derived from the Public Use Microdata Sample from the 1980 Census. For national statistics and for data on New York City workplaces, national summary files for the A and B samples were combined, providing sampling rates of 1-in-500 and 1-in-1000 for the United States and New York City respectively. (Place-of-work and migration information was coded for only half the records on the files.) Data for households with New York City residence were obtained from the 1 percent New York State B sample.

Data for 1983 came from the March 1983 Current Population Survey. Because the Survey does not provide place-of-work information, all comparisons for New York City involving 1983 are based on City residence. Comparisons over time should be used with caution, because the Census and Survey utilized different methodologies.

Following Census practice, all educational comparisons in this article are for the population or workforce over the age of 25. Problems of youth employment are therefore not considered in this article.

services the decrease was from 18 to 13 percent. (This phenomenon was not unique to New York; similar declines occurred nationwide.) So even if the manufacturing sector and all other major industrial groups had each maintained their 1980 shares of total City resident employment, the percentage of dropouts among employed New Yorkers would have been only half a percentage point higher in 1983. Little of the reduction of their job share would have been prevented.

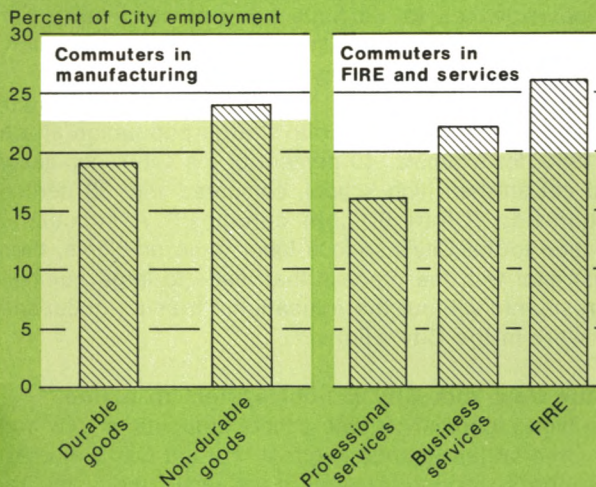
The data provide no clear explanations for these trends. One possibility might involve New York City's special role as a headquarters city, for which many functions require higher education. For instance, the management operations of manufacturing firms were not cut back as much as production work. Or perhaps as the workforce ages, the City's employers could be replacing retiring dropouts with high school graduates, in roughly the same positions. In any event, the breadth of these declines reveals that the problem lies not just in the loss of manufacturing firms but also in either the changing nature of all industries, or the labor force decisions of large numbers of dropouts.

The "skills mismatch" and jobs for dropouts

The term "skills mismatch" refers to an imbalance between the characteristics of New York City residents

Chart 4
New York City Commuters

By industry*



* Workforce over age 25.

Source: United States Department of Commerce, Bureau of the Census, Public Use Microdata Sample, 1980.

and the characteristics of the jobs being offered by the City's employers. The contrast is especially marked with regard to the proportions of dropouts: their 40 percent share in the City's population is nearly twice the share of jobs held by that educational group in the City's firms (Chart 5, top).⁹ At the same time, college graduates represent about 18 percent of the City's population, but about a third of its jobs (Box 2). Neither of these imbalances can be explained by an unusual industrial composition in the City.

The relatively severe "mismatch" for New York City's dropouts comes not from unusually low availability of jobs for unskilled labor, but from the group's above-average population share. New York City firms employed the same proportion of high school dropouts in 1980, 22 percent, as did United States employers in the aggregate (Chart 5, left column). That is, the proportion of jobs held by dropouts is typical of employment practices throughout the country.

Furthermore, the share of New York City jobs held by

⁹Of course, some people prefer not to work, so an employment-population comparison is not an *absolute* measure of hardship. But the relative difficulties for dropouts are clearly shown.

dropouts is weakly influenced by differences between New York's industrial mix and that of the rest of the country. If in 1980 New York City's industrial composition (by major grouping) had matched the national average, the proportion of jobs going to persons without high school diplomas would have been at most three percentage points higher. Almost all of the "mismatch" between City jobs and City residents would remain.

The relative severity of New York City's "mismatch" instead stems from the group's large population share. In 1980, for example, 40 percent of the City's population had not finished high school, compared with 33 percent nationwide (Chart 5, right column).¹⁰ A successful solution to the City's serious labor force problems, then, must deal with the process that leads to large numbers of residents without the educational training necessary for work in the City's firms.¹¹

Is the New York City school system to blame?

The high proportion of high school dropouts in New York City may at first glance suggest that the City's elementary and secondary schools have failed them, but the evidence for that judgment is very weak. Two-thirds of New York City's dropouts were born outside New York State; fully half were born outside the fifty states. These statistics suggest that a large proportion of the City's dropouts may not have been City residents when they were of school age. Thus, much of the educational problem with the City's workforce probably lies entirely outside the control of the City's school system.

In fact, City residents born outside the fifty states can alone account for the City's high proportion of dropouts. Among all residents born in the fifty states, the proportion of high school dropouts in the City's population was virtually equal to the national average in 1980, just under one-third. Put another way, residents born abroad, as well as in U.S. possessions and other territories, account for almost 40 percent of New York City's population over age 25—far exceeding their 10 percent national share. About

half of this group, a disproportionately large share, did not finish four years of high school.¹²

Actually, people born in New York State have been quite a bit more successful on average in finishing high school than have residents of other states. Throughout the country, only a quarter of adult New York State natives had failed to graduate from high school; this is well below the one-third share for the general population.

The charge has also been made that New York City's high school graduates are on average less well educated than those schooled elsewhere. Although the share of jobs held by high school graduates without college degrees is smaller in the City than nationally, the City schools may not be to blame for any weakness in their training. Half of the New York City residents in this educational group were born outside New York State, and about a third outside the fifty states. This latter percentage far exceeds the national average for this group, 7 percent. The benefit to New York City youth of improved schools may be enormous, but the impact on the skills mix of the labor force will only be gradual and vulnerable to further in-migration to the City.

Can manufacturing incentives help anyway?

The evidence presented in this article suggests that the City's industrial composition does not depress the employment proportion of high school dropouts, did not decrease this proportion since 1980, and did not increase the share of the City's jobs going to suburbanites. Nevertheless, policies aimed at attracting and retaining manufacturing firms still may seem a good way to generate jobs for low-skilled City residents. But in practice such policies could never make more than a small dent in the "skills mismatch". Manufacturing industries now make up a small proportion of the City's jobs. Even though the greatest concentration of jobs for dropouts is in manufacturing, it would still take a massive increase to alter the citywide shares of jobs held by high school dropouts to any great extent. After all, nearly two-thirds of manufacturing jobs in 1980 were held by high school or college graduates.

In 1980, for example, 16 percent of all jobs in New York City were in the manufacturing industry, while roughly half were in the FIRE and services sectors (table). If it were somehow possible to double the manufacturing share of total employment (holding all other industries at their 1980 relative proportions), then the proportion of jobs held by dropouts would rise only 3 percentage points. The share of jobs for college

¹⁰Among large cities, though, New York's dropout proportion is not unusually high. In 1983 the population shares of high school dropouts in Baltimore, Cleveland, Miami, Philadelphia, and St. Louis were all greater than that of New York.

¹¹Regional migration patterns during the 1970s led to disproportionately high decreases in the City among persons with high educational levels, but the impact on the "mismatch" was minor. The net outflow from New York State reduced the number of college graduates by almost 5 percent between 1975 and 1980, but by only 2 percent for high school dropouts. These trends raised the population proportion of high school dropouts by less than one percentage point. See Richard D. Alba and Michael J. Batulis, *The Impact of Migration on New York State*, The Public Policy Institute and the New York State Job Training Partnership Council, September 1984.

¹²These numbers raise the question of why so many less-educated immigrants came to the City, given their poor job opportunities. In 1980, most of the City's foreign-born had been living there since at least 1975, so many may have arrived when their job prospects were better.

Employment Shares and Educational Composition in New York City, 1980

Industry	Percent of total employment*	Proportion college graduates*	Proportion high school dropouts*
Durable goods	5	20	36
Non-durable goods	11	22	38
Finance, insurance, and real estate	13	34	12
Business and repair services	7	29	24
Professional services	24	49	13
Construction	2	15	35
Public administration	6	35	9
Trade	14	20	27
Transportation, communications, and public utilities	13	17	17
Miscellaneous†	5	24	41
[§] All industries			
Actual industrial share	100	30	22
Manufacturing share doubled	100	28	25
Manufacturing share doubled and FIRE and services halved	100	26	26

*Over the age of 25.

†Agriculture, mining, and personal and entertainment services.

Sources: United States Department of Commerce, Bureau of the Census, Public Use Microdata Sample, 1980, and Federal Reserve Bank of New York staff computations.

Box 2: The "Skills Mismatch" and Jobs for College Graduates

In contrast to the market for unskilled labor, a "mismatch" at higher educational levels can in fact be explained by the particular employment practices of the City's firms. The proportion of City jobs going to workers with college degrees, 30 percent, was well above the national average, 22 percent (Chart 5, left column).*

As with the job share for dropouts, differences in industrial mix between the City and the rest of the United States do little to explain the relatively high proportion of jobs held by college graduates. Even if the industrial employment proportions of New York City firms had been the national averages, the employment share of college graduates would have been only 2 percentage points lower. The tendency of New York City firms to hire relatively high proportions of college graduates extends to every major industrial category.

This disproportionate share of jobs going to college

graduates, moreover, is not the result of an especially large proportion of that group in the City's population. In fact, the proportion of City residents who finished four years of college or more in 1983 was 18 percent, virtually equal to the national average, and 20 percent in the New York-Northeastern New Jersey Standard Metropolitan Statistical Area (SMSA).† However, in the suburban counties of the SMSA, the proportion of college graduates was about 30 percent—equal to the proportion of New York City jobs going to this educational group.

Of course, the high education levels of New York's suburban counties in part reflect the attractiveness of employment opportunities in the City. But the large numbers of highly educated suburbanites may also encourage firms to expand activities, such as headquarters, that require this kind of workforce.

*Since New York City's job share for high school dropouts matches the rest of the country, the people getting a smaller-than-average share of jobs compared with the nation are the high school graduates without college degrees. But in one respect this in-between educational group is not really hurt by any "mismatch"; its share of the City's jobs is still greater than its share of the City's population (Chart 5, top).

†If adjacent SMSAs of Nassau-Suffolk and Paterson-Clifton-Passaic are also considered, the proportion is only one percentage point higher. In 1983, the New York-Northeastern New Jersey SMSA comprised the five boroughs of New York City plus Putnam, Rockland, and Westchester Counties, New York, and Bergen County, New Jersey. The Nassau-Suffolk SMSA consisted of Nassau and Suffolk Counties, New York. The Paterson-Clifton-Passaic SMSA was defined as Passaic County, New Jersey.

graduates would fall even less. And if the FIRE and services proportions could be reduced further, to half their actual shares, then the dropout share would be just one percentage point higher.

The numbers are indeed immense—industrial shifts of 400,000 jobs might bring about 100,000 new jobs for dropouts at the expense of other groups. But it is unlikely that such large increases in manufacturing employment could be accomplished. The sector has been declining nationwide as a percentage of total employment since 1960, and manufacturing employment has grown very little over the last fifteen years. This puts the City in the difficult position of competing with other areas for a limited number of jobs. But even in the best of cases the impact on the magnitude of New York City's "mismatch" would be minor.¹³

Of course, the City may choose to give special subsidies to manufacturing firms for other reasons. It might seek to eliminate any distortions discouraging manufacturing that other City policies may impose, or it may want to encourage growth of the industry for the sake of industrial diversity (even though nationally, the manufacturing sector is very sensitive to the business cycle). Policies that influence the City's industrial mix may attain these and other objectives. But restrictions on the conversion of manufacturing plants, and specific subsidies for manufacturing at the expense of other sectors, will most likely not change the educational composition of the workforce significantly.

Conclusion

In several respects, the dramatic recovery of the New York City economy has not been "balanced". The FIRE and services industries have expanded rapidly but the manufacturing sector continues to contract. Jobs have increased steadily in New York City locations but gains for City residents have been weak and erratic. And job growth for the City's high school dropouts has been slower than for other City residents, even though their population share has not fallen.

The City's labor force problems are often summarized as a "skills mismatch" caused by the decline of goods production along with the rapid growth of service-related activities. Common policy prescriptions based on this characterization subsidize manufacturing activity in the City and prohibit the displacement of manufacturing firms by other uses.

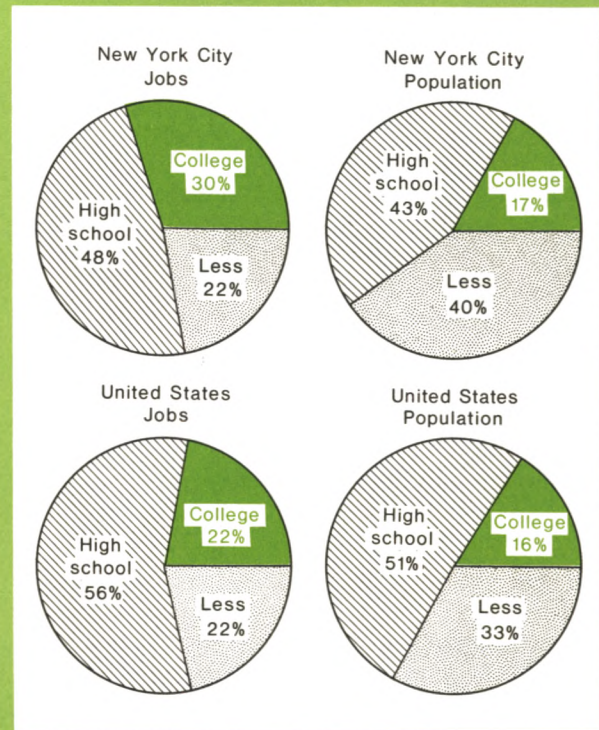
The evidence presented in this article suggests that such policies would attack only the symptoms of a fun-

¹³Policies targeted for production work would have a greater concentration of the desired kinds of jobs, but these have an even smaller share of total employment. So the required scope of a successful program would still be huge.

Chart 5

Education Distributions

By highest level completed *



*Workforce and population over age 25.

Source: United States Department of Commerce, Bureau of the Census, Public Use Microdata Sample, 1980.

damental problem, and rather weakly at that. Industrial shifts have not caused the decline in the employment shares of high school dropouts since 1980 nor did they increase the percentage of jobs held by commuters. New York City firms hire no fewer high school dropouts as a proportion of the workforce than the rest of the country, and the City's industrial composition does not explain why City firms hire an unusually high proportion of college graduates.

Furthermore, policies aimed at increasing the manufacturing employment share of the City's economy must be enormous in scope to have a meaningful effect on the City's workforce. Even in the unlikely event that the City could double manufacturing's share, the composition of City employment would adjust by only a few percentage points.

Policies designed to improve the City's educational

system address part of the problem, but a great deal is beyond their control. Half of City residents without high school diplomas were born outside the fifty states, and over two-thirds were born outside New York, suggesting that many of them are dropouts from other school systems. Certainly the potential gains to the City's young people from improved schools would be

substantial, and the benefits from expanded adult educational programs may be significant. But the effect on the workforce will perforce be only gradual, as workers with better educations slowly become more prevalent. And if large numbers of high school dropouts continue moving to New York, the "mismatch" problems may grow even as the schools improve.

Daniel E. Chall

State Unemployment Rates: What Explains the Differences?

Unemployment rates vary sharply across the fifty states. In the ten most populous states, February 1985 unemployment rates ranged between 3.7 and 9.4 percent, compared with a 7.3 percent national average. Nor has it been unusual in recent years for the lowest and highest unemployment rates to differ by as much as ten percentage points. What accounts for this variation?

One of the most frequently cited reasons for different unemployment rates across states is industrial mix. States that tend to have a greater share of their employment in industries with low unemployment rates are likely to have lower unemployment rates than the national average.

But how can the effect of industrial mix be quantified? To answer this question an alternative unemployment rate was calculated for each state. It measures what unemployment rate a state would have if each of its industries had the same unemployment rate as prevailed nationally in the industry. Consequently, this alternative unemployment rate differs from the national average only to the extent that the state's concentration of high or low unemployment industries differs from the national average. A statistical analysis finds that the differences between the alternative unemployment rates and the national average account for a substantial part of the spreads between unemployment rates reported at the state and national level.

But industrial mix is not the whole story. Racial composition and the degree of unionization are also important for explaining the differences in unemployment rates across states. However, differences in state gov-

ernment policies seem to have little, if any, direct effect.

How important are these factors overall? For the twenty states with unemployment rates that are farthest away from the national average, these factors account for about 90 percent of the differences. For all fifty states combined, the figure is closer to two-thirds. By and large, the statistical results show that unemployment rates are lowest in those states with: (1) favorable industrial composition; (2) a lower-than-average degree of unionization; and (3) a lower-than-average proportion of Black population.

Factors behind unemployment differences

To keep the presentation manageable, the discussion focuses on nine illustrative states, chosen to represent a wide range in industrial composition and other factors (Chart 1). The statistical analysis, however, is based on all fifty states.

States with above-average unemployment over 1980-83 tend to be above-average now, although the expansion has lowered most unemployment rates considerably.¹ In recent years Texas and Connecticut consistently have had unemployment rates below the national average, while Michigan, Oregon, and Pennsylvania have had unemployment rates consistently above the national average. The other four states (California, New Jersey, New York, and South Carolina) show some change over the past few years in their year-to-year relationship to the national average.

The persistence of relatively high and low unemploy-

The author thanks Joann Martens and Kimberly Mason for excellent research assistance.

¹A comparison with earlier years would show a similar pattern. 1983 is the most recent year for which employment data by industry are available at the state level.

ment rates in certain states suggests that longer-term factors, like industrial structure, may play an important role in determining state unemployment rate differences.

Industrial structure

While industrial structure is often mentioned as a source of unemployment differences, quantitative treatments of its effects are rare. The general presumption is that Michigan, Oregon, and Pennsylvania have had higher than average unemployment at least partly because large proportions of their labor forces are in industries with high unemployment during recent years (e.g., automobiles, lumber, and steel). In contrast, Connecticut is thought to have done better than average because it does not have significant parts of its labor force in declining or weak industries.

If labor were homogeneous and perfectly mobile, industrial mix would not be such an important factor. But because the skills possessed by workers in high unemployment rate industries do not necessarily match the skills required to obtain a job in an expanding industry, substantial structural unemployment can develop. This problem is likely to be worse in a rapidly changing economy, whether because of technological

progress, dramatic relative price changes (e.g., energy prices), or new demand patterns.

To focus on the contribution industrial composition makes to unemployment differences, an industrial mix adjusted, or IM-unemployment rate, was calculated for each state. Essentially, this alternative rate weights each industry according to how important it is for the state's labor force. It measures the unemployment rate a state would have if each of its industries had the same unemployment rate as prevailed nationally for the industry (Box 1). For example, in 1983 New York's IM-rate was 8.3 percent, compared with a national average of 9.6 percent, giving it a 1.3 percentage point industrial mix advantage. In general, the difference between the national unemployment rate and the IM-unemployment rate indicates a state's comparative advantage for unemployment from its industrial mix.²

Results for these nine states demonstrate how

²One limitation of the IM-unemployment rate as a complete indicator of comparative advantage from industrial structure is its failure to take full account of age differences in plant and equipment. For the purposes of this paper this omission is desirable, because it leaves it to other factors—like state policies and unionization—to explain why the same industry is disinvesting in one state while investing in another. But for other purposes, the omission may be inappropriate.

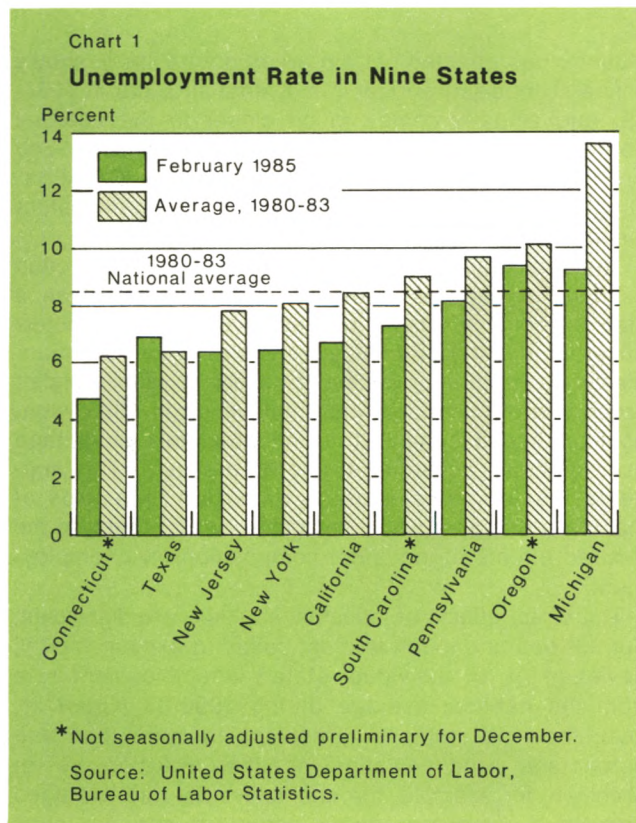


Table 1

Index of Comparative Advantage from Industrial Composition (IM-Unemployment rate)* In percent

State	1980	1981	1982	1983
New York	0.9 (6.3)	1.0 (6.7)	1.4 (8.4)	1.3 (8.3)
New Jersey	0.3 (6.9)	0.3 (7.3)	0.6 (9.1)	0.6 (9.0)
California	0.2 (6.9)	0.2 (7.4)	0.4 (9.4)	0.2 (9.4)
Pennsylvania	0.1 (7.1)	0.1 (7.5)	-0.1 (9.8)	-0.1 (9.7)
Connecticut	0.0 (7.2)	0.3 (7.3)	0.1 (9.6)	0.4 (9.2)
Texas	-0.1 (7.2)	0.0 (7.6)	-0.1 (9.9)	-0.5 (10.0)
South Carolina	-0.2 (7.4)	-0.5 (8.1)	-0.6 (10.4)	-0.2 (9.7)
Oregon	-0.4 (7.6)	-0.5 (8.1)	-0.3 (10.0)	-0.5 (10.1)
Michigan	-1.2 (8.4)	-0.7 (8.3)	-1.0 (10.7)	-0.5 (10.1)
National average unemployment rate	7.2	7.6	9.7	9.6

*IM-unemployment rate and the index of comparative advantage may sum to 0.1 more or less than the national average unemployment rate because of rounding error.

Box 1: The Industrial Mix-Unemployment Rate

The industrial mix unemployment rate is defined as the unemployment rate a state would have if each industry in the state had the same unemployment rate as the national unemployment rate for the industry. A simple example will clarify the concept.

Consider State A and State B, each with two industries, X and Y. State A has half of its labor force in each industry, while B has three-fourths in X and one-fourth in Y. Suppose that nationally industry X has a 10 percent unemployment rate, but industry Y has only a 5 percent unemployment rate. Assume that these are the only industries and that each one represents half the national labor force.

Under these circumstances, the national unemployment rate will be $7\frac{1}{2}$ percent. In state A, which has exactly the same industrial mix as the nation, we would expect the unemployment rate to be the same as the national average—based solely on industrial mix considerations. But in state B, the greater relative importance of industry X (with its higher unemployment rate) implies an industrial mix unemployment rate of $8\frac{3}{4}$ percent. So state B has an industrial mix disadvantage of one-and-a-quarter

percentage point, while state A is neutral compared to national industry structure.

Employment data are available by industry at the state level from the establishment survey. Unemployment data by industry are available at the national level from the household survey. For each state, the percent of the labor force in a particular industry was calculated by summing the employment number with a hypothetical unemployment number based on the national unemployment rate in that industry, and then dividing this sum by the state's labor force size. This gave a weight for each industry, which was multiplied by the national unemployment rate in the industry. These weighted unemployment rates were then summed to yield the IM-unemployment rate for the state.*

*Twenty-nine industrial categories were used, corresponding fairly closely to the level of detail presented each month in the Table, "Unemployed Persons by Industry and Sex", *Employment and Earnings*, Bureau of Labor Statistics. Employment data by industry at the state level were taken from *Supplement to Employment, Hours, and Earnings, States and Areas, Data For 1980-83*, Bureau of Labor Statistics, August 1984.

deceptive impressionistic evaluations of state industrial structure can be (Table 1). Low unemployment rate states, like Texas and Connecticut, do not necessarily have a particularly favorable structure. Connecticut's industrial mix does improve over 1980-83, but for most of the period it is close to the national average. By 1983 Texas had moved from a somewhat neutral to an unfavorable industrial structure by the IM measure.

While the decline in oil prices has worked against Texas in recent years, it probably has helped New York and New Jersey as well as other states with industrial structures that benefit from lower energy prices. New York and New Jersey also gain by having higher proportions of their labor forces in sectors that traditionally have lower than average unemployment. This is particularly true of New York, which has a very large share of its employment in industries with below average unemployment rates (e.g., finance, insurance, real estate, transportation, public utilities, communication, government, and other services).

California, often hailed as the stereotypical sunbelt high-tech service economy, is the only other state among the nine showing a consistent overall employment advantage from industrial structure. But, compared to its image, California's advantage of about a quarter percentage point is not very large.

Pennsylvania, where unemployment in the steel

industry has affected certain areas dramatically, shows only a slight disadvantage in industrial structure in 1982-83, and actually comes much closer to the national norm than one might expect from its highly publicized problems. The remaining states, South Carolina, Oregon, and especially Michigan, all show persistent disadvantages from industrial mix.

The percentage of manufacturing employment is often used as a measure of the industrial mix effect on a state's economy. There are, however, dramatic differences in industry unemployment rates within the manufacturing sector. For instance, despite a slightly higher proportion of manufacturing employment in 1983, Connecticut had a comparative industrial mix advantage over Michigan according to the IM-measure. This suggests that empirical studies based on measures of manufacturing as a whole will not accurately capture the desired effects of industrial composition on unemployment.

The *direct* effects of industrial structure are significant, but not nearly enough in most cases to explain the full deviation of an individual state's unemployment rate from the national average during 1980-83 (Chart 2). Over the nine states they explain no more than one percentage point deviation in either direction; yet in Michigan, for example, the unemployment rate averaged about five percentage points above the national level.

In contrast, Connecticut and Texas averaged more than two percentage points below the national average, without any major direct impact from industrial structure.

But before downplaying the effects of industrial mix, it is important to recognize its "spillover" impact on a state's whole economy. A state with an unfavorable industrial mix is likely to have above-average unemployment in its stronger industries as well as in its disadvantaged ones. For example, unemployment among retail sales workers in Michigan was probably higher during 1980-83 than in New York, simply because Michigan's less favorable industrial structure implies lower employment, income, and, hence, aggregate demand. Also, businesses in other industries that act as suppliers to the high unemployment industries can feel the impact of a downturn at the state level, even if national conditions are good.

Table 2 shows the estimated spillover effects. They exceed the direct effects of industrial mix by about fifteen percent (Box 2). Altogether, industry mix adjustments—both direct and indirect—show that each percentage of comparative advantage in industrial mix results in more than two percentage points less unemployment.

One more feature of the data needs to be mentioned. Because the adjustment for industrial composition used here is based on industry data from the non-agricultural establishment payroll survey, it does not allow for effects from the agricultural sector, which generally has a much lower rate of unemployment than the average for the non-farm population. Estimates taking the significance of agriculture into account imply that unemployment goes down about one-tenth of a percentage point for each percentage point of a state's farm population above the national average. In most states this is not that important (Table 3, column 2). But in some, such

as Nebraska and South Dakota, where the farm population is substantially higher than the national average, it can amount to more than a percentage point.

Other factors

While the impact of industrial composition explains part of the gap between state and national unemployment rates, a good bit of difference remains unexplained. To look at possible reasons for this, several additional factors that have been suggested as causes of state unemployment rate differences were considered.

Policy variables at the state level

Federal expenditures in the state. The level of Federal expenditures is another factor frequently said to influence state unemployment differences: presumably, large amounts of Federal expenditures will stimulate a state's economy and help reduce unemployment. Per capita Federal expenditures vary widely from state to state. For example, in 1983 Connecticut received \$3,750 per person in Federal expenditures compared with \$2,203 in Michigan.³

Surprisingly, the test results suggest that Federal expenditures have only a small (statistically insignificant) positive effect. For each additional thousand dollars a state receives per person, the unemployment rate will only be about one-tenth of a percentage point lower (Table 3). Since most states now receiving relatively large amounts of Federal expenditures have enjoyed this advantage for a long time, favorable economic effects have probably become embodied in the state structure.⁴ In that case, the impact of Federal expenditures would already be captured in the industrial mix effect.

State tax systems. Differences in state tax systems may also affect the labor market. In particular, how tax differentials influence where businesses choose to locate has been a primary concern in recent years. Increasingly, individual states use tax incentives and enterprise zones as an integral part of their economic development and employment programs.⁵

As with Federal expenditures, these effects did not turn out to be very significant in the statistical analysis,

Table 2

Average Contribution of Industrial Mix to State Unemployment Rates*

In percentage points

State	Direct effect	Spillover effect	Total effect
California	-0.26	-0.30	-0.56
Connecticut	-0.20	-0.23	-0.43
Michigan	0.86	0.99	1.85
New Jersey	-0.47	-0.53	-1.00
New York	-1.14	-1.31	-2.45
Oregon	0.41	0.48	0.89
Pennsylvania	-0.01	-0.02	-0.03
South Carolina	0.37	0.42	0.79
Texas	0.16	0.18	0.34

*Averaged over 1980-83.

³For more on this topic, see Thomas J. Anton, "The Regional Distribution of Federal Expenditures", *National Tax Journal*, December 1983, pages 429-442.

⁴For example, Connecticut's industrial mix reflects a considerable amount of low unemployment defense manufacturing. This is not a recent development, but a long-standing consequence of Federal expenditures there.

⁵Most states have several forms of taxes, both corporate and personal, applying to diverse bases, including income, sales, and wealth. Because of the difficulty in summarizing a state's tax system in a variable, three measures of differences in state tax systems were used in the analysis (Box 2).

Table 3

Average Contribution of Selected Factors to State Unemployment Rates*

In percentage points

State	Total industrial mix	Agriculture	Unionization	Federal expenditures	State taxes	Race
California	-0.56	0.20	0.36	-0.05	0.01	-0.32
Connecticut	-0.43	0.26	-0.46	-0.11	-0.02	-0.37
Michigan	1.85	0.07	2.43	0.08	0.01	0.10
New Jersey	-1.00	0.26	0.08	0.05	0	0.07
New York	-2.45	0.21	2.69	0.01	0.08	0.16
Oregon	0.89	-0.06	0.16	0.07	0.01	-0.81
Pennsylvania	-0.03	0.13	1.87	0.03	0	-0.23
South Carolina	0.79	0.09	-3.46	0.04	-0.01	1.47
Texas	0.34	0.07	-2.75	0.05	-0.04	0.03

*Averaged over 1980-83.

indicating that differences among state tax systems, at least as measured here, do not account for much of unemployment differences. Again, this may be because most effects of tax structure, like Federal expenditures, are already embodied in industrial structure.

Other state policy variables. Another policy factor economists cite is unemployment insurance (UI). Some analysts argue that differences in state UI programs influence locational decisions of firms and the pattern of unemployment across states.⁶ Also, issues of tax-exempt securities to finance public and private sector capital expenditures within a state have been mentioned as a possible employment stimulus. Neither unemployment insurance nor tax-exempt financing shows any significant effects in the statistical analysis.

Unions

Another factor which seems to influence unemployment rate differences is the degree of unionization. The industrial mix measure will capture this partially, because unionization is associated with particular industries. But since the unionization rate in a given industry varies across states, some residual impact is not included.

Economists have suggested several channels for unions' impact on unemployment. These can generally be put into three categories: higher labor costs, increased labor market friction, and higher worker productivity.

⁶For example, John M. Barron and Wesley Mellow, "Interstate Differences in Unemployment Insurance", *National Tax Journal*, March 1981, pages 105-113. For a discussion and references on the effect of UI on the duration of unemployment, see Robert Moffitt and Walter Nicholson, "The Effect of Unemployment Insurance on Unemployment: The Case of Federal Supplemental Benefits", *The Review of Economics and Statistics*, February 1982, pages 1-11.

A considerable literature indicates that union workers are more highly paid, both in terms of hourly wages and fringe benefits, than non-union workers performing similar tasks. Unless greater productivity offsets this higher labor cost, firms will tend to locate in areas that are less unionized.⁷

Aside from raising labor costs for employers, unionization may also increase labor market frictions, prolonging adjustment to changing economic conditions. For example, the well-documented benefits of union membership probably increase the reluctance of laid-off union members to accept non-union jobs where benefits on average are less.⁸ Also, there is empirical evidence of increased wage rigidity in unionized sectors. Union-

⁷The classic study on the union wage premium is H. Gregg Lewis, *Unionism and Relative Wages in the United States: An Empirical Inquiry*, University of Chicago Press, 1963. For recent studies that update Lewis' work and summarize the empirical literature, see John Pencavel and Catherine E. Hartsog, "A Reconsideration of the Effects of Unionism on Relative Wages and Employment in the United States, 1920-1980", National Bureau of Economic Research Working Paper No. 1316, March 1984, and Richard B. Freeman and James L. Medoff, "The Impact of Collective Bargaining: Can the New Facts Be Explained by Monopoly Unionism?", National Bureau of Economic Research Working Paper No. 837, January 1982.

⁸This does not mean unemployed union workers will never accept lower paying non-union jobs, only that they may wait longer and look harder before doing so.

A recent study by Martin Feldstein and James Poterba, "Unemployment Insurance and Reservation Wages", *Journal of Public Economics* 1984, pages 141-167, provides persuasive evidence that the reservation wage that the unemployed chose is generally quite close to the wage they received at their last job. This fact, together with the generally higher level of union compensation, implies unemployed union workers will have higher reservation wages than non-union workers. With most recent job growth in the non-union lower wage sectors, this suggests unemployed union workers will engage in a longer job search on average and have a higher rate of frictional unemployment.

negotiated work rules can limit management flexibility in the use of labor.⁹

⁹A frequent explanation for the stagnation of job growth in Western Europe revolves around labor market rigidities. The relatively rapid job growth in the U.S. over the past ten years is then attributed to flexibility and less restraint on market adjustments to changing economic conditions. One interpretation of the results in this paper is that even within the U.S. there is quite a bit of variation in labor market flexibility, and that this accounts for a large part of the differences among state unemployment rates. Also see Jeffrey D. Sachs, "Real Wages and Unemployment in the OECD Countries", *Brookings Papers on Economic Activity*, Number 1, 1983, pages 255-304.

Finally, on the positive side, some labor market analysts find unions to be beneficial to worker productivity, thereby mitigating some of the negative impact of higher wages on employment. The stronger this union productivity advantage is, the less adverse the effects of unions on employment.¹⁰

¹⁰After surveying the evidence, Richard P. Freeman and James L. Medoff conclude that productivity is generally higher in union establishments compared with otherwise similar non-union establishments. For more on this and related topics see their comprehensive survey, *What Do Unions Do?*, Basic Books, 1984.

Box 2: Statistical Results

Regression analysis was used to see how much of the difference between the national unemployment rate and each state's unemployment rate could be explained by industrial structure and other factors.

The explanatory variables included:

- Industrial Mix
 - (1) The difference between the national unemployment rate and the computed IM-rate. A coefficient of one on this variable means there are no indirect or spill-over effects from industrial mix. Since the coefficient on this variable is generally more than two, indirect effects exceed direct effects from industrial mix.
 - (2) The proportion of the state's population engaged in agriculture.
- Other Factors
 - (1) Two measures of Federal expenditures were tried: the total per capita expenditures, and the procurement contract expenditures per capita. Both had positive, but insignificant, effects.
 - (2) Three measures of state tax rates were tried: the maximum marginal rate on personal income; the average rate on personal income (adjusted gross income); and the average of total state and local tax revenues (net of severance taxes) to adjusted gross income. Coefficients varied between negative and positive values, but were insignificant.
 - (3) Three measures of unemployment insurance were tried: the ratio of insured unemployed to total unemployed, the percentage of weekly salary available in benefits, and the product of the two. All were insignificant in regressions that included the demographic variables.
 - (4) The total amount of general obligation and industrial revenue bonds was also insignificant.
 - (5) The proportion of the state's employed belonging to a labor organization.
 - (6) The proportion of the population that is Black.
 - (7) The proportion of the population between eighteen and twenty-four years old was not significant.

(8) The proportion of the population over age twenty-five with at least a high school education was not significant.

Regressions for the individual years 1980-83, as well as all four years together, were done. The sample of states was varied to include all fifty states, the forty most populous states, and the ten highest and ten lowest unemployment rate states. The cross-section results for all fifty states in 1982 are representative of the general pattern of results. Variables not significant in that regression were generally not significant in other regressions, and their estimated coefficients varied with the sample. The variables significant in that regression were generally significant in other regressions and their coefficients were much more stable over time and across sub-samples of states.

Statistical Results

Independent variables	Coefficient	t-value
Industrial structure	2.15	4.1*
Agricultural population	11.64	1.8†
Unionization	-0.20	-6.5*
Federal expenditure	0.34	0.3
State taxes	-1.09	-0.1
Race	-7.86	-3.3*
S.E.E. 1.438	$\bar{R}^2 = 0.62$	

Dependent variable is national unemployment rate minus state unemployment rate. Sample is all fifty states in 1982.

*Significant at 99 percent confidence level.

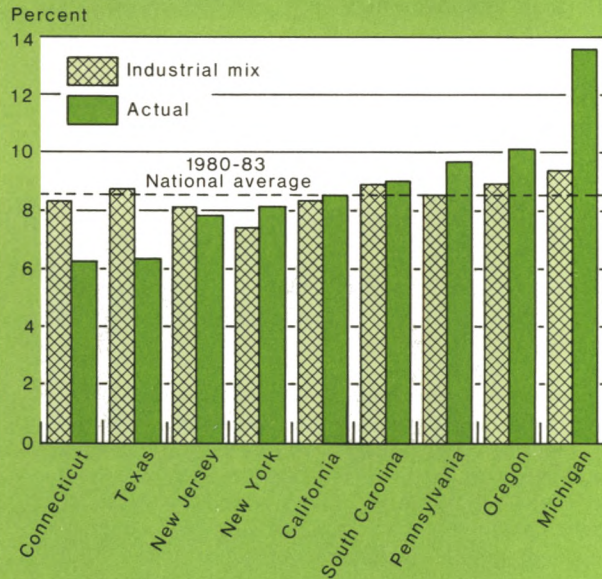
†Significant at 90 percent confidence level.

The explanatory variables were all expressed as deviations from the national average. No constant term was in the regression, so that a hypothetical state that matched the national average in every dimension would have a predicted unemployment rate equal to the national average. Regressions were also run with constant terms to check bias in the regression. Constant terms were generally insignificant and did not influence the magnitude of the significant variables' effects.

Chart 2

Industrial Mix Unemployment Rate in Nine States

Average over 1980-83

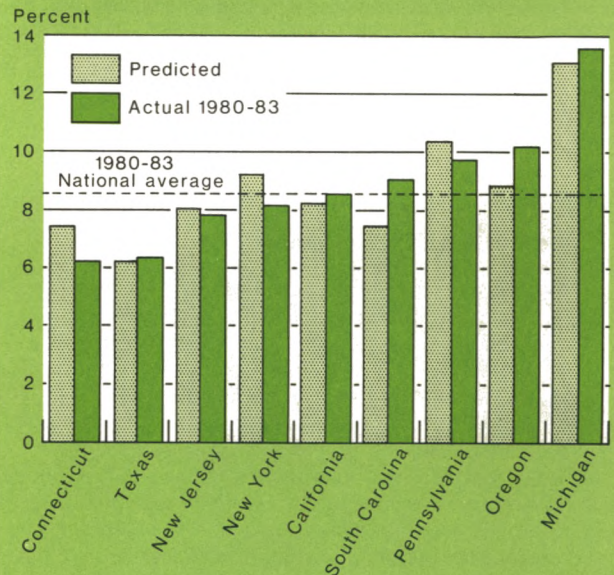


Sources: United States Department of Labor, Bureau of Labor Statistics and Federal Reserve Bank of New York staff estimates.

Chart 3

Unemployment Rate Predicted

By the regression equation
Average over 1980-83



Sources: United States Department of Labor, Bureau of Labor Statistics and Federal Reserve Bank of New York staff estimates.

The statistical analysis suggests that a state with a ten percent above-average unionization rate is likely to have an additional two percentage points of unemployment. Among the nine sample states, union effects range from lowering unemployment in South Carolina and Texas by about three percentage points, to raising it by about two and a half percentage points in New York and Michigan (Table 3, column 3).¹¹

This additional unemployment is not confined to the unionized sector, but includes spillover effects into the non-union sector as well. Otherwise, it would imply unrealistically high levels of unemployment among union workers.¹²

¹¹There is surprisingly little empirical evidence to compare with these results. Most U.S. work focuses on wage and productivity effects of unions rather than unemployment effects. Recent studies in the United Kingdom use structural labor market models to estimate the impact of unions on unemployment. Patrick Minford finds a substantial adverse impact in "Labour Market Equilibrium in an Open Economy", *Oxford Economic Papers*, November 1983, pages 207-244. S.J. Nickell and M. Andrews, on the other hand, find the effects to be much less pronounced, but still adverse, in an article in the same volume, "Unions, Real Wages and Employment in Britain 1951-79", pages 183-206.

Demographics

Besides industrial mix, policy, and unionization differences, there are demographic differences among the states. For instance, Blacks make up a larger segment of the population in South Carolina (about thirty percent), compared with Oregon (about one percent). Unemployment rates are typically higher among the Black population nationwide, which accounts for some of the differences among state unemployment rates. Age is another factor: younger workers are more likely to be unemployed than those over twenty-five. Also, average education levels vary among the states, and some evidence suggests that the likelihood of unemployment

¹²Applying the same ratio of spillover to direct effects as from industrial structure yields a more realistic implied level of unemployment among union members. Spillover effects in the case of unionization may include wage spillovers as well as aggregate demand spillovers. There is some research suggesting higher union wage levels put upward pressure on non-union wages. See, for instance, Susan Vroman, "The Direction of Wage Spillovers in Manufacturing", *Industrial and Labor Relations Review*, October 1982, pages 102-112.

decreases with the level of education.¹³ But of these three demographic factors, only race emerged as significant in the statistical analysis (Box 2).

In evaluating these results, it is important to recognize that a variable can be insignificant for explaining *differences among states*, but still be an important determinant of the *national unemployment rate*. For example, a higher proportion of younger workers may result in a higher overall level of unemployment; yet if the age composition differences among states are not that great, this factor will not show up as an important determinant of state unemployment rate differences.

Conclusion

This paper started off by asking what accounts for the variation in state unemployment rates. Somewhat surprisingly, in view of the often heated debate on short-term economic policies at the state level, factors outside the immediate realm of policy contribute the most to unemployment differences.

This does not imply that policy choices will not affect unemployment levels. Partly, such decisions are already incorporated into the industrial mix adjustment. A higher

¹³For a recent study that estimates the influence of demographic factors on regional unemployment differences see Kevin J. Murphy and Richard A. Hofler, "Determinants of Geographic Unemployment Rates: A Selectively Pooled Simultaneous Model", *The Review of Economics and Statistics*, May 1984, pages 216-223.

proportion of employees in government or defense manufacturing, where unemployment is low, will give a state an edge in industrial mix. Also, a dollar of government expenditure or tax revenue may have very different effects from state to state, because the composition of spending and distribution of the tax burden will vary considerably. For these reasons it is probably unrealistic to expect very broad statistical measures of fiscal policy to work the same way in each state.

Among the factors which did seem to affect relative unemployment rates, industrial structure appears very important. Its estimated impact ranges from lowering New York's unemployment rate by about two percentage points, to raising Michigan's by about the same amount (Table 3). Of the other factors considered, unionization and racial composition are significant for explaining unemployment differences across states.

On the whole, the analysis presented here seems to account for most of state unemployment rate fluctuations around the national average. This is especially true for the twenty states with the highest and lowest unemployment rates. But in a few states like Connecticut, New York, and South Carolina, there remains a fairly large unexplained gap (Chart 3). Case studies on these states may be helpful for determining whether any unexamined policies are particularly effective in lowering unemployment.

Robert T. McGee

Monetary Policy and Open Market Operations in 1984

In 1984, monetary policy sought to promote sustainable growth in economic activity while encouraging further progress toward price stability. In pursuing the objectives of the Federal Open Market Committee (FOMC), the Desk adapted operations to the new milieu of contemporaneous reserve requirements (CRR) beginning in February, and had to take account of a variety of economic and financial developments throughout the year. Monetary policy was successful in keeping the narrower money measures—M1 and M2—within their annual growth ranges throughout the year, although the broadest measure of money and the credit aggregate generally tracked above their ranges.

The first half of the year was marked by very rapid economic expansion, followed by a period of more modest growth. Inflation remained subdued—impressively so by the standards of the 1970s. Although price increases were still larger than consistent with long-run stability, the persistence of modest inflation numbers helped to lower inflationary expectations. Interest rates generally rose during the first half of the year when money growth was pushing upward, the economy was expanding at an unusually rapid pace, and monetary

policy was working to counter the excessive expansion. Rates declined thereafter as both money growth and economic activity fell off for a time and policy became more accommodative. Short-term rates declined the most and ended the year well below their starting levels. Long-term rates were little changed to slightly lower on balance.

The economic expansion was accompanied by disturbing structural imbalances. The large ongoing Federal budget deficit absorbed both domestic and foreign savings. Spurred by a rush of foreign investment, the dollar strengthened in the foreign exchange market despite the large current account deficit. Meantime, the dollar inflows facilitated the financing of the Federal budget deficit. These deficits and the resulting imbalances among economic sectors were a source of deep concern to members of the FOMC. Monetary policy had little scope for modifying these effects, and the FOMC continued to focus primarily on avoiding excessive monetary expansion. When monetary growth turned sluggish in the second half, the FOMC's more accommodative posture was reinforced by a desire to temper further strengthening of the dollar.

The Committee restored some of the weight to M1 that had been taken away in the latter part of 1982 when a spate of financial innovations brought the measure's reliability into question. In drawing up annual growth ranges at its meeting in late January 1984, the FOMC indicated it would continue to give substantial weight to M2 and M3 and would evaluate M1 relative to the broader measures. By the July review of the annual ranges, most Committee members felt that M1 should be given roughly equal weight to the broader

Adapted from a report submitted to the Federal Open Market Committee by Peter D. Sternlight, Executive Vice President of the Bank and Manager for Domestic Operations of the System Open Market Account. Christopher J. McCurdy, Research Officer and Senior Economist and Ann-Marie Meulendyke, Manager, Securities Department, were primarily responsible for preparation of this report. Barbara L. Walter, Adviser and Robert Van Wicklen, Senior Statistician also prepared sections. Connie Raffaele and Laura Raftery, members of the Securities Analysis Division staff, participated extensively in preparing and checking information contained in this report.

measures, as its recent cyclical relationship to nominal GNP had become more consistent with that of earlier periods. Nonetheless, many uncertainties remained about the behavior of all of the aggregates. The Committee continued to appraise the aggregates in light of developments in the economy and the financial markets, both domestic and international, as well as the outlook for inflation and credit growth.

The Committee maintained essentially the targeting procedure used in 1983, in preference to a quasi-mechanical targeting procedure such as prevailed between October 1979 and October 1982. The earlier procedure had built closely on the linkage between money and reserve growth, and allowed deviations of M1 relative to its specified growth paths to show through, more or less automatically, in changed levels of adjustment plus seasonal borrowing at the discount window. The introduction of CRR raised the subject again, and the Committee considered potential modifications. Under CRR, deposits and reserves are more closely related in time than they were under lagged reserve requirements (LRR), and perhaps more conducive to some type of short-run money targeting using reserve aggregates. However, the Committee remained skeptical about the desirability of trying to mold the short-run behavior of M1 given the uncertainty about velocity behavior and the meaning of week-to-week variability.

Instead, in 1984 the Committee established at each FOMC meeting a desired degree of reserve pressure, interpreted as an initial amount of adjustment plus seasonal borrowing. The directive then indicated desired money growth, stating the conditions under which it would be appropriate to respond to stronger or weaker money growth by altering the degree of reserve pressure. As in 1983, the extent of business expansion and the behavior of prices were regularly included as conditioning elements. From time to time, credit and financial market behavior were also listed explicitly, and toward the end of the year, international financial markets and the strength of the dollar were included as well.

The switch to CRR at the beginning of February involved several changes in the rules for reserve accounting. Under the old system of LRR, reserve requirements were applied to deposit levels of two weeks earlier. Under CRR, requirements were applied to transactions deposits with only a two-day lag. (Reserves on non-transactions deposits and vault cash to be counted towards meeting reserve requirements continued on a lagged basis.) The length of the reserve computation and the maintenance periods was doubled to two weeks. Under the new system, both the banks and the Federal Reserve had to make estimates of required reserves. Both also had to adjust to managing

reserves over a longer period.

With occasional exceptions, estimating required reserves went reasonably well, although there were instances when revisions proved large enough to modify the appropriate reserve strategy. The lengthening of the period over which requirements were to be met altered both Federal Reserve and bank strategies for meeting reserve goals. For the Open Market Trading Desk, it meant more options for offsetting a reserve excess or shortage. For the banks, it meant more flexibility in dealing with technical supply factors or changing interest rate expectations. As the year went on, it became apparent that expectations about future interest rates had greater influence than before on the Federal funds rate. The rate often moved in the direction that the market expected monetary and economic developments to produce, without a shift in the Desk's actual allowance for borrowing necessarily having occurred.

Beginning in May and continuing over succeeding months, a crisis of confidence concerning Continental Illinois National Bank and Trust Company of Chicago (Continental) had considerable effects on Desk operations and bank reserve management. As depositors withdrew funds in response to actual and prospective loan losses, the bank had to borrow heavily at the dis-

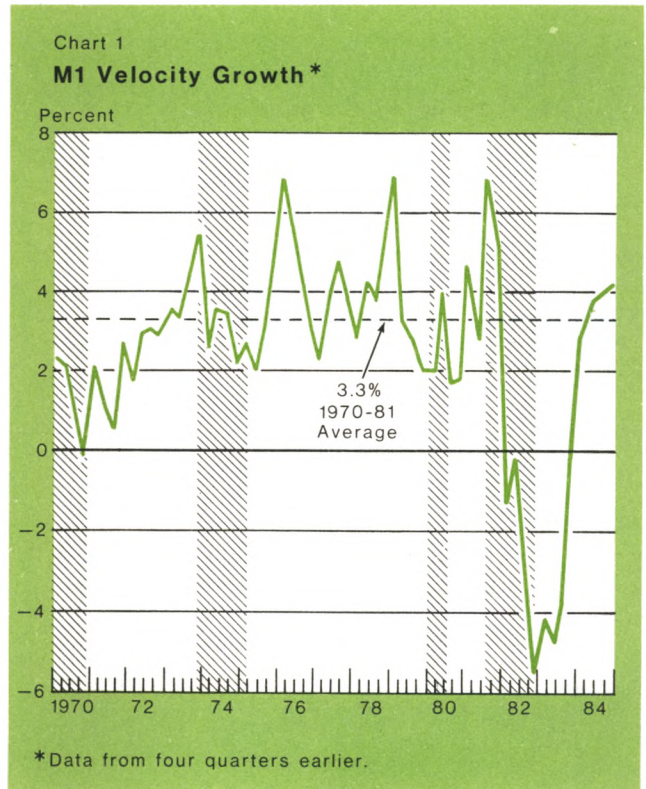


Chart 2

M1: Levels and Target Range

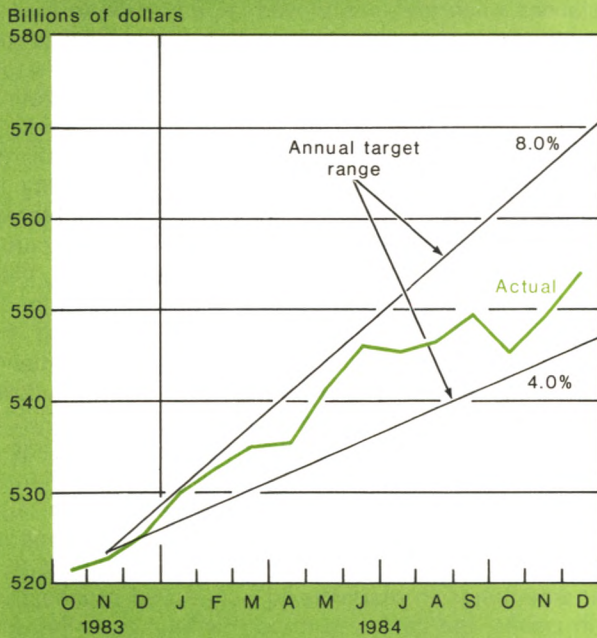


Chart 3

M2: Levels and Target Range



count window to support its ongoing operations. Borrowings grew as the search continued on several fronts for a lasting solution. As it became clear that the difficulties would take considerable time to resolve, these borrowings were classified as extended credit and treated for policy purposes as nonborrowed reserves. The Desk had to cut back on provision of reserves through open market operations to compensate for the injection of reserves from the extended credit borrowing. During the summer, many other banks became increasingly reluctant to use the discount window, as use might be interpreted as a sign of weakness. Given the Desk's pursuit of the reserve paths, conditioned on about unchanged borrowing levels through this period, the special effort banks made to avoid borrowing put increased upward pressure on the Federal funds rate.

The borrowing allowance was raised once, near the end of March, before the Continental difficulties, and then was held at \$1 billion until late August. During the summer the Federal funds rate continued to rise as the reluctance to borrow intensified. The Committee accepted the increased pressures in the money markets, given the strong money and economic growth during most of the period. In late summer, as evidence developed that money and economic growth were slowing, the Committee sought more accommodative conditions, which were reflected in a series of reductions in the borrowing assumption. Later the discount rate also was reduced. As pressures on the banking system eased and Continental's problems moved toward resolution, the unusual reluctance to borrow seemed to fade away.

Monetary policy—formulation and implementation

In restoring M1 to target status in 1984, the FOMC took account of that measure's long-term record as a reasonably good predictor of nominal GNP and prices—at least as good as other measures. Initial adjustments in the underlying relationships to income and interest rates associated with recent financial innovations appeared largely to have been completed. While M1 behavior seemed to be returning to normal, with velocity rising again (Chart 1), some uncertainties remained. The presence of interest bearing instruments in M1 could either increase or decrease the sensitivity of M1 demand to interest rate changes.¹ Furthermore, the NOW and Super NOW accounts represent a mix of savings and checking vehicles. Since savings accounts have lower velocity than checking accounts, the pres-

¹NOW accounts pay interest at a rate that generally has been well below market rates. But, since the rate is greater than zero, a change in rates will have a large proportionate impact on the difference between market and ceiling rates. This factor should increase the interest sensitivity of the demand for money. Meantime, since Super NOWs pay market interest, sensitivity of money demand to rate changes from this source should decline.

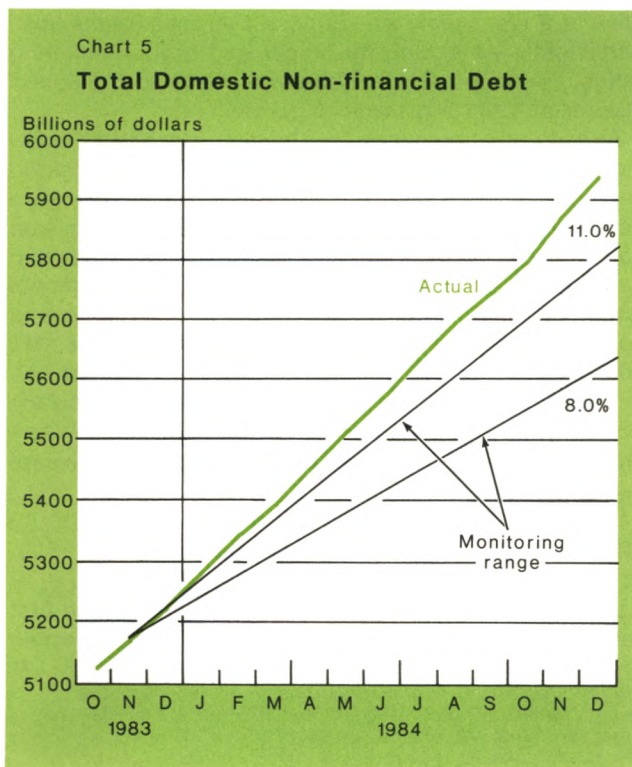
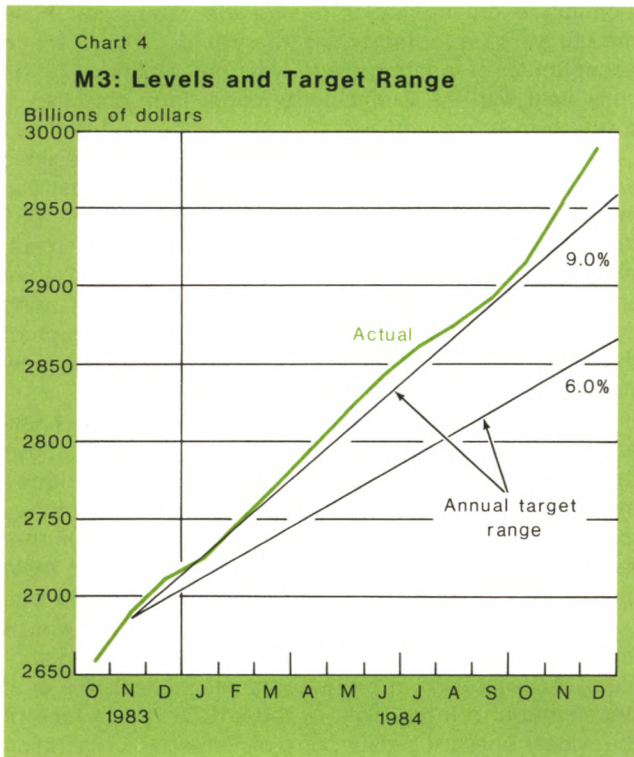
ence of NOW accounts could lower the trend of M1 velocity growth. Indeed, some of the velocity decline in late 1982 and early 1983 was probably from this source, although declining inflation and interest rates played a role as well. NOWs also could have contributed to shifting seasonal factors. The revisions to seasonal factors for 1983 were unusually large.

Given the remaining uncertainties about M1's behavior, in January the Committee retained the relatively wide 4 to 8 percent growth rate range it had tentatively established in July 1983 (Chart 2). The range was a full percentage point below the monitoring range that had applied in the second half of 1983. It was consistent with actual growth during that period and allowed for a range of velocity behavior while still leaving room for economic expansion.

The growth rate ranges for M2 and M3 were established at 6 to 9 percent (Charts 3 and 4), representing a one percentage point reduction for M2 and a one-half percentage point reduction for M3, compared to the 1983 ranges. Historically, M3 had expanded more rapidly than M2. However, in 1983, the relationship had shifted as the introduction of money market deposit accounts (MMDAs) had inflated M2 relative to the other monetary aggregates. For 1983, the Committee had set the base period for M2 in February-March following the initial shifts of funds into MMDAs, but the range for M2 still left room for some residual shift of deposits. By setting equal ranges for M2 and M3 in 1984, the Committee provided room for a partial return of the historic relationship between these two measures. The FOMC established a monitoring range for domestic nonfinancial debt of 8 to 11 percent (Chart 5).

At its July 1984 meeting, the Committee reaffirmed all of the ranges it had set in January. At the time, M1 was tracking in the upper part of its range, having expanded at a 7½ percent annual rate from the fourth quarter of 1983 through June 1984.² M2 was modestly below the middle of its range, during the first half of the year, having expanded at about a 7 percent annual rate from the fourth quarter of 1983 through June 1984. M3 had recently moved above its range, having risen at almost a 10 percent annual rate over that period. Domestic nonfinancial debt had run persistently above its annual range, recording a 13.2 percent annual growth rate over the same period. The Committee noted that M3, and especially the debt measure, were likely to end the year high in their ranges or above them. A majority of the

²All money growth rates cited in this report are based on the data available before the February 14, 1985 benchmark and seasonal revisions. These revisions raised overall growth rates slightly. However, the growth rate from the fourth quarter through June was lowered modestly for M1 to 6.9 percent. For M2 and M3, the revised growth rates for the same period were 7.3 and 10.2 percent, respectively.



Committee did not favor raising the ranges of those measures to accommodate the rapid growth, since acceptance of such growth was not believed to be consistent with the Committee's longer term objective of a return to price stability.

M1 growth slowed after midyear. M1 actually declined in July and October, but growth resumed at a fast clip in the final two months. From the fourth quarter of 1983 through the fourth quarter of 1984, M1 grew 5.0 percent, placing it at the lower quartile of its range.³ M2 rose sharply in the final two months of the year after tracking in the lower half of its growth rate range over much of the year. From fourth quarter to fourth quarter, M2 grew 7.5 percent, the middle of its range.

M3 grew on a fourth quarter to fourth quarter basis at a 9.9 percent rate, nearly one percentage point above its range. A year-end spurt in the broader money measures was supported by rapid growth in money market mutual funds. Rates on these instruments declined with a lag relative to market rates, making them more attractive *vis-à-vis* alternative investments. M3 was boosted over much of the year by the rapid growth of large CDs, primarily at thrift institutions. The temporary sluggishness of M3 in the late summer reflected a brief deceleration in the growth of these CDs in the face of the widely publicized difficulties of Financial Corporation of America and its thrift subsidiary, the American Savings and Loan Association. Domestic nonfinancial debt grew at a reasonably steady pace over most of the year, persistently exceeding the upper end of its monitoring range. From the fourth quarter of 1983 to the fourth quarter of 1984 it grew 13.5 percent.

At each of its meetings the Committee specified three-month growth rates for the monetary aggregates to serve as guides for policy implementation. They were designed to be generally consistent with the longer run objectives but also took account of developments that had already occurred. Table 1 shows specified growth rates and actual rates of growth for the corresponding periods. Consistent with the longer run patterns, M1 tended to overshoot the specified rates in the first half of the year and fall short in the second half, particularly in the third quarter. M2 lagged the specified growth rates until the final quarter, while M3 overshot them except in the third quarter.

The economy and financial markets

Economy

Real economic growth was quite strong during the first half of the year, tapered off dramatically in the summer,

then picked up moderately in the final quarter. From the fourth quarter of 1983 to the fourth quarter of 1984, real GNP grew by 5.7 percent, somewhat stronger than the average performance at the comparable stage of recent recoveries. Substantial increases in nonfarm payroll employment were also achieved but with the civilian labor force mirroring the growth in real GNP, the declines recorded in the unemployment rate were more modest than in 1983. The civilian unemployment rate ended the year at 7.2 percent, compared to 8.2 percent in December 1983.

The economy's strong performance in the first half largely reflected a huge inventory buildup in the first quarter, followed in the second quarter by a surge in consumer and government spending, and a pickup in business fixed investment. Housing starts also were strong in 1984, particularly in the first half, and for the year reached their highest level since 1979. Rising net imports were important in meeting final demand, so that domestic production grew more slowly, particularly in the third quarter. The strikes against General Motors Corporation in September and October apparently had only a small temporary negative impact on GNP.

Business fixed investment grew at a healthy pace, rising to nearly 13 percent of real GNP in the fourth quarter, a record high for the postwar period. The broad-based strength was distributed among commercial and industrial structures and producers' durable equipment expenditures.

Inflation remained generally subdued during the year. Most measures showed advances either lower than, or little different from, the reduced rates recorded in 1983. From the fourth quarter of 1983 to the fourth quarter of 1984, the implicit GNP deflator increased by 3.6 percent, the smallest advance since 1967. From December 1983 to December 1984 the consumer price index rose 4.0 percent, just slightly higher than the increase of the previous year. The producer price index rose 1.8 percent over the same period. A further strengthening in the dollar and declines in fuel prices and wage cost pressures aided the favorable price performance. Capacity utilization in manufacturing also remained below the average levels in postwar recoveries.

Financial Markets

Interest rates rose during the first half of the year, pushed higher by the strong economy, by rapid credit growth, by concerns about rapid money expansion, and by the firming response of the System. Sizable Federal budget deficits and the absence of significant action to curb future deficits continued to weigh on market sentiment. Heavy supplies of Treasury issues burdened the markets at times. In the early spring the Board of Governors of the Federal Reserve System approved an

³Revised growth rates over the four quarters of 1984 were 5.2 percent for M1, 7.7 percent for M2 and 10.5 percent for M3. The larger revision to M3 reflected inclusion of new RP survey information pertinent to term RPs at thrift institutions.

increase in the discount rate from 8½ to 9 percent, confirming to many market participants that the uptick in the Federal funds rate indicated a firmer System policy rather than merely temporary reserve shortages. The liquidity problems experienced by Continental in May caused some nervousness in the markets and a "flight to quality." For a short time this benefited the Treasury bill market, contributing to a steeper Treasury yield curve (Chart 6). For a time, CD rates came under upward pressure, and spreads to Treasuries generally remained wide until the autumn.

As a slowdown in the economy emerged in the summer and autumn, rates reversed course, falling almost in a mirror image of the pattern in the first half of the year (Chart 7). Chairman Volcker's Humphrey-Hawkins testimony in July did much to alleviate fears of further System tightening. With the slowing economy came some lower money supply growth, continued favorable inflation data, and the belief that the Federal Reserve might ease its policy stance. Initially, the rally was confined largely to the longer term sectors. Short-term rates began their descent only in late summer as the expected easing in System policy materialized. Lower Federal funds rates were followed by two half percentage point cuts in the discount rate to 8 percent late in the year. However, market views oscillated from about November to mid-December, as the economic and money supply data painted a blurred picture of the outlook for the economy and System policy. In the final months of the year, long-term rates followed a mixed course while short-term rates fell along with the Federal

funds rate, resulting in a steepening yield curve. For the year as a whole, short-term interest rates ended lower by about three-quarters to one- and one-quarter percentage points. Most longer-term rates on taxable instruments ended with declines of about one-quarter to one-half percentage point while municipal bond yields actually rose a bit on balance.

Corporations borrowed more heavily in the bond market than in 1983. Domestic corporate sector offerings rose by over \$25 billion to a total of \$73 billion. In addition, U.S. corporations stepped up offerings sold abroad to about \$23 billion, almost tripling their 1983 total as they took advantage of the attractive borrowing costs available in foreign markets.

New issuance in the tax-exempt sector rose from about \$86 billion in 1983 to about \$102 billion in 1984, with the offerings heavier in the second half of the year. These included industrial development revenue issues marketed before tighter Federal tax restrictions went into effect in 1985 and housing bonds, which had been prohibited in the first half of 1984. Tax-exempt yields rose less than Treasury yields in the first half of the year, reflecting light issuance. Heavier tax-exempt sales in the second half led to a narrowing of the rate spread of Treasury over tax-exempt yields and contributed to the slight increase in municipal bond yields over the year.

Innovations in the securities markets during the year represented mostly blends of features that have appealed to investors in the past. Zero-coupon instruments continued to grow in popularity, helping to absorb

Table 1

Short-term Money Growth Rates Specified at FOMC Meetings and Actual Growth Rates*

Meeting Month	Period Covered	M1		M2		M3	
		Specified	Actual	Specified	Actual	Specified	Actual
Dec. '83	Nov.-Mar.	6	7.0	8	6.6	8	8.7
Jan. '84	Dec.-Mar.	7	7.5	8	6.1	8	8.4
Mar. '84	Mar.-June	6½	8.2	8	7.6	8½	10.8
May '84	Mar.-June	6½	†	8	†	10	†
July '84	June-Sept.	5½	1.9	7½	5.9	9	7.0
Aug. '84	June-Sept.	5 ‡	†	7½	†	9	†
Oct. '84	Sept.-Dec.	6	4.1	7½	12.3	9	13.5
Nov. '84	Sept.-Dec.	3 §	†	7½	†	9	†

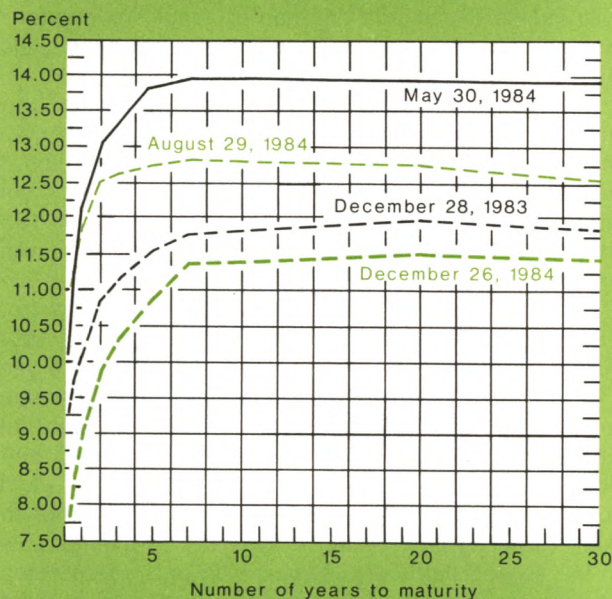
*Actual growth rates are based on data available February 7, 1985.

†Not applicable.

‡Or slightly less.

§Or more.

Chart 6

Yield Curves for Selected
U.S. Treasury Obligations

the mounting volume of long-term Treasury coupon offerings. From January 1984 to January 1985, the estimated total volume of Treasury securities used to create zero-coupon issues nearly tripled to about \$45 billion. (This includes both custody receipts and physically stripped issues.) The Treasury's new STRIPS program, announced in general terms in October 1984 and in greater detail in January 1985, was designed to take advantage of the demand for zero-coupon issues by providing a direct Treasury liability. The program allows for separate trading of the interest and principal components of selected Treasury issues, in book entry form, as direct obligations of the U.S. Treasury. Issuance of zero-coupon corporate securities also increased during the year. Net proceeds from such offerings totaled \$837 million, up from \$309 million in 1983.

Shortly after Congress' repeal of the 30 percent "withholding tax" charged on foreigners' holdings of U.S. securities, the Treasury began to offer "foreign-targeted" coupon issues in order to expand markets and reduce borrowing costs by incorporating features more appealing to foreign investors. The foreign-targeted issues are sold through foreign institutions and foreign offices of U.S. financial institutions which certify that the investors are not U.S. citizens or residents, but do not disclose the identity of the buyer to the Treasury. The

first such offering of \$1.0 billion of three-year eleven-month notes was sold in October at a yield about 32 basis points below the yield on a companion domestic offering with the same maturity. A month later, the second foreign-targeted issue, \$1.0 billion of notes due in just over five years, drew much less aggressive demand. It yielded only seven basis points below a companion domestic issue. Subsequently, yields on these special issues moved in line with, or slightly above, those on the comparable domestic issues.

Federally sponsored agencies sold zero-coupon issues and engaged in a number of innovative financing techniques. For example, in March the Federal National Mortgage Association offered 12½ percent, seven-year debentures with the option to investors of exchanging the debentures for preferred stock with a 12½ percent minimum dividend for an additional three years. This option thus permitted the exchange of a fixed-rate issue for a variable-rate issue. The offering proved attractive and its size was raised to \$450 million from an originally scheduled \$250 million.

Dealer Surveillance

During 1984, the activities of several participants in the Government securities market reminded others of the need for care when selecting counterparties. Although the markets took in stride the failure of two small, non-primary dealer firms—Lion Capital Group and RTD Securities—considerable attention was given to the losses suffered by several school districts that did not have adequate possession of collateral in dealing with those entities. Trading losses suffered by Marsh & McLennan (a large insurance brokerage firm) and the City of San Jose, California, also provided object lessons for participants on all sides of the market, pointing to the importance of close monitoring of risk positions.

The scope of dealer surveillance activities by the Open Market Operations Function was broadened in 1984 to gain a better understanding of the market and to encourage more prudent practices. In particular, a capital adequacy guideline and system of voluntary compliance for unregulated Government securities dealers was developed with the participation of the dealer community through the Public Securities Association. In addition to strengthening self regulation in the market, the proposal was designed to assist customers and other market participants in judging whether their counterparties act in accordance with generally accepted prudential standards. The proposal was published for comment in February 1985.

A report on "when-issued" trading by primary dealers was implemented in April 1984 after approval by the Board of Governors. The report was designed to provide insight into current market practices and the nature of

customer participation in when-issued trading. It should also provide important information on whether these unmargined forward commitments pose a threat of systemic risk to the market. Voluntary reporting of positions and financial condition by non-primary dealers was also formally implemented in early 1984. About 30 dealers now participate in the program, broadening our knowledge of the market and providing some communication with smaller dealers with which the Bank does not otherwise have contact.

The ongoing surveillance of primary dealers was also strengthened during 1984. A second full cycle of dealer visits was completed and enhancements were made to the review of capital and daily positions of these dealers. Several dealers responded to the Bank's concern about the adequacy of their liquid capital relative to their risk positions by increasing their capital base. The number of primary dealers remained at 36, unchanged from year-end 1983. However, A.G. Becker Paribas, Inc. was deleted from the list when their activities were absorbed by Merrill Lynch Government Securities, Inc. A new dealer, Greenwich Capital Markets, Inc., was added following its acquisition of New York Hanseatic Corporation.

Policy implementation

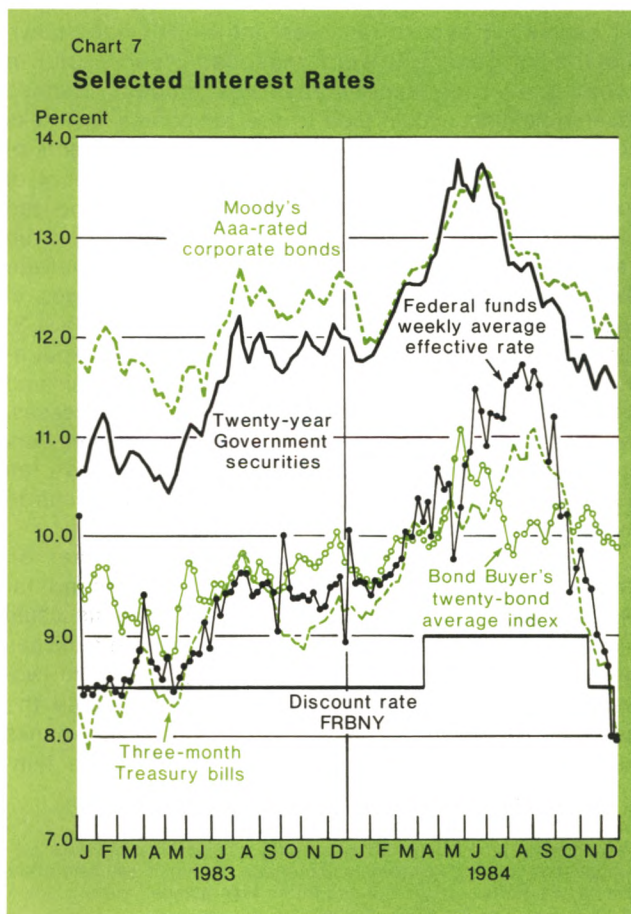
Procedures

The FOMC retained the same basic approach to implementing policy that had evolved in 1983, but with some changes designed to adapt to the beginning of CRR and the return of M1 to target status. In instructing the Open Market Desk, the FOMC continued to indicate desired degrees of reserve pressure, interpreted as initial levels of adjustment plus seasonal borrowing to be used in constructing targets for nonborrowed reserves. The policy directive stated conditions to be considered in weighing any change in reserve restraint during the intermeeting period. Operationally, this meant reviewing the assumption about borrowing at the start of each two-week maintenance period and again at midperiod when new information about the monetary aggregates became available. In practice, most of the changes in the borrowing assumption were made in the latter half of the year. The assumption was raised at the March meeting and lowered in a series of steps both at and between FOMC meetings starting at the end of August.

With the advent of CRR in February, some procedures were changed so the Desk could continue to seek an average level of borrowing consistent with desired reserve restraint. Under LRR, the nonborrowed reserve objective could be set near the beginning of a reserve week on the basis of known required reserve levels, which were rarely revised significantly during the period.

However, under CRR, required reserves for the period in progress were estimated, and revised periodically as new deposit data became available. If the level of borrowing allowed for in constructing the nonborrowed reserve path were to be held at the initially planned level, it was necessary to change the nonborrowed reserve objective during the maintenance period whenever required reserve estimates changed, since nonborrowed reserves equal required reserves plus excess reserves less borrowed reserves. While some new information on deposits became available daily, it was found that only on Tuesdays, Wednesdays, and Thursdays was the incoming information sufficient to justify revisions to required reserve estimates, and hence to the nonborrowed reserve objective.

In the initial maintenance period following the introduction of CRR—that ending February 15—estimating required reserves proved very difficult, in part because a phase-in of reserve requirement changes under the Monetary Control Act of 1980 (MCA) took place at the same time. Subsequently, the revisions became more



manageable, although occasionally they were large enough to call for a change in the approach to reserve management part way through a period. Between the statement period ended February 29, 1984, and that ended January 2, 1985, the average absolute revision to the Board staff's required reserve estimate between the first and last days of the maintenance period was \$220 million. The maximum revision was \$435 million. While the Desk still had one day to respond to revisions in the nonborrowed reserve objective on the last morning of the period, borrowing could easily end up being different than intended, since the latest required reserve estimate could prove faulty. Also, as under the previous reserve accounting regime, errors in estimates of nonborrowed reserves or the demand for excess reserves could lead to deviations in borrowed reserves. Over the same late-February to January 2 interval, the average absolute revision to required reserves after the reserve period ended was \$65 million. The largest revision was \$175 million.⁴

The excess reserve assumption used in building the nonborrowed reserve objective also had to be reevaluated in the face of the shift to CRR. Models developed for estimating excess reserves under LRR had shown that banks generally were reasonably successful in keeping average excess reserves modest. Excess reserve holdings would tend to rise temporarily in weeks containing holidays, ends of quarters, and payments of social security benefits. Large banks took account of excesses or deficits carried into the period and ran offsetting deficits or excesses. Beyond these short-run "seasonal" influences and the carryovers, average excess reserve levels were lifted by the changes in reserve requirements under the MCA and the Garn-St Germain Act. More institutions were subject to requirements above the levels they met with vault cash and thus had the potential for showing measured excesses. In some cases reductions in requirements for members led them to hold more excesses, as they may have felt a need to aim for some minimum level of balances to avoid overdrafts.

Under CRR, the potential existed for either an increase or a decrease in the average demand for excess reserves. Uncertainty about requirements could make banks more cautious and raise average excess reserve holdings. On the other hand, the change to two-week reserve settlement periods should reduce the need for excess reserves on average by giving banks more flexibility to adjust. The magnitude of the tem-

porary increases related to short-term "seasonal" factors should be reduced by the longer maintenance period. The fact that deposit flows resulted in complementary changes in required reserves (except on the last two days of the period) could offset a fraction of the undesired swings in excess reserves. Finally, the carryover privilege provided increased flexibility as the dollar amount was enlarged automatically by the lengthening of the reserve settlement period and was raised further for the first year.

Preliminary studies of the early experience suggest that average excess reserve levels were little affected by the shift to CRR. The "seasonal" influences were muted, particularly if they occurred early in a maintenance period. Excess reserves were higher in 1984 than they had been the year before, but the increase can be explained by changes in reserve requirements that also occurred on February 2 under MCA.⁵ For the statement periods ending late February through January 2, 1985, excess reserves averaged about \$670 million. Omitting all the periods that contain special "seasonal" factors lowers the average to about \$580 million. In developing nonborrowed reserve objectives, the excess reserve assumption typically used was \$600 million, although it was sometimes set higher in periods expected to be distorted.

In advance of the switch to CRR, the question arose whether it would affect the demand for adjustment plus seasonal borrowing at the discount window. The uncertainty associated with not knowing requirements might increase the surprises that would lead banks to borrow. On the other hand, large banks do the bulk of their borrowing on settlement days and, with half as many settlement days as under LRR and larger carryover, they might borrow less. In the absence of any clear convictions about the direction or magnitude of the impact of CRR on borrowing, it was assumed that the switch to CRR would not change bank borrowing behavior.

In practice it proved difficult to get a good reading on the effect of CRR on bank borrowing behavior. The funding difficulties encountered by Continental, beginning in May, and related concerns felt by a number of other institutions about their potential funding ability, appeared to inspire additional caution by many banks in their approach to the window. The three-month period between the start of CRR and the beginning of Continental's funding difficulties was too short to offer any meaningful conclusions about the impact of CRR on the

⁴These figures omit the period ended July 4. Since that day was a holiday, no Wednesday estimate was made. From the estimate at the middle of the maintenance period to the final number, the average absolute revision was \$155 million.

⁵For a more extensive discussion of the behavior of excess reserves under CRR, see Kausar Hamdani, "CRR and Excess Reserves: An Early Appraisal", Federal Reserve Bank of New York *Quarterly Review*, Autumn 1984, pages 16-23.

demand for borrowing. By the time borrowing behavior appeared to have returned to normal in the fall, the level of borrowing was lower, which in itself probably modified the relationship. What work has been done suggests that CRR did not have a significant effect on borrowing, but these results are tentative.

Operations Strategy

Under CRR, the Desk focused in the first instance on average reserve levels over the entire two-week reserve maintenance period, but remained alert to the possibility that the pattern of required reserves, demand for excess reserves, or the supply of nonborrowed reserves, might cause unwanted variations in reserve pressure within the period. The starting point for operations is the nonborrowed reserve objective derived from estimations of required and excess reserves and the agreed amount of adjustment plus seasonal borrowing. The Desk compared the objective to estimates of what average nonborrowed reserves would be in the absence of Desk operations; a strategy would be formed to bring nonborrowed reserves into line with the objective. The Desk had to take account of possible revisions to the objective and to estimates of available nonborrowed reserves. It also had to pay some attention to the distribution of reserve supplies and demands within the period. Finally, it needed to keep in mind the direction of policy, as the timing of operations might be adjusted to emphasize a change in stance.

The uncertainty about the nonborrowed reserve objective arose primarily from the potential revisions to required reserves described above. Estimates of the demand for excess reserves were also subject to some uncertainty, although in periods away from quarter ends, the margin of error was usually modest. It was rare that any formal revision was made to the excess reserve assumption after the start of the period, but occasional informal allowances were made.

As in past years, factors other than open market operations were a source of considerable day-to-day uncertainty. The staff forecast these uncontrolled reserve factors each morning to produce an estimate of what nonborrowed reserves would be over the two-week maintenance period in the absence of additional Desk operations. These forecasts were subject to considerable error because several of the factors were influenced by random events such as weather-related check delays which create float. Even those factors whose patterns could be predicted fairly successfully, such as seasonal swings in currency, might show short-term timing variations.

In 1984, the average absolute revision to market factors (including extended credit borrowing) from the first day of the two-week period to the final figure was

\$810 million.⁶ From the second Thursday, it was \$320 million, and from the final day of the maintenance period, it was \$75 million. In 1983, errors for two weeks ahead, computed every other week, showed a \$645 million average absolute error.

Variations in the Treasury balance at the Federal Reserve provided the largest single source of forecasting error. The balance became more variable and harder to predict in 1984. Unexpected changes in extended credit borrowing also became more troublesome to forecast and were a factor in the rise in overall errors. The higher errors for extended credit borrowing forecasts reflected its increased size and variability which stemmed from Continental's funding difficulties. That bank made large but variable use of the discount window under the program. Each day the Desk received estimates from Continental of its likely borrowing that day and in coming days. However, Continental found it hard to predict funding flows, and actual window usage often varied considerably from the earlier estimates.

Another consideration in the Desk's reserve management strategy was the distribution of required and nonborrowed reserves over the two weeks. Like the Desk, individual banks had to estimate their own required reserves and changes in reserve supplies as each statement period unfolded. To the extent that banks viewed a period as a whole, taking account of expected ups and downs in requirements and in reserve availability, the System's Trading Desk could also view a period as a whole. If instead, banks reacted to day-to-day variations in reserve demands and supplies as they occurred, substantial short-run changes in reserve conditions might have developed that would have proved disruptive to the market. Individual banks are almost inevitably limited in their ability to focus on the whole reserve period as each sees only a small part of the aggregate picture. Even where banks might have been able to take a longer view and regard a reserve period as a whole, they would have been restricted in the options for going short by the need to avoid end-of-day overdrafts at the Federal Reserve. The overdraft constraint also placed a limit on the upside since banks would be unwilling to accumulate excesses that they

⁶The figure does not treat the foreign repurchase pool as a market factor. While technically it is a factor changing the portfolio, its size and variation are not under direct Desk control. The average size of the pool often turned out to be different from what was expected at the start of the period. Coincidentally, however, on average over the year, the errors were offset by misses in other factors. Hence, the overall forecast errors were similar with or without allowance for the RP pool. All of the errors reported here omit an exceptionally large error in forecasting vault cash in the first CRR period, since it arose as part of the transition to CRR.

might not be able to work off.⁷ In practice, the banks made considerable allowance for variations in requirements and reserve supplies within the period. To dampen possible distortions to market perceptions of the short-run availability of reserves, the Desk often timed its operations within a reserve period to smooth out the variations somewhat.

A final consideration entering into the strategy for meeting the nonborrowed reserve objective was the thrust of policy at the time. If there were reason to place emphasis on the accommodative side, the Desk would attempt to meet estimated reserve needs promptly or accomplish needed absorptions slowly or unobtrusively. On the other hand, if emphasis were being placed on the restraining side, the Desk would tend to meet needs grudgingly or accomplish absorption promptly so as to make a sense of reserve shortage more apparent.

Putting all of these factors together led the Desk to use a mix of outright and temporary transactions. Outright purchases of Treasury securities totaled \$23.8 billion, \$14.1 billion in the market, and the rest from foreign official accounts. The System sold \$8.7 billion, all but \$1.1 billion to foreign accounts, and allowed \$8.0 billion of bills and agency issues to mature without replacement. The Desk made considerable use of temporary transactions to respond flexibly to estimated needs to adjust reserves. "System" repurchase agreements totaled \$144.8 billion while customer-related repurchase agreements came to \$126.7 billion, and matched sale-purchase agreements arranged in the market totaled \$55.0 billion.

The System portfolio showed a net increase of only \$7.2 billion, compared to an increase of \$16.4 billion in 1983. The use of extended credit borrowing which stood at \$2.6 billion in December and the Federal Reserve's acquisition of a \$3.5 billion FDIC capital note in September in return for the FDIC's assumption of that amount of Continental's borrowing held down the portfolio growth. Currency outside the Federal Reserve rose \$13.4 billion and required reserves increased \$1.5 billion. Together, these more than accounted for the portfolio increase.

⁷In recent years, vulnerability to overdrafts has grown as reserve requirement ratios have declined while total payments through the Federal Reserve increased with an expanding economy and financial system. In 1984, the average level of reserve balances at the Federal Reserve of about \$21 billion (excluding the portion of reserves in the form of applied vault cash but including required clearing balances) supported an average daily volume of transfers over Fedwire of about \$370 billion; these balances turned over about 18 times a day. Three years earlier, average reserve balances of \$27 billion supported daily Fedwire transfers averaging about \$200 billion, with balances turning over about seven times a day.

Conducting open market operations

January to Early May

Over the first four months of the year, Desk operations adapted to the introduction of CRR and also achieved an increase in reserve pressures on the banks. Uncertainty surrounded the onset of CRR and a phasedown of required reserves under MCA, complicating reserve management in February for both the Desk and the banks. Both adopted a more cautious approach to reserve management. The Desk took measured steps in filling reserve needs or draining surpluses amid an often shifting outlook for reserve availability. In the initial period, the reserve paths made an allowance for some increase in excess reserves, but the banks held even higher levels. By March, excess reserve demand settled back and recurring patterns of reserve management began to develop.

As the period unfolded, evidence accumulated that the economy was expanding at an unsustainably rapid pace. Under the FOMC's direction, the Desk held back on reserve provision. Market participants, reacting as well to the incoming information on the economy, marked down securities prices, reinforcing the Desk's efforts. A rise in the discount rate to 9 percent in April confirmed the System's intentions and the market's expectations.

In the last few weeks of LRR the Desk continued to incorporate \$650 million of seasonal plus adjustment borrowing in the *weekly* nonborrowed reserve objectives. At its December 1983 meeting, the Committee had indicated that it preferred to maintain at least the degree of reserve restraint prevailing at the time of the meeting (Table 2). In this way, the Committee allowed for the possibility of tightening depending on new information on the economy and the aggregates. Over the interval, the broader aggregates appeared to grow broadly in line with the rates indicated at the meeting. In addition, data on the economy available during late December and January indicated some moderation of earlier strength. Consequently, operations sought to maintain existing reserve restraint.

Following year-end money market pressures, the Federal funds rate settled down to the area of 9½ percent during most of January. Excess reserves and borrowing ran high over the week containing the New Year's Day holiday, but, excluding that surge, borrowing at the discount window tended to average fairly close to the path level of \$650 million. Despite year-end firmness, interest rates generally declined in late 1983 and early 1984. The markets, buoyed by a perceived slowing in the economy, reacted bullishly to the "flash" GNP data on the fourth quarter of 1983, released in late December, and to the report of virtually flat retail sales in December.

The start of CRR in early February introduced a new

Table 2

Specifications from Directives of the Federal Open Market Committee and Related Information

Date of meeting	Short-term annualized rate of growth specified for period indicated			Initial assumption for borrowings in deriving nonborrowed reserve path (millions of dollars)	Discount rate (percent)	Notes
	M2	M3	M1			
12/19-12/20/83 ...	8	November to March 8	6*	650	8 1/2	The Committee sought to maintain at least the existing degree of reserve restraint. The Committee noted that depending on evidence about the continuing strength of economic recovery and other factors bearing on the business and inflation outlook, somewhat greater restraint would be acceptable should the aggregates expand more rapidly.
1/30-1/31/84	8	December to March 8	7	650	8 1/2	<p>The Committee sought to maintain the existing degree of pressure on bank reserve positions. It was noted that lesser restraint would be acceptable in the event of a shortfall in money and credit growth over the period ahead, while somewhat greater restraint might be acceptable in the context of a more rapid monetary growth. In any case, the appropriate degree of restraint would be evaluated in light of the strength of the business expansion and inflationary pressures.</p> <p>The Committee instructed the Manager for Domestic Operations to take account of the uncertainties associated with the introduction of the system of more contemporaneous reserve requirements, particularly including the possibility that depository institutions, during the transition period, may desire to hold more excess reserves.</p>
3/26-3/27/84	8	March to June 8 1/2	6 1/2	1,000	8 1/2 9 on 4/6/84†	The Committee sought to maintain reserve pressures deemed consistent with the indicated monetary growth rates from March to June. The Committee noted that greater reserve restraint would be acceptable in the context of more substantial growth in the aggregates while somewhat lesser restraint might be acceptable if monetary growth slowed significantly. In either case, such a change would be considered in the context of appraisals of the continuing strength of the business expansion, inflationary pressures, and the rate of credit growth.

*At the meeting in December 1983, the Committee agreed to continue to monitor the behavior of M1 until velocity characteristics resumed a more predictable pattern.

†Announcement date.

Table 2

Specifications from Directives of the Federal Open Market Committee and Related Information (continued)

Date of meeting	Short-term annualized rate of growth specified for period indicated			Initial assumption for borrowings in deriving nonborrowed reserve path (millions of dollars)	Discount rate (percent)	Notes
	M1	M2	M3			
10/2/84	6	September to December 7½	9	750	9	The Committee sought to maintain the lesser degree of reserve restraint sought in recent weeks. It was noted that a somewhat further lessening of restraint would be acceptable in the event of significantly slower growth in the aggregates, evaluated in relation to the strength of business expansion and inflationary pressures, conditions in domestic and international financial markets, and the rate of credit growth. Conversely, greater restraint might be acceptable in the event of substantially more rapid monetary growth and evidence of significant strengthening of economic activity and inflationary pressures.
11/7/84	3 (given the appreciable decline in October) More rapid M1 growth acceptable for the quarter.	September to December 7½	9	575	9 8½ on 11/21/84†	The Committee sought to reduce somewhat existing reserve pressures. Lesser reserve restraint would be sought in the event of significantly slower monetary growth, evaluated in relation to the strength of the business expansion and inflationary pressures, domestic and international financial markets, and the rate of credit growth. Conversely, greater restraint might be acceptable in the event of substantially more rapid monetary growth and indications of significant strengthening of economic activity and inflationary pressures.
12/17-12/18/84 ...	7	November to March 1985 9	9	300	8½ 8 on 12/21/84†	The Committee sought to reduce existing reserve pressure consistent with the specified short-run monetary growth targets. Somewhat more rapid growth of M1 would be acceptable in light of the estimated shortfall in growth for the fourth quarter relative to the Committee's expectations at the beginning of the period, particularly in the context of sluggish growth in economic activity and continued strength of the dollar in exchange markets. Greater restraint on reserve positions might be acceptable in the event of substantially more rapid monetary growth and indications of significant strengthening of economic activity and inflationary pressures.

†Announcement date.

uncertainty for reserve managers at banks. Like the Desk, they needed accurate and timely data on reservable deposits to project their requirements. The two-week averaging process and the enlarged carryover provision allayed their concerns about deposit volatility and reporting errors. Desk conversations with liability managers at major money center banks suggested that the uncontrollable factors affecting reserve flows would remain their major problem. Even those managers expressing a good deal of confidence in their reserve projections indicated that they would initially manage their positions cautiously so that they would not accumulate large intraperiod deficiencies or excesses.

For its part, the Desk faced not only the usual uncertainties inherent in any reserve projections, whether they are nonborrowed or required estimates, but also questions concerning how banks in the aggregate would behave. The degree to which banks wanted to hold precautionary excess balances over the period would influence their willingness to purchase or sell funds. In addition, the start of CRR coincided with a phasedown of reserve requirements under MCA. Experience indicated that previous phasedowns had been accompanied by a tendency for excess reserves to rise, possibly reflecting some banks' lagged response to the new requirements.

Accordingly, allowance was made for \$750 million of excess reserves in the first two-week maintenance period. (In the two subsequent intervals the nonborrowed reserve objective scaled back the excess allowance to \$650 million and then \$550 million.) As it turned out, bank demand for excess reserves soared well above the assumed level, although it is hard to say how much of the increase was attributable to CRR and how much to the reserve requirement changes. Nonborrowed reserve projections early in the interval suggested a surplus for the period as a whole, but much of the surfeit was expected to emerge late in the period. In view of the uncertainties during the first few days of CRR, the Desk chose to provide reserves in the first week by executing customer-related repurchase agreements. Late in the second week projections suggested that nonborrowed reserve supplies were well above the indicated objective; however, the money market tended toward the firm side with Federal funds trading around 9⁵/₈ to 9⁷/₈ percent. Rather than try to absorb reserves, the Desk remained on the sidelines. Borrowing averaged somewhat below the \$650 million allowance for the period while excess reserves, once a variety of reporting errors were sorted out, averaged over \$1 billion.

In light of this experience, the Desk proceeded cautiously during the next maintenance period. The Desk filled much, but not all, of a moderate projected reserve need gradually by arranging customer-related repur-

chase agreements on six of the nine business days. Purchases of Treasury bills from foreign accounts also served to provide reserves. However, reserves became overly abundant at the end of the period as required reserve estimates were scaled down, estimates of vault cash applied against reserve requirements rose, and the Treasury balance dipped below expected levels. With the money market confirming the excess as funds traded comfortably around 9¹/₄ percent, the Desk drained reserves in the market. Initial data indicated that nonborrowed reserves ran slightly above the objective, while subsequent revisions to the data increased the overrun. Borrowing averaged about \$565 million, compared with the \$650 million assumption.

The considerable day-to-day uncertainty about reserve needs and availability evident in the first month of CRR continued to engender a wary attitude in March. The Desk made moderate short-term adjustments to reserve availability over the four maintenance periods from early February to late March. During that period, it executed 23 rounds of customer-related repurchase agreements over the 38 business days plus a total of four rounds of System RPs and matched sale-purchase transactions in the market.

The step-by-step approach to supplying reserves compared to the expected needs appeared appropriate as new economic data showed signs of vigorous growth. At its meeting in late January, the Committee voted to maintain the existing degree of reserve restraint, retaining a \$650 million borrowing assumption for the nonborrowed reserve paths. While calling for no immediate change, the directive leaned toward an easier posture, as it set more rigorous conditions for firming than for easing. The directive stated that lesser restraint *would* be acceptable if the aggregates slowed significantly while greater restraint *might* be acceptable if money grew more rapidly than desired (emphasis added). In any event, the appropriate degree of restraint was to be evaluated in light of the strength of the business expansion and inflationary pressures. While the aggregates grew at about the rates expected, the economy proved to be quite strong. As a result, the Desk was restrained in meeting reserve needs in mid-March.

A sharp rise in the Treasury balance around the mid-March tax date drained a sizable amount of reserves and contributed to pressures in the money market. The flow of funds into the Treasury's balance took place at the beginning of the March 28 statement period. With the Desk feeding in reserves gradually, the money market firmed and borrowing rose to \$1.4 billion on Friday, March 16. The tightness continued after the weekend with Federal funds trading around 10 percent or somewhat higher. Borrowing backed off from the high

weekend levels, but averaged above the \$650 million path level.

Borrowing surged again on the following Friday as market participants began to anticipate a rise in the discount rate based on the tightness in the money markets and rising evidence of a substantial pickup in business activity. In these circumstances, it was clear toward the end of the March 28 maintenance period that pursuing a nonborrowed reserve objective consistent with \$650 million of borrowing would produce an unwanted surfeit of reserves, given the borrowing that had already taken place. Moreover, the Committee, at its meeting on March 26 and 27, voted to maintain the greater reserve restraint then prevailing, approving a new borrowing allowance of \$1.0 billion. Thus, the Desk moved to drain reserves late in the March 28 period to be consistent with the lower nonborrowed reserve objective.

The Committee's decision to exert more restraint than envisioned at the January meeting reflected concern that the rapid pace of the expansion, if sustained for some time, would lead to stronger price and wage pressures and to outsized credit demands. (In April, the Board of Governors followed suit by approving an increase in the discount rate to 9 percent from 8¹/₂ percent.) Market interest rates rose as well over the late-January to late-March interval, reacting to the firming in the Federal funds market, the incoming information on economic strength, and continuing fiscal deficits. Sizable increases in employment and production and the lack of lasting progress in reducing the Federal budget deficit engendered apprehension about growing credit demands and further interest rate increases. Revisions to monetary data for the latter half of 1983, reported in early February, appeared to rule out an easing in Fed policy and diminished the fears some had had of an economic slowdown. In this environment two major Treasury financing packages in early February and late March attracted less-than-enthusiastic investor interest. Three-month bill rates rose from the area of 9 percent in late January to about 9³/₄ percent toward the end of March while long-term Treasury bond yields rose from about 11⁷/₈ percent to the area of 12¹/₂ percent.

In the interval following the March meeting, the Desk endeavored to maintain the degree of reserve restraint associated with seasonal and adjustment borrowing of \$1.0 billion. Major money market banks adapted quickly to CRR, tending to run deficiencies in the first half of the two-week periods and covering them in the second half. Banks as a whole economized on excess reserves, which dropped from two-week average levels around \$750 million in late February and March to around \$300 to \$600 million through early May.

Desk operations were complicated in April by market

expectations of a discount rate increase early in the month, which contributed to banks' heavy use of the window. The buildup in borrowing left the Desk with little choice but to undershoot the nonborrowed reserve objective. Wide swings in the Treasury balance, a common occurrence in April, were also a disturbing influence. Over the latter half of the month Treasury receipts bulged with income tax payments and the banks soon reached their limits for holding the money. The overflow spilled back to the Treasury's accounts at the Federal Reserve, draining a substantial amount of reserves. The Desk tried to replenish reserves, buying nearly \$4.9 billion of Treasury bills in the market and from foreign accounts, plus an additional \$1.5 billion of Treasury coupon securities in the market. System and customer-related repurchase agreements were used as well.

At the end of the April 25 interval, however, the Desk's efforts to inject reserves through System repurchase agreements fell short of intended levels when collateral in the market proved to be in short supply. Borrowing rose sharply on the last night as banks scrambled to fill their needs, lifting the average to about \$1.2 billion for the period compared to the \$1.0 billion path level. The Federal funds rate varied over a wide range in these circumstances, swinging between a daily low average of 9.55 percent and a high of 10.67 percent. The average rates of 10.27 and 10.18 percent for the April 11 and April 25 periods, respectively, were close to, but slightly below, the levels expected given the degree of reserve restraint in the paths. The Treasury balance at the Federal Reserve remained high over the rest of April, peaking at \$16.8 billion on May 1. The Treasury balance plunged in early May and the Desk reversed course, selling and running off bills at auction.

Early May to Late August

The funding problems of Continental cast a long shadow over the financial markets during the late spring and summer. Anxieties generated by the rapid runoff at that bank of deposits by large institutional customers prompted many depository institutions to adopt highly conservative postures in the management of their liabilities. Rapid monetary growth and a vigorous economy also contributed to the belief that interest rates would rise and prompted banks to extend the maturities of their liabilities. Consequently, some banks did not find themselves in the position where they needed to borrow at the discount window while others apparently eschewed any use of the window out of concern that the borrowing would be taken as a sign of financial weakness. Rumors about problems at other banks exacerbated these worries from time to time. This shift

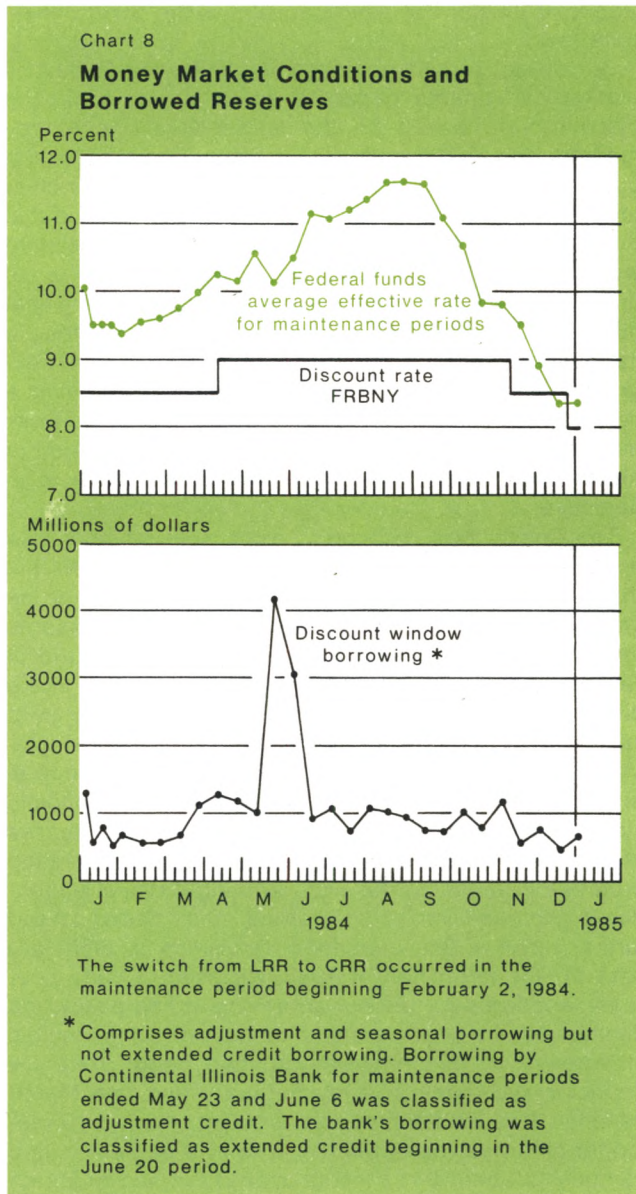
in bank liability management and the reluctance to borrow meant that the \$1.0 billion borrowing levels, initially indicated at the March meeting and reaffirmed at the May meeting, became consistent with higher trading levels for Federal funds (Chart 8). The Committee did not resist this tendency, given the continuing evidence over most of the period of rapid growth in money and in the economy.

Continental's long simmering problems boiled over in the first half of May. The bank's deposit outflows began to build late in the maintenance period ending May 9, as rumors of serious problems at the bank surfaced. The runoff continued in the two-week maintenance period ending May 23. Continental turned to the discount window for adjustment credit and to a safety net of funding provided by other major banks. As the bank later reported, its overnight borrowing needs from all sources rose to approximately \$8 billion in about one week because of the deposit runoffs. On May 17, the FDIC, a group of major banks, and the Federal Reserve stepped in with a rescue package including a \$2 billion capital infusion, promise of full protection for depositors, an expanded credit line from banks, and commitment by the Federal Reserve "to meet any extraordinary liquidity problems of the Continental Illinois Bank".

Continental's difficulties affected the Desk directly. The bank's borrowing was initially classified as adjustment credit. Since Continental's borrowing did not result from the Desk's pursuit of the nonborrowed reserve paths, the Desk made full allowance for Continental's borrowing, lowering the nonborrowed reserve objectives accordingly. Implicitly, special nature of borrowing meant that it was treated as nonborrowed reserves from the beginning. The borrowing was officially designated as extended credit in early June and became a variable source of nonborrowed reserves, bearing on the Desk's pursuit of the nonborrowed reserve objective.

The Desk was sensitive to the markets' fragility during the height of Continental's problems in May. Market participants were not only anxious about the health of particular financial institutions but also about investors' tepid response to the Treasury's quarterly refunding auctions of \$16.5 billion of notes and bonds early in May. Early in the May 10 to May 23 maintenance period, the Desk delayed overt operations to absorb expected reserve excesses while the markets wrestled with these concerns. On May 17, a round of matched sale-purchase transactions in the market was postponed until the next day, pending announcements about the rescue package arranged for Continental.

At the end of the interval, the Desk allowed for the likelihood that, because of cautious bank behavior, excess reserves would run higher than the level contained in the nonborrowed reserve path. The Desk



accelerated its injections of reserves in the May 24 to June 6 period, taking account of anticipated cautious reserve management in advance of the long Memorial Day weekend and the market nervousness generated by spreading rumors about problems at other major banks.

Amid these market concerns, large banks appeared to reverse their previous behavior of building reserve deficiencies early in maintenance intervals to be covered by surpluses later in the period. As rumors about a number of banks made the rounds of the market, the

major banks bid through CDs and other channels for longer dated funds. Also, banks were reluctant to be seen as necessitous bidders for funds. The possible profits from intraperiod arbitrage of the Federal funds market paled in comparison to the costs of a run generated by rumors of funding difficulties. Liability managers at banks built surpluses early in the two-week intervals and ran them off toward the end or managed to keep their positions close to even throughout the interval.

The Desk took into account market anxieties and the banks' behavior during the two-week interval in mid-June. The path for nonborrowed reserves plus extended credit borrowing was constructed by adding \$600 million of excess reserves to the estimates of required reserves and then by subtracting a \$1.0 billion allowance for seasonal plus adjustment borrowing. (The special borrowing which had bloated adjustment credit in the previous two periods was transferred to the extended credit category on the first day of the new period.) The degree of reserve restraint implied by the reserve path was expected to be associated with Federal funds trading around 10¹/₂ percent or perhaps somewhat above that level.

Initial estimates of nonborrowed reserves suggested a moderate need to add reserves with more of the need concentrated late in the period. In the money market, the period began on a firm note with Federal funds trading in a range of 10³/₄ to 11¹/₄ percent. At the same time, however, seasonal and adjustment borrowing ran on the low side, averaging only about half of the \$1.0 billion path level. Taken together, the evidence indicated strong demand by banks for reserves, but a marked unwillingness to seek accommodation at the window. Given this situation the Desk injected reserves on the first three business days of the interval, arranging customer-related repurchase agreements on Thursday and Friday, and overnight System repurchase agreements on Monday. In the process, the Desk overfilled the projected need for the entire period, indicating that it could address an overabundance later in the period. The injections appeared to relieve the strains for a while as Federal funds tended to trade in a range of 10⁵/₈ to 10⁷/₈ percent over the next couple of days. Midway in the period, available data indicated that large money center banks had posted a surplus, contrary to their behavior before early May, and none had sought adjustment credit.

Banks continued to bid aggressively for funds in the latter half of the interval. Federal funds traded at about 11 to 11¹/₄ percent before the second weekend. However, the Desk refrained from market action to affect reserves as the nonborrowed reserve projections suggested a surplus for the period and borrowing continued

to run well below the path allowance.

The reserve outlook changed dramatically after the second weekend, indicating a substantial deficit for the period. Reserves had fallen short of projected levels on Friday, the estimates of the foreign RP pool were revised higher, and the outlook for the Treasury balance after the June 15 corporate tax payment date suggested significantly higher levels. The money market tightened further with funds trading around 11¹/₂ percent on Monday and Tuesday. Uncertainties arising out of the international debt situation may have contributed to the desire for liquidity. Advance preparation for the quarter end may also have added to the heightened pressures. The Desk again overfilled the projected need, making overnight System repurchase agreements on Monday and then two-day contracts on Tuesday. It accepted nearly all propositions offered in the latter market entry.

By the last day of the interval, June 20, the projections indicated that nonborrowed reserves were close to path. While borrowing had expanded to \$1.8 billion over the weekend it still averaged about \$850 million through Tuesday. Consequently, a bulge in borrowing that night to about \$3.0 billion would have been needed to bring the average for the interval to the \$1.0 billion path level. Federal funds traded that morning at about 12 percent, indicating continuing strong bank demand for funds. In this situation the Desk aimed for nonborrowed reserves a little above the path level rather than force a sharp rise in borrowing. It entered the market to offer System repurchase agreements at about 10:45 a.m., an hour before its normal operating time, because of the tight collateral situation encountered on Tuesday. The dealer propositions were plentiful and the Desk added about \$3.1 billion of reserves on the day or a little over \$200 million to the two-week average.

As it turned out, bank demand for reserves remained quite strong. The Federal funds market firmed further in the afternoon, gradually rising to around 13¹/₄ percent before trading over a wide range late in the day. The rate averaged 12.31 percent for the day, the highest daily rate of the year. Despite the reserve injection, bank borrowing rose substantially that night to about \$3.0 billion to average nearly \$1.0 billion for the period. Nonborrowed reserves exceeded the path level and excess reserves came in above their allowance, initially by a substantial amount. Later revisions reduced the overrun of excess reserves to about \$100 million. For the two weeks, Federal funds averaged 11.17 percent.

Drawing on the experience in the period ended June 20, the Desk provided generously for the projected reserve needs early in the July 4 interval containing both the Independence Day holiday and the quarter-end statement publishing date in the latter part of the period. The injections contributed to a large excess reserve

buildup which apparently was sufficient to tide the banks over the quarter-end. Money market pressures backed off from the strains that had been experienced at the end of the previous interval. Federal funds rates, however, spiked at the end of the period even though the Desk had provided for enough excess reserves to meet an expected demand of around \$1.0 to \$1.2 billion. The tightness, with funds trading around 12½ percent, may have reflected a maldistribution of reserves. It seemed that some banks had probably accumulated more excess reserves than they could fully use or carry over into the next interval. In these circumstances, the Desk arranged customer-related repurchase agreements in the market on July 3, the last business day of the period. (Revised data also indicated that required reserves were substantially above estimates available at the end of the period.)

The Committee voted at the July meeting to maintain the existing degree of reserve pressure, accepting the higher rate levels that had emerged. Use of \$1.0 billion of seasonal and adjustment borrowing in the path was accompanied by further upward pressure on rates. The funds rate gradually crept higher and by early August it averaged around 11⁵/₈ percent (compared with an expected level around 10½ percent in mid to late April with the same path level of borrowing).

During May the financial markets reacted nervously to the rumors about banks, especially those with large international loan exposures, and to investor reluctance to commit funds to the longer term sectors. Yields on Treasury securities ranging from 5 years to 30 years pushed up to nearly 14 percent on the last two days of May. Investor interest was piqued by rates at those levels, which proved to be the high watermark for the year. The markets rallied over the first part of June, but yields backed up again as new signs of rapid economic growth and the onset of the Treasury's midyear financing weighed on sentiment. As the summer progressed, price advances resumed in the longer term markets. Investors were heartened by the slower growth of the aggregates and consequently felt less concerned about System policy over the longer term. The growing feeling that the inflation premium imbedded in interest rates might be too high added to the markets' better tone. Reports of large-scale swapping of equities into debt and "coupon stripping" activity relieved the markets of concerns about supplies.

In the short-term sectors, on the other hand, Treasury bill rates reflected investor demand for safety and liquidity amid the concerns about banks in May and June. Many investors worried about the impact that possible loan writedowns would have on banks' earnings and the acceptability of their liabilities. These concerns diminished after the June quarter end passed without inci-

dent. Continuing firm money market rates, however, weighed on the bill sector in July and August. The bill yield curve flattened over the summer with three-month rates rising somewhat while six-month and twelve-month issues showed small rate increases or modest decreases. Not surprisingly, yields on bank CDs rose appreciably in May and again in late June. In the process, the spread between three-month CDs and bills, which had averaged about 35 basis points over the first four months of the year, rose to about 160 basis points at its widest in late June and early July and then narrowed slowly over the summer.

Late August to year-end

Over the latter part of the year, open market operations sought initially to maintain reserve pressure on the banks, but then turned more accommodative as the FOMC responded to sluggish monetary and economic growth. Money growth from June to September fell short of the rates anticipated at the July and August meetings, and M1 growth from September to December came in below the rate sought at the October meeting. The economy's growth slowed considerably as well with real GNP advancing at only about one third the pace of the first half. Despite the fall in interest rates, the dollar proved to be quite strong in foreign exchange markets.

Against this background, the Federal Reserve reduced the allowance for borrowing contained in the nonborrowed reserve paths in several steps. By the end of the year the paths allowed for up to \$300 million of borrowing, down from \$1 billion at midyear. The Federal Reserve discount rate was lowered to 8 percent in one half percentage point cuts in November and December. The Federal funds rate dropped over the last four months of the year reflecting reduced reserve pressure, the discount rate reductions, and the return of major banks to more normal patterns of reserve management. Other interest rates also dropped sharply with the largest decreases posted on short-term rates.

At the end of August the monetary aggregates showed distinct weakness compared to the rates expected by the Committee at its August meeting. The Committee had approved an evenhanded approach to altering its stance, allowing for the possibility that strength in the aggregates would lead to greater restraint while weakness would lead to lesser restraint. Against this background, the allowance for borrowing was reduced to \$900 million at the start of the period ended September 12. Following further weakness in the aggregates in September, the allowance was pared to \$850 million for the interval ended September 26 and \$750 million at the start of the next interval.

The Desk acted promptly to fill reserve deficits during September and resolved doubts about reserve provision

toward the accommodative side. Frequent reserve injections proved necessary to meet large reserve needs during the month. During the August 30 to September 12 interval, for example, the Desk entered the market on eight of the nine business days, arranging System and customer repurchase agreements as well as one "go-around" to purchase Treasury bills for same-day delivery (the first such cash operation since 1978). Borrowing ran low over the interval and on the last day the Desk injected reserves to trim the rise in borrowing, even though nonborrowed reserves were expected to be close to path. Following vigorous efforts to offset a high Treasury balance in late September, the Desk was ready to inject additional reserves to forestall a last-day rise in borrowing. However, the money market was soft, giving no hint of a reserve shortage, and no action was taken. In those two intervals, borrowing averaged about \$750 million, somewhat below the allowances made in the reserve paths. With nonborrowed reserves more plentiful, the Federal funds rate began to ease from the firm levels experienced in August and early September. The average rate dropped from 11.60 percent in the interval ended September 12 to 11.09 percent in the next period.

At its early October meeting the Committee preferred to maintain the lessened reserve pressure that had emerged since the August meeting. At the same time it was more disposed to allow additional easing should money weaken further than to contemplate tightening should the aggregates strengthen somewhat. As it turned out, M1 declined in October and Desk activity accommodated an easing in the money market. While the borrowing allowance remained at \$750 million over most of the interval until the November meeting, the reserve outlook shifted toward projected surpluses in October and the Desk's gradual approach to withdrawing them allowed the reserve excesses to produce further softening in money market pressures.

At the start of October, however, strong bank demand for reserves over the quarter end contributed to a brief rise in the Federal funds rate. Borrowing also surged over that weekend, reflecting the firm money market as well as technical difficulties in funds transfer processing. Borrowing tended to settle down over the rest of the October 10 period, but the average ran high for the interval. The Desk's pursuit of the nonborrowed reserve path meant that excess reserves ran high for the interval and the funds rate eased considerably in the second week to pull down the average for the period to 10.60 percent. Excess reserve carryovers into the next interval contributed to a further easing in the latter half of October. The funds rate dropped further to average 9.84 percent in the October 24 period. Expectations of an easier stance, given weaker money and

economic data, also contributed to the lower Federal funds rate.

Securities prices rallied substantially over the autumn. Gains were fairly modest at first but picked up momentum in late October, when the weakness in money became widely evident. Participants concluded that the Desk was taking no strong action to resist the decline in the funds rate, fanning expectations of a still more accommodative approach. Signs that the price of oil might fall further buoyed the outlook for additional moderation in inflation. Because of delays in passing new debt ceiling legislation, the Treasury's regular consolidated financing schedule of auctions of 4-, 7-, and 20-year coupon securities was postponed until the latter half of October from the more normal schedule around the end of September. As it turned out, the auctions were generally well received amid the ebullient outlook for interest rates. The Treasury's regular quarterly refunding auctions of 3-, 10-, and 30-year issues at the beginning of November, however, met more mixed receptions as the market bogged down temporarily under the heavy supplies.

The Committee explicitly voted to reduce reserve pressures at its meetings in November and December and conditioned the directives to lean more readily to greater rather than lesser accommodation. The reserve paths constructed shortly after the November 7 meeting used \$575 million of borrowing for the November 21 period, down from the \$700 million level employed shortly before the meeting. With M1 continuing to track below the Committee's indicated September-to-December pace, the degree of reserve restraint was eased at the start of the two subsequent maintenance periods. The borrowing assumption dropped to \$500 million for the December 5 interval and to \$400 million for the December 19 interval. (In fact, borrowing ran low in the November 21 period, and late in the period the nonborrowed reserve objective informally allowed for \$500 million of borrowing rather than force a surge in borrowing at the end of the period, and risk misleading the market.) Following the December 19 interval, the paths allowed for up to \$300 million of borrowing.

With further reductions in the borrowing gap, the Federal funds rate settled in closer to the discount rate. The ability of most banks to weather the storms over the summer and get past the September quarter end without significant difficulty contributed to a more relaxed atmosphere in the market for bank liabilities. The System's turn toward ease over the latter part of the year also relieved the pressure on the banks that were reluctant to borrow or felt compelled to avoid situations in which they might appear to be overly aggressive in the funds market. Thus, by mid-November, when the paths allowed for \$575 million of borrowing,

Federal funds tended to trade comfortably at 9½ percent compared to the 9 percent discount rate.

Participants, observing the shrinkage in borrowing and lower funds rate, began to speculate that further System efforts to ease would require cuts in the discount rate. They noted that the Committee had only a little more room to reduce borrowing before it would drop to frictional levels. Some felt that the Committee preferred to induce enough borrowing to provide some tension in the market so that funds would trade at a small but relatively predictable spread over the discount rate. Consequently, the announcements of cuts in the discount rate to 8½ percent on November 21 and then to 8 percent on December 21 were widely expected. The short-term sectors of the securities markets reacted positively—though moderately—to the announcements.

Bill rates dropped to their lows of the year in late December, the lowest levels since early 1983. Longer term sectors displayed little overall trend during the last two months of the year. Some indications of a bounce-

back in the economy, and a pickup in the growth of the aggregates were seen as harbingers of renewed credit demands while discussions of tax reform proposals refocused attention on the deficits.

The money market reflected the usual year-end churning and window dressing activity, but settled down quickly in the new year. With the December 31 statement publishing date occurring late in the January 2, 1985 reserve maintenance interval, many banks had little time to adjust their reserve positions after the year-end. Excess reserves and borrowing ran high amid the scramble for reserves, while Federal funds traded as high as 15 percent on the settlement day and averaged 8.75 percent for the week ended January 2. The markets ascribed the firmness to technical reasons, and with the paths allowing for up to \$300 million of borrowing, the tightness dissipated rapidly. The funds rate averaged 8¼ percent over the January 16 interval, close to the average in late December before the year-end spike.

Treasury and Federal Reserve Foreign Exchange Operations

During the six months ended in January, the dollar rose to its highest levels of the floating-rate period against the German mark and to record levels against the British pound and most other European currencies. The dollar's advance largely occurred in two steps—first around mid-September and again from early November to mid-January. In all, the dollar rose some 8 percent against the currencies of Continental Europe and 15 percent against the pound sterling. It advanced by a substantially smaller 3½ percent against the Japanese yen and by about 1 percent in terms of the Canadian dollar. In trade-weighted terms the dollar rose some 8 percent over the six-month period.

The dollar continued to rise despite a shift in the prospects for the U.S. economy and for U.S. interest rates, which began to occur in the summer. For the past couple of years, the dollar's strong performance had been associated with exceptionally vigorous U.S. economic growth, contrasting with slower recoveries elsewhere. Relatively high U.S. interest rates had also been viewed as supporting the dollar. But indications emerged in August that the U.S. expansion was slowing in the third quarter, while economic activity abroad was picking

up. Private economic forecasters tended to scale back their projections of U.S. output gains for late 1984; some even speculated that the United States might experience a growth recession in the coming quarters. At the same time, long-term U.S. interest rates were progressively declining. By early autumn, evidence accumulated that the narrowly defined monetary aggregate was no longer expanding and short-term interest rates began to fall back. By late January, interest rates on long-term U.S. government bonds had eased one and a half percentage points. Short-term interest rates had dropped even more, the decline accompanied by two half-percentage-point cuts in the Federal Reserve's discount rate to 8 percent. For the period as a whole, the rate for three-month Eurodollar deposits had declined by more than three percentage points, and interest differentials *vis-à-vis* the German mark, for example, though still favorable to the dollar, had been cut just about in half.

Under these circumstances, expectations developed that the dollar would weaken during the latter part of 1984, but these expectations failed to materialize. Each time the dollar started to move lower, it quickly recovered. The dollar was buoyed by an easing of inflationary fears in the United States that implied U.S. real interest rates were still attractive, even at lower nominal levels. Forecasts that price pressures would reappear, made when the U.S. expansion was stronger early in 1984, had not been borne out. Inflation con-

A report by Sam Y. Cross, Executive Vice President in charge of the Foreign Group at the Federal Reserve Bank of New York and Manager of Foreign Operations for the System Open Market Account. Richard F. Alford and R. Spence Hilton were primarily responsible for the drafting of this report, assisted by Elisabeth Klebanoff.

tinued moderate, and confidence grew that the U.S. economy might experience reasonable price stability for

some time. This confidence gained support from continued declines in world commodity prices, most particularly crude petroleum.

The strength of the dollar reflected as well a continuing preference on the part of both residents and non-residents to invest in dollar-denominated assets. Since the last recession, economic growth was considerably greater in the United States than in most other industrialized countries many of which were still facing near-record levels of unemployment. The United States and its currency continued to be well-regarded on grounds of relative political stability. The flexibility of its labor and product markets compared favorably with those of other countries, some of which had been experiencing unusually protracted labor disputes. The weakness of precious metals and other commodity prices tended to underline the attractiveness of financial assets in general and of dollar assets in particular. Investors, still reacting to the credit problems of recent years, attempted to be more selective. They tended to place a greater premium on security in making investment decisions, and the dollar provided an outlet for much of these investments. Portfolio managers as well remained attracted to dollar markets. These markets seemed to provide the flexibility needed to adjust investment strategies quickly in the face of shifting interest rate expectations, and the liquidity to cover the currency exposure if the dollar should drop.

Thus, capital inflows continued to be attracted to the United States at a pace greater than needed to finance a large current account deficit at prevailing exchange rates. During the third quarter, heavy inflows came through the banking sector, as banks in the United States pulled back funds previously placed in the Eurodollar market. As inflationary expectations in the United States continued to moderate, as long-term interest rates fell, and as expectations of a decline in the dollar faded, a larger portion of the inflows subsequently took the form of portfolio investments in dollar-denominated securities. In November and December, the U.S. bond market in particular attracted attention at least partly because of relatively attractive yields and prospects for capital appreciation.

As these developments unfolded during the six months, market participants focused on the economic consequences and the possible policy implications of the dollar's continued advance. For the United States, while a strong currency helped to moderate price pressures at a time of vigorous economic growth, it imposed major strains on the U.S. competitive position. The current account deficit was building up close to \$100 billion, largely as the result of sharp increases in imports of consumer and investment goods. For other countries, market participants noted the competitive boost being

Table 1

Federal Reserve Reciprocal Currency Arrangements

In millions of dollars

Institution	Amount of facility January 31, 1984
Austrian National Bank	250
National Bank of Belgium	1,000
Bank of Canada	2,000
National Bank of Denmark	250
Bank of England	3,000
Bank of France	2,000
German Federal Bank	6,000
Bank of Italy	3,000
Bank of Japan	5,000
Bank of Mexico	700
Netherlands Bank	500
Bank of Norway	250
Bank of Sweden	300
Swiss National Bank	4,000
Bank for International Settlements:	
Swiss francs-dollars	600
Other authorized European currency-dollars	1,250
Total	30,100

Table 2

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

In millions of dollars

Period	United States Treasury Exchange Stabilization Fund	
	Federal Reserve	
First quarter 1984	-0-	-0-
Second quarter 1984	-17.7	-21.4
Third quarter 1984	-0-	-0-
Fourth quarter 1984	-0-	-0-
January 1985	-0-	-0-
Valuation profits and losses on outstanding assets and liabilities as of January 31, 1985*	-\$1,380.7	-\$900.6

Data are on a value-date basis.

*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 valuation losses reflect the dollar's appreciation since foreign currencies were acquired.

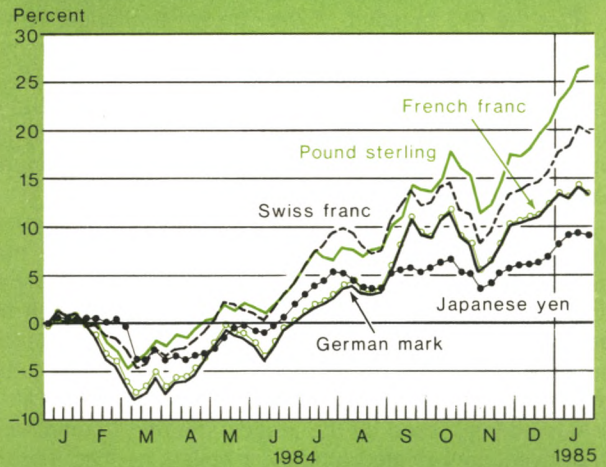
given to their exports, the leading source of stimulus to otherwise relatively modest economic recoveries. But they believed the authorities would prefer a broader-based recovery and, therefore, would seek to keep interest rates as low as possible, particularly since inflationary expectations were subdued.

Thus, market participants concluded that the authorities would be reluctant to use monetary policy to resist the dollar's rise. For a time early in the period, dealers were skeptical that even intervention would be used. But market sensitivity to intervention increased, after the Bundesbank sold dollars aggressively in the exchange market late in September, in the first of several, highly visible operations. The U.S. authorities, having intervened on one occasion earlier that month, again entered the market on four days following the Bundesbank's late September operation. Central banks of some other countries also intervened to sell dollars during late September and early October. Later in the period, when the dollar resumed its advance, market professionals again expected the authorities would try to moderate the move with intervention. Expectations of central bank resistance, along with the intervention operations that actually took place, for a time kept the dollar's rise in check.

By the turn of the year, the outlook for the U.S. economy was progressively improving. Published data revealed quicker growth in the fourth quarter for the United States than had been anticipated. Also, an accelerating expansion of monetary aggregates late in the year was seen as narrowing the scope for any further easing of U.S. monetary policy. Economic performance in several European countries, though also improving, was still viewed by market professionals as not so vigorous as to require greater monetary restraint. As sentiment toward the dollar became even more bullish early in January, the dollar's rise against all currencies gained increasing momentum. The market noted the dollar's approach to levels against the German mark where the Bundesbank had been seen intervening several months before, as well as intense selling pressure against the British pound. In a few European countries, domestic interest rates were tending to firm in response to concerns that the dollar's continued rise would eventually be reflected in increased domestic inflation.

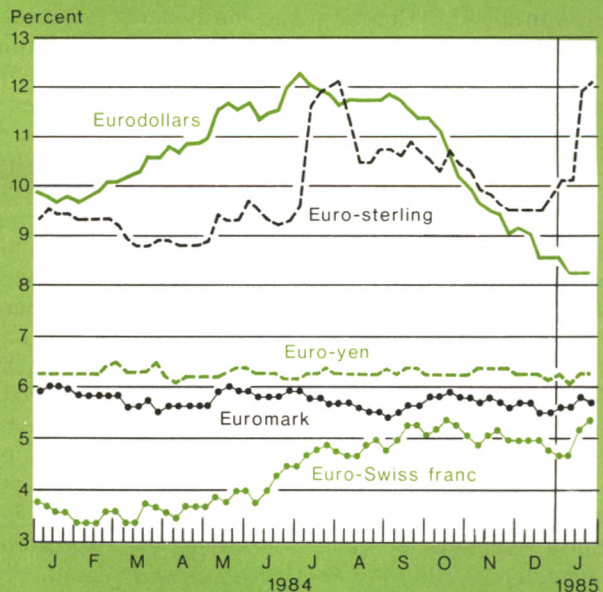
With the approach of a scheduled meeting of G-5 finance ministers and central bank governors, market professionals anticipated that this might be an occasion for monetary authorities to plan a large and concerted exchange market operation. The officials discussed a range of international economic and financial issues. In their announcement of January 17, they reaffirmed their commitments to promote a convergence of economic

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 December 26-30, 1983. Figures calculated from New York noon quotations.

Chart 2
Selected Interest Rates
Three-month maturities*



* Weekly averages of daily rates.

performance and stressed the importance of removing structural rigidities in their economies. They also reaffirmed the May 1983 Williamsburg agreement to undertake coordinated intervention as necessary.

After the G-5 meeting, visible foreign exchange market operations were in fact undertaken by several countries. Most central banks in Europe and the Bank of Japan operated on occasion to sell dollars during the rest of January. The U.S. authorities, in coordination with the others, also intervened on two occasions late in January to sell dollars against marks.

These operations reinforced market perceptions that the central banks were more willing to intervene than before. At the end of the month, however, market participants were still uncertain of the extent to which the authorities were prepared to intervene and of the circumstances in which the central banks would judge intervention to be appropriate or helpful. Dealers remained impressed by the steady stream of commercial and investment-related orders for dollars coming into the market. Under these circumstances the dollar steadied but did not fall back appreciably from mid-January levels.

In summary, during the six months under review, the U.S. authorities intervened in the exchange markets on seven occasions, selling dollars and buying marks in each instance. They bought \$50 million-equivalent of marks on one day early in September, \$229 million on four occasions between September 24 and October 17, and \$94 million on two days late in January. The total, \$373 million-equivalent of marks, was shared equally between the U.S. Treasury and the Federal Reserve.

In other operations, the Treasury Department announced on October 12 that it had joined with the Bank of Japan and the Bank of Korea in arrangements to provide short-term financing to the Central Bank of the Philippines, totaling \$80 million in support of the Philippine economic adjustment program which had been agreed upon with the management of the International Monetary Fund (IMF). The Treasury, through the Exchange Stabilization Fund (ESF), agreed to provide \$45 million, the Bank of Japan \$30 million, and the Bank of Korea \$5 million. The full amount of the facility was drawn on November 7. The drawing occurred after the Managing Director of the IMF confirmed that the IMF had received assurances of the availability of adequate financing in support of the Philippine economic adjustment program and that he had formally submitted the Philippine request for a standby arrangement to the Fund's Executive Board. The drawings were repaid on December 28, after the Philippines drew on its standby arrangement with the Fund.

On December 3, the U.S. Treasury agreed to provide a \$500 million swap facility to the Central Bank of the

Argentine Republic as bridging credit in support of the Argentine economic adjustment program, which had been agreed upon with the IMF. The full \$500 million was drawn on December 28. On that day the IMF Managing Director indicated that the IMF had assurances of adequate financing from commercial banks in support of the Argentine Government's economic program. Argentina's requests to draw on a standby arrangement and on the Compensatory Financing Facility (CFF) were then approved by the Fund's Executive Board. The drawing was repaid in the amounts of \$270 million on January 3, 1985, and \$230 million on January 15, 1985, after the Argentine Government's drawings from the IMF under the CFF and its standby arrangement, respectively.

The Federal Reserve and the ESF invest foreign currency balances acquired in the market as a result of their foreign exchange operations in a variety of instruments that yield market-related rates of return and that have a high degree of quality and liquidity. Under the authority provided by the Monetary Control Act of 1980, the Federal Reserve had invested \$870.1 million of its foreign currency holdings in securities issued by foreign governments as of January 31. In addition, the Treasury held the equivalent of \$1,573.8 million in such securities as of the end of January.

German mark

During the period under review, the mark fell 8.5 percent against the strongly rising dollar and eased relative to all other major currencies except sterling, ending the period near the bottom of the EMS. The mark's decline against the dollar was interrupted only temporarily—between late September and early November.

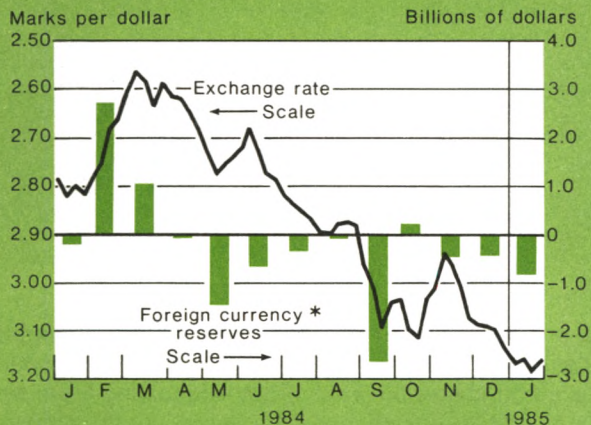
At the start of the period, international investors' attention was deflected to dollar-denominated securities. A rally in the U.S. bond market had just gotten underway. A much talked-about elimination of U.S. withholding tax on interest payments to non-residents was finally approaching. And talk spread that the U.S. Treasury would soon issue securities targeted especially for foreign investors. Meanwhile, the mark continued to suffer from comparison between the recoveries in Germany and in the United States. Under these circumstances, the mark was trading at DM2.9170, near 11 and a half-year lows against the dollar early in August. Its margin over other currencies within the EMS had also been significantly reduced.

After trading steadily in seasonally thin markets for several weeks, the mark again began to decline as the dollar rose early in September. As the mark's fall progressed, market participants questioned whether the German authorities would act to stop the decline. The economic justification for doing so was unclear. Addi-

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.

tional stimulus to Germany's export sector—already the driving force to economic recovery—was seen in the market as a welcome boost to the economy and a spur to employment. Meanwhile, depreciation was not generating any evident pickup in inflationary pressures, partly because of the weakness of world commodity prices. Moreover, market participants were unsure what policy tool the authorities might use if they chose to act against the mark's decline. The Bundesbank had emphasized before, when the mark was also declining against the dollar, that it did not intend to tighten monetary policy. As for official intervention, remarks of Bundesbank officials pointed to its limited effectiveness in resisting fundamental market trends.

In fact, the Bundesbank had been intervening regularly at the Frankfurt fixings and on occasion at other times in the open market. These operations, at least during August, just about offset interest earnings and other inflows into Germany's reserves, so that the foreign exchange reserves showed little net change from end-July's \$38 billion level. When the dollar's rise

accelerated, pulling the mark rate down to DM3.1765 on September 21, the Bundesbank intervened more aggressively. Its actions, followed by other European central banks, helped the mark to bounce back up immediately. For several days thereafter, market participants were extremely wary of possible further dollar sales by the Bundesbank, and rumors of other large operations circulated widely. For the month of September, Germany's foreign exchange reserves fell \$2.7 billion.

The U.S. authorities had purchased \$50 million-equivalent of marks on one occasion early in September. After the Bundesbank's action of September 21, they purchased a total of \$135 million-equivalent of marks during three days from late September to early October to counter disorderly markets. These purchases were shared equally between the Federal Reserve and the Treasury.

Immediately after the central bank interventions the mark traded generally between DM3.00 and DM3.10. In early October the mark received a further lift when the cabinet announced repeal of Germany's 25 percent withholding tax on German securities held by non-residents, retroactively to August 1, sparking renewed foreign interest in German bonds. But soon thereafter, the mark began to drift lower against the dollar and to a lesser extent most other currencies. In mid-October, when the mark was approaching the lows of September and trading at DM3.1575, the Bundesbank again intervened. The U.S. authorities also bought \$95 million-equivalent of marks on one occasion to counter a renewed outbreak of disorderly market conditions.

The mark then rallied. Market participants had become impressed that the Bundesbank and others were resisting the generalized rise of the dollar. Furthermore, the economic environment appeared to have shifted in Germany's favor since mid-summer. Statistics were released indicating that the economy had revived strongly during the summer. Exports continued to be the principal boost to output and earnings. But for the first time the export boom appeared to be spilling over to other sectors, as reflected in increased domestic new orders for capital goods. U.S. interest rates of all maturities were declining, so that the market no longer perceived the Bundesbank as having to resist a gradual decline in German rates to obtain a narrowing of adverse interest differentials to strengthen the mark. Under these circumstances, market professionals began to build up long positions in marks in the expectation that a major adjustment in the dollar-mark relationship was about to occur. The bidding for marks pushed the spot rate up 9 percent to DM2.90 in the first week in November.

But after November 7, the mark changed direction and

Table 3

Drawings and Repayments by Foreign Central Banks under Special Swap Arrangements with the U.S. Treasury

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

	1984 III	1984 IV	1985 January	Outstanding January 31, 1985
Drawings on the United States Treasury				
Central Bank of the Philippines	-0-	{ +45 -45	-0-	-0-
Central Bank of the Argentine Republic	-0-	+500	{ -230 -270	-0-

Data are on a value-date basis.

declined as the dollar strengthened for the balance of the period under review. At first the selling of marks appeared to be dominated by corporations and others that had postponed dollar purchases required before the year-end in hopes of taking advantage of the expected rise in the mark. Before long the selling of marks broadened as expectations of a generalized decline in dollar rates diminished. Speculators in the futures markets and dealers in commercial banks liquidated much of their long mark positions by year-end. Moreover, international investors, no longer as concerned that a decline in the dollar would erode their total return on dollar-denominated securities, came back to U.S. securities markets in size. With investors attracted by the remaining interest differentials favoring the dollar and the prospect of profits as U.S. interest rates continued to decline, the dollar quickly came to overshadow the mark in the exchange markets. By January 11, the mark had been pulled down to a record low for the floating rate period of DM3.2020.

The Bundesbank had continued to operate in the exchange markets to sell dollars. These operations contributed to a \$950 million decline in Germany's foreign exchange reserves during the three months October to December. But German authorities were also attempting to modify their money market management to ensure that German banks not have permanent recourse to large amounts of Lombard loans at the central bank, and they were concerned that larger dollar sales might complicate this endeavor. Accordingly, by January, central bank money was increasingly being provided through security-based repurchase agreements, sometimes at interest rates slightly below the Bundesbank's Lombard rate. Foreign exchange market operators at times misread the central bank's actions as signaling a desire for short-term interest rates to ease. In fact, the Bundesbank had announced that its monetary growth targets for 1985 would be lower than for

the previous year, at 3 to 5 percent. Bundesbank officials pointed to the impact of the mark's continued decline on import prices, thereby suggesting there was little scope for easing monetary policy. Yet the market's misinterpretation of the Bundesbank's intentions for money market rates was not fully dispelled until the Bundesbank announced it would raise the Lombard rate half a percentage point, to 6 percent, effective February 1.

In any case, by the time the mark hit its mid-January low, market attention was focused more on the rise of the dollar than the decline of the mark. Other currencies, too, were weakening sharply, most especially the pound. As a result, when market participants became aware that a G-5 meeting of finance ministers and central bank governors was to take place in Washington on January 17, they began to expect a concerted intervention operation. Between the middle of January and the close of the period, there were joint intervention operations in which the U.S. monetary authorities purchased \$94 million-equivalent of marks. These operations, like those earlier in the period, were shared equally between the Federal Reserve and the Treasury and were conducted to resist a renewed rise in the dollar.

At the end of January the mark was above its lows, trading at DM3.1670 against the dollar. But it was 9 percent below its high reached in early November and 8½ percent below end-July levels. Germany's reserves declined a further \$821 million in January to close the period at \$34 billion.

Within the EMS, the mark's attraction as an investment vehicle for private-sector investors weakened in relation to other EMS currencies, as well as to the dollar. Economic performance and macroeconomic policies among EMS countries were showing growing convergence. Other European countries were adopting more market-oriented policies. Against this background,

the persistence of wide, unfavorable interest differentials at a time when inflation differentials were narrowing and prospects for a new currency realignment were appearing remote led virtually all the EMS currencies to strengthen relative to the mark. The authorities of other EMS countries took advantage of this development to buy substantial amounts of marks in the market to add to reserves.

Sterling

At the beginning of the period under review, a five-month decline of sterling against the dollar was ending, with the currency trading around \$1.30 and between 78 and 79 according to the Bank of England's trade-weighted index. After mid-October, however, the pound became increasingly vulnerable to selling pressure, and by December it was falling across the board. The downward pressure continued in January. For the period as a whole, the pound fell 15 percent against the dollar and 9 percent in terms of the Bank of England's trade-weighted index.

In August and September, sterling traded steadily against other European currencies, even though all were declining against the dollar. The British authorities' resolve to adhere to their medium-term financial plan calling for cuts in monetary and public-sector borrowing growth had recently been reaffirmed. The Bank of England ratified a substantial increase in short-term British interest rates, that restored an interest rate advantage for the pound relative to the dollar. Although the pound declined 8½ percent against the dollar to \$1.22 as the dollar advanced generally, it did not move below 76.6 on the trade-weighted index. The overall steadiness of sterling and an apparent moderation in the growth of British monetary aggregates permitted staged reductions in short-term sterling interest rates during August totaling one and a half percentage points. With these cuts the interest differentials favoring sterling were more than eliminated.

Notwithstanding the pound's steadier tone in the exchange markets, a number of factors undermined market confidence that the British authorities would hold to their anti-inflation policies. Britain's economy, in its third year of expansion, was showing signs of losing momentum while unemployment was still rising. No progress was being made in bringing inflation down below 5 percent or in slowing the rise of unit labor costs, by then increasing more rapidly than in other industrial countries. Meanwhile Britain's current account position was deteriorating, despite a pickup in demand in major export markets, because of a sharp jump in imports. A lengthy strike by coal miners was having an adverse effect on production, as well as the balance of payments since imported oil was being substituted for

domestically-produced coal. Moreover the oil sector, which had been accounting for more than half of the economy's recent growth and had kept Britain's current account in surplus, was no longer seen as a reliable source of strength. With predictions that North Sea oil production would peak in the next couple of years, the stimulative effect of the oil sector on the economy was expected to wane. In the meantime the contribution of net oil exports to Britain's balance of payments was expected to be undercut if an apparent weakness in oil markets led to any significant drop in petroleum prices.

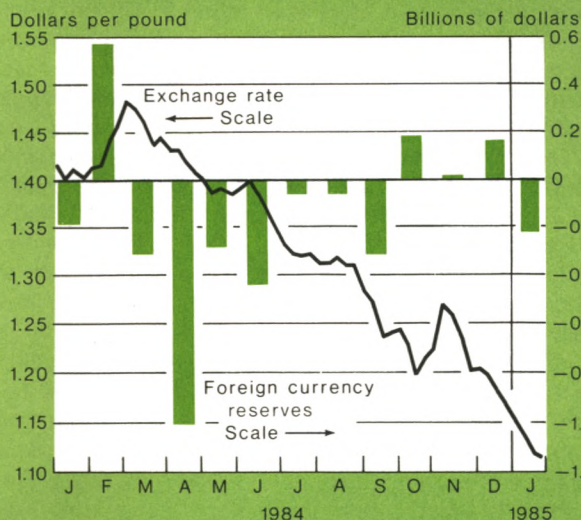
Britain's domestic economy and external position were thus perceived to be in precarious balance. Market participants paid close attention to any development thought capable of forcing the government to have to choose between supporting further growth and employment or dealing with pressures on prices, costs, and the exchange rate. Thus, prospects of a possible spreading of the coal miners' strike and of a reduction in oil prices set the stage for an abrupt but limited drop in the exchange rate around mid-October. Within a week, the pound slid below \$1.20 against the dollar and to 74.0 against the trade-weighted index.

For about two months, the pound then steadied. The coal miners' strike failed to widen and downward pressure on oil prices was being contained as long as OPEC

Chart 4

United Kingdom

Movements in exchange rate and official foreign currency reserves



See footnotes on Chart 3.

discussions on ways to deal with weak oil prices continued. The pound traded within a range of 74 to 76 according to the trade-weighted index. Against the dollar it moved in line with other European currencies, rising during late October and early November before falling back below \$1.21 early in December. With the pound again trading more steadily, British short-term interest rates continued to ease largely in line with the decline in Eurodollar rates. By mid-December, the British clearing banks had cut their base lending rates from the mid-summer highs by a total of 2½ percentage points to 9½ or 9¾ percent.

From December on, sterling began to fall sharply against all currencies, setting successive new lows in terms of both the dollar and the trade-weighted index. Selling of sterling was stimulated by the expectation that OPEC would have difficulty reaching an effective agreement on price differentials. In addition, the market's underlying concern intensified that the authorities were shifting their priorities for economic policy toward spurring output. Growth of public-sector borrowing was turning out well in excess of the government's target, only partly because of strike-related expenditures. Credit extended to the private sector also showed signs of accelerating. The monetary aggregates remained near the top of their official target ranges. Admittedly, the monetary aggregates were distorted in December by a stock issue. But market participants, interpreting the evidence at hand, concluded that the Bank of England would be reluctant to see a reversal of the interest-rate declines of the past several months even to stem a fall in the exchange rate. Market participants also came to doubt the authorities were prepared to use intervention to resist a renewed decline in sterling. Official declarations and actions suggested the authorities were willing to let the pound fall if dictated by market forces.

Under these circumstances the pound dropped steadily, falling most precipitously in mid-January when the OPEC negotiations appeared to be under particular strain. The pound touched a low against the dollar of \$1.1015 in Far Eastern trading on January 14 and of 70.6 against the trade-weighted index at the opening in London that same day. As the exchange rate fell, the authorities did not resist a rise in money market interest rates. The Bank of England at one point seized the initiative to push interest rates up further, to the levels of mid-summer. In the end, sterling interbank rates rose even more—for a total increase of 4½ percentage points to 14 percent. At that point interest rate differentials were again strongly in favor of the pound, reaching a level of 3½ percentage points for three-month deposits relative to the dollar.

Late in January, the high level of sterling interest rates made selling the pound short expensive. In addition,

OPEC had demonstrated an ability to work out a limited agreement on pricing differentials, and spot oil prices firmed. Thus, the immediate pressures against the currency abated. In addition, sterling benefited from market talk of stepped-up central bank intervention following the mid-January G-5 meeting in Washington. Although the pound remained subject to sporadic pressure through the end of the month, it traded without clear direction. The pound closed slightly above its low at \$1.1275 and 71.5 in terms of the Bank of England's trade-weighted index.

British foreign exchange reserves were little changed on balance between end-July and the end of December. Then for January, they dropped \$233 million to \$6.73 billion as of the end of the period.

On December 18, the Chancellor of the Exchequer, in reply to questions in Parliament, stated that the Bank of England would no longer request foreign monetary authorities to restrict sterling balances to working levels, thereby ending formally an agreement the government felt was no longer appropriate to the current international monetary setting. The announcement did not cause any visible impact on exchange rates at the time.

Japanese yen

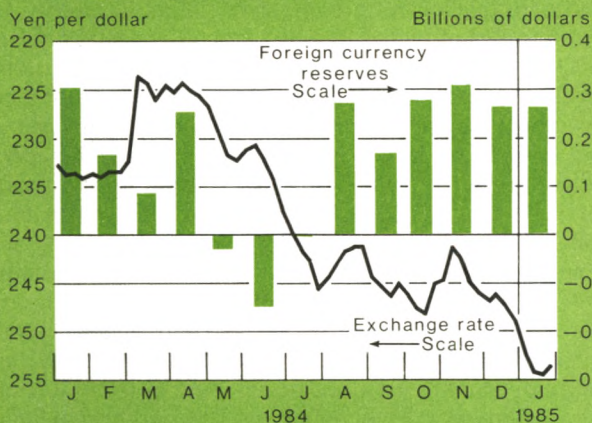
Over the six-month period under review, the Japanese yen eased against the dollar but appreciated against the European currencies. A record-breaking pace of long-term capital outflows continued to be a source of downward pressure on the currency against the dollar. Outflows of Japanese resident capital were attracted in part by relatively high interest rates abroad. They also reflected the continuing diversification of financial assets by Japanese investors and increased yen lending to foreign borrowers. Meanwhile, some non-residents that had been among the largest investors in Japanese securities several years ago continued to liquidate their holdings at maturity, largely to meet payment needs. The net long-term capital outflows swamped Japan's large and growing current account surplus, which was reaching \$35 billion for the year. At times, however, favorable shifts in commercial leads and lags gave a boost to the yen against all currencies. *Vis-à-vis* the European currencies, Japan's large current account surplus and robust domestic economy was an important source of strength.

At first, the yen got some respite from the full brunt of the capital outflows that had helped to push the spot rate down to ¥246.45 by the start of the six-month period. The outflows subsided in August as foreign investment in Japanese equities resumed during a late-summer rebound in the Tokyo stock market. Also, Japanese investors slowed their net purchases of foreign securities ahead of the end of the financial half-year in

Chart 5

Japan

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

September. Thus, the yen advanced to ¥242 early in August and traded steadily against the dollar at that level for several weeks.

During September and October, the yen also received a lift from a favorable swing in commercial transactions. The yen started to ease against the dollar which had become well-bid across the board. But market participants expected this weakness to be short-lived, anticipating that the dollar would soon decline in response to declining U.S. interest rates. Thus, as the yen fell through the lows of late July-early August and toward the ¥250 level, Japanese exporters stepped up their selling of dollars to take advantage of the current dollar rate. Meanwhile importers postponed their currency purchases. At the same time, Japan's imports of oil slowed so that the net export balance was unusually favorable.

With these trade transactions favoring the yen and capital outflows temporarily subdued, the yen's decline against the dollar was more gradual than the decline of the European currencies during September and early October. The yen did touch a two-year low of ¥250.45 on October 17, but it gained 7 percent against the German mark to trade near a record high *vis-à-vis* that currency. Moreover, the yen recouped its losses against the dollar during late October when the dollar eased back. By early November the yen was again trading near the ¥240 level against the dollar and reached a high for the six-month period of ¥239.40 on November 7.

Meanwhile, the changing economic environment abroad had several implications for Japan. The slow-down of the U.S. economic expansion in the third quarter of 1984 seemed to show up almost immediately in a sharp deceleration of Japan's export growth. As a result, Japan's external position actually had a negative impact on GNP the same quarter. In addition, the decline in U.S. interest rates, widely expected to be further encouraged by cuts in the Federal Reserve's discount rate, contributed to a substantial easing of long-term interest rates in Japan. Japanese enterprises shifted their expectations about immediate financing requirements and the future costs of funds. Credit demand softened and corporate borrowing increasingly took place at shorter maturities.

Against this background, there was discussion in the fall that a reduction of the Bank of Japan's official interest rates could entail large potential benefits and low risks for the Japanese economy, given Japan's restrictive fiscal policy, low inflation, and the more restrained economic growth outlook. Bank of Japan officials were concerned, however, that any further drop in Japan's relatively low short-term rates would put further pressure on the yen exchange rate at a time when the size of Japan's current account surplus was threatening to provoke protectionist reactions in major export markets. It therefore kept its discount rate at the 5 percent level established a year earlier with the result that short-term interest rates remained steady.

As a result of these interest rate developments, the interest differentials adverse to the yen narrowed somewhat for long-term rates and declined even more for short-term rates. But market operators began to waver in their expectations that the yen would strengthen further in response to this narrowing of interest differentials, because the dollar generally had eased relatively little from its highs of October.

Thus, the allure of the remaining interest differentials favoring the United States and of prospects of significant further capital appreciation on dollar-denominated bonds began once again to weigh on the Japanese yen. Toward the end of the year Japanese investment in foreign securities mounted. The December U.S. government issue targeted at foreign investors, as well as the offering of British Telecom shares, were well received in the Tokyo market. Thus, net capital outflows jumped up in November and December to \$5 billion and a record \$8 billion, respectively. In the year as a whole net long-term capital outflows from Japan rose to \$50 billion. At the same time, market participants noted that foreign private borrowers rushed to take advantage of the opening of the Euro-yen market to them, effective December 1, to place yen issues. To the extent these issues were purchased by Japanese residents the

transactions contributed to Japan's capital outflows.

Commercial leads and lags also began to shift against the Japanese yen. When expectations of a decline in the dollar faded, importers who had postponed their currency purchases came to fear that exchange rates would become even more unfavorable if they waited any longer. Meanwhile, exporters had already converted some of their foreign currency proceeds ahead of schedule.

As a result, the yen progressively weakened against the dollar, falling over 6 $\frac{1}{2}$ percent from its early November high to ¥255.40 by the end of January. At this level it was down 3 $\frac{1}{2}$ percent on balance during the six months, although against the major European currencies, it rose nearly 5 percent.

Throughout the six-month period the Bank of Japan intervened in the foreign exchange market in comparatively small amounts. Following the meeting of the G-5 in mid-January, the prospect of an increase in coordinated intervention made market participants wary of speculating too heavily against the yen. However, the concern was not sufficient to stem the yen's slide. In total, intervention sales of dollars offset only a fraction of Japan's interest earnings on its foreign exchange reserves, which rose \$1.6 billion over the six-month period to close at \$22 $\frac{1}{2}$ billion.

European Monetary System

During the period under review, there was a growing convergence of economic performance among EMS countries. Recovery had spread to all. The countries showing the greatest improvement in 1984 were those that had still been in recession during 1983. Inflation was continuing to decelerate, with the countries showing the greater declines being those with the higher inflation rates a year before. In general, current account positions were either stable or continuing to improve.

In all cases, the economic expansion proved insufficient to reduce historically high levels of unemployment. Yet fiscal and monetary policies were generally restrained. Fiscal policies were aimed at reducing the size of the government deficit relative to GNP, with actual results varying depending on the burden of unemployment compensation and interest payments on government debt. Monetary policy was generally unaccommodating. Interest rates were allowed to ease only in response to declines in other countries or to improvements in inflation and fiscal deficit control at home.

Under these circumstances, the exchange rate relationship within the EMS remained free from strain during the entire period under review. Early on, most of the EMS currencies were clustered within 1 percent of their bilateral parity rates. The only exception was the Italian

lira, which started near the upper limit of the wider, 6 percent limit established for that currency. The German mark and the Dutch guilder alternated as the topmost currency within the narrow band against the Belgian franc at the bottom. During the period, the German mark and Dutch guilder fell progressively, albeit unevenly, to the lower part of the band. The two currencies fell below the Danish krone and the Irish pound by early September, dropped below the French franc late in November, and approached the bottom of the narrow band to trade below the Belgian franc by early January.

The strength of other currencies *vis-à-vis* the mark presented many EMS countries with opportunities and policy choices. One option, chosen by the Belgian, French, and Italian authorities, was to take advantage of the lack of pressure to build their foreign currency reserves. Prior to the period, the Belgian National Bank had been able to begin reducing its liabilities to the European Monetary Cooperation Fund (EMCF), using the proceeds of the government's external borrowings. During the six months under review, the Belgian central bank was able to continue this program, not only with proceeds of further borrowings, but also with foreign currencies acquired in the market. By the end of the period, Belgium had fully restored its European Currency Unit (ECU) position in the EMCF and increased foreign currency reserves more than \$500 million over the six months. Before the period, the French and Italian authorities had already restored their foreign currency reserves to the levels prevailing before the last EMS realignment. However, they continued to buy substantial amounts of marks along with some other currencies.

Another option, chosen in a small way by the French and Italian authorities, was to ease some of the exchange controls imposed during earlier periods of pressure against their currencies. On December 1, the French authorities announced a partial lifting of controls on the transfer of funds abroad by individuals and corporations and permitted Economic Community institutions to float ECU-denominated bonds in the French market. On December 1, the Italian authorities announced reductions in the non-interest-bearing deposit required against residents' investment abroad and eased restrictions on foreign exchange accounts as well as on the means of payment to be used by Italians traveling abroad.

A third option was to take advantage of the relative strength of the currency to lower interest rates. In France and Belgium the authorities cautiously permitted an easing of interest rates once the foreign currency reserve position was restored and after inflation had shown clear signs of moderation. The French authorities also took advantage of moderating domestic credit demands to replace the strict guidelines on banks'

credit, known as the *encadrement du credit*, with a more flexible credit control system.

But in general the authorities perceived the scope for lowering interest rates to be limited. Faster or more substantial cuts in interest rates were judged to be inappropriate in view of the remaining inflation differentials *vis-à-vis* Germany, the continuing need to finance a large budget deficit, or the financing requirements of a current account deficit. In both Italy and Ireland, interest rates were actually increased. The Bank of Italy temporarily raised its discount rate one percentage point to 16.5 percent in September to curb growth in bank

credit that was exceeding its target range. When credit growth moderated, however, the Bank of Italy cut its discount rate back to 15.5 percent in recognition of the continuing progress in reducing inflation to below double-digit rates.

Thus, interest differentials among EMS countries remained relatively wide and did not narrow as rapidly as, for example, the inflation differentials. Residents in countries with still relatively high interest rates increased their borrowings in international markets, partly to finance domestic operations, while short-term capital movements through the banking sector also flowed to

Chart 6

Percent Deviation of EMS Currencies from their Bilateral Central Rates*



* Weekly averages of daily 9 a.m. rates.

† The Italian lira may fluctuate \pm 6 percent from its central rate with other participating currencies.

the centers with higher rates. Judging these inflows to be potentially reversible, the central banks chose to resist a substantial appreciation of their currencies within the EMS through intervention.

Against the dollar, the EMS currencies fluctuated generally in line with the German mark, weakening most of the period under review with the only major reversal during October and November. By the end of January many of these currencies were trading at record lows against the dollar, and all were some 8 percent below end-July levels.

Although several of the EMS central banks at times intervened in dollars to limit the decline of their currencies against the dollar, total dollar sales by central banks other than the Bundesbank were moderate for the period as a whole. In any case, by end-January, the EMS central banks had purchased considerably more EMS and other currencies in the exchange market than they had sold dollars.

Swiss franc

As the period under review began, Swiss interest rates were under some upward pressure. Throughout 1984, the monetary authorities in Switzerland aimed at controlling inflation by monetary restraint, adhering to a targeted rate of growth of about 3 percent for the central bank money stock. They held to this goal even though economic recovery slowed during the second half of the year. The economic recovery, though moderate by historical standards, was sufficient to generate a modest pickup in credit demands and some increase in interest rates. In addition, domestic financial markets were somewhat unsettled by the decline of the Swiss franc from its peak in March that amounted to nearly 19 percent *vis-à-vis* the dollar and about 2 percent *vis-à-vis* the German mark by the end of July. These declines had brought the spot rate down to SF2.4745 and DM.8493 by the opening of the period.

During August the Swiss franc steadied. Although short- and long-term interest rates in Switzerland remained the lowest of any of the industrialized countries, the tightening of money market conditions in Switzerland combined with other factors to begin to reverse the decline in the Swiss franc. Interest rates in Switzerland were rising at a time when rates elsewhere were either steady or declining. Interest differentials, while still adverse *vis-à-vis* both the dollar and the German mark, narrowed. In addition, non-residents had significantly reduced their issuance of Swiss franc-denominated bonds. Also, there had been a particularly sharp drop in bond placements—and therefore in the ensuing conversion of bond proceeds into dollars—by Japanese firms whose ability to offer attractive terms on bonds with stock warrants became compromised by a

poor performance of Japan's stock market during the second quarter. Nor did Swiss franc bonds offer as much prospect for capital appreciation to attract investors as did bonds denominated in currencies where interest rates were declining.

The Swiss franc therefore recovered irregularly against the dollar to reach its high of the six-month period of SF2.3650 on August 16. The franc recovered against the German mark for somewhat longer, moving to a level below DM0.82 after mid-September.

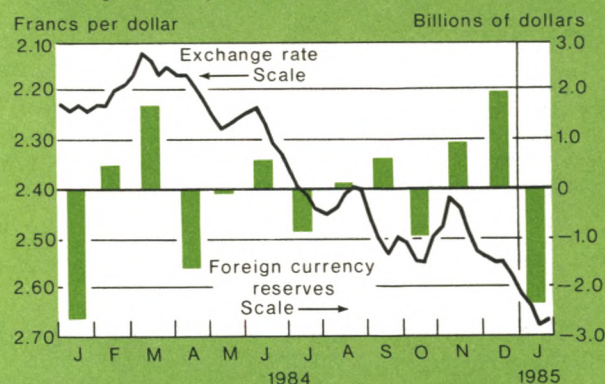
During late September and October, when European currencies were generally fluctuating widely *vis-à-vis* the dollar, the Swiss franc moved with the German mark, but not as widely. The Swiss franc was not the focus of selling pressures prior to September 21. Thereafter, it did not benefit as much from intervention. The Swiss authorities made it clear that they did not intend to intervene aggressively in the exchange markets out of concern that they might then have to deviate substantially from their domestic monetary policy objectives. When the dollar fell back in late October, the Swiss franc was again trading close to its highs for the period against both the dollar and the mark.

Thereafter, however, the franc began to lose ground relative to both currencies. This weakness in the franc followed statistical releases confirming that inflation continued to be higher and growth lower than in Germany. Also, the franc did not benefit, as the mark did, from continuing expectations of central bank intervention. The National Bank, having kept its restrictive 3 percent target for growth of central bank money for

Chart 7

Switzerland

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

1985, was perceived as reluctant to add further upward pressure on domestic interest rates by intervening in the exchange markets. The franc declined more rapidly than the mark as the dollar strengthened across the board during late December and January. The franc closed the period at SF2.6830, down 8 1/2 percent relative to the dollar for the six months.

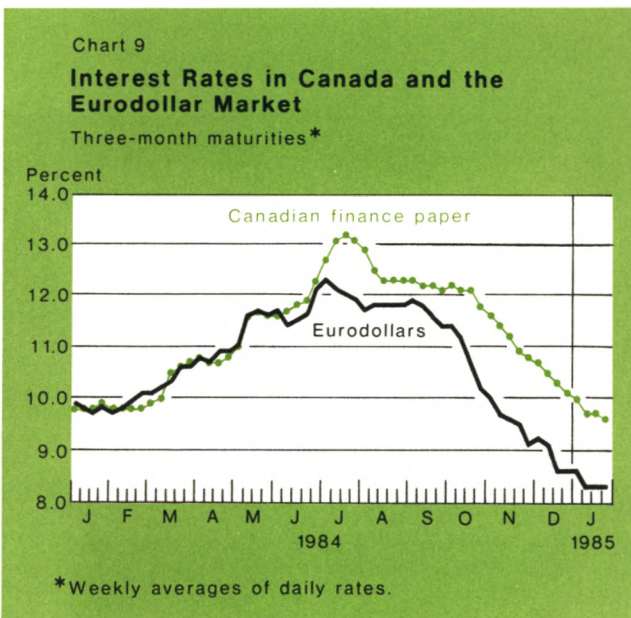
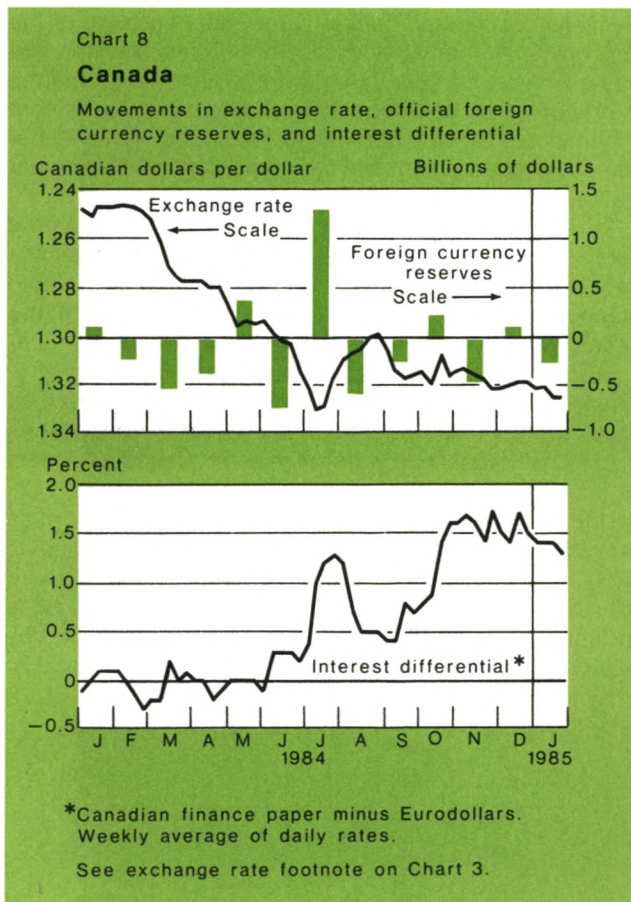
As the franc began again to decline in late 1984, market commentators started to attribute the move at least in part to a long-term loss of the franc's international appeal. They suggested the franc might be suffering from an erosion of its "safe haven" status in the face of worldwide reductions in inflation and the perception of an increasingly fragile political environment in Europe. Some also suggested that the transactions demand for the currency had diminished to the extent that the franc has lost attractiveness as a trading vehicle. As for foreign exchange dealing, the dollar/mark relationship was volatile enough to provide sufficient profit opportunities in markets larger in size and permitting bigger transactions. As a medium for investment, the franc was being overshadowed by other currencies, most especially the dollar.

The Swiss National Bank did not intervene in the exchanges during the August-January period. Swiss reserves fluctuated as the central bank used currency swaps to adjust domestic liquidity, closing virtually unchanged from end-July levels.

Canadian dollar

Just before the period opened, the Canadian dollar had shaken off the severe selling pressures of the earlier part of the year. In mid-summer, Canadian interest rates had moved up, restoring a positive differential in favor of the Canadian dollar. With money market rates well above corresponding U.S. rates at the start of August, the cost of short Canadian dollar positions had become expensive. Thus professional selling of the currency subsided and commercial leads and lags came into better balance. Also a public debate faded over whether economic policy should give priority to reducing unemployment or dealing with inflation. The Canadian dollar rose from the historic low of Can.\$1.3368 (\$0.748) against the U.S. dollar reached in mid-July to Can.\$1.3094 (\$0.764) by early August.

During the period under review, a number of factors supported the Canadian currency which, along with the U.S. dollar, rose relative to the other major currencies. Canada's current account was in surplus, buoyed by a strong export performance. Canada's economy revived in the third quarter, catching up for slower growth earlier in the year. Meanwhile, inflation continued to moderate, falling to below 4 percent at an annual rate. In addition, a change in government at the September national



elections encouraged market participants because of the new governing party's advocacy of policies to encourage foreign investment in Canada, to reduce governmental intervention in the economy, and to cut government expenditures. These ideas were reaffirmed in November when the government gave a statement to Parliament of its intended legislative program.

Yet market confidence in the Canadian dollar was not fully restored. The public debate preceding the election had left uncertain the priority any government would place between lower interest rates to stimulate the economy and higher rates to fight inflation. By mid-winter there was also some doubt that the new government would be able to implement its program of fiscal restraint. Moreover, large corporate transactions occasionally weighed on the market for Canadian dollars at times.

Under these circumstances, the Canadian authorities moved cautiously to take advantage of the decline of U.S. interest rates to avoid an outbreak of revived pressure against the currency. Canadian interest rates at first did not decline as quickly as U.S. rates, and by mid-October the interest differentials *vis-à-vis* the U.S.

dollar were even wider than in early August. Thereafter, Canadian interest rates did ease more in line with U.S. interest rates, maintaining the wider differentials for the balance of the six-month period.

Against this background, the Canadian dollar fluctuated without clear direction against the U.S. dollar, declining less than other currencies. On balance it declined 1¹/₄ percent to Can.\$1.3258 (\$0.754) by end-January. The Canadian dollar thereby continued to appreciate against other currencies during the period under review, benefiting at least in part from high yields on Canadian assets and the currency's relative firmness against the U.S. dollar to attract sizable capital inflows from abroad.

Foreign exchange intervention by the Canadian authorities was aimed at smoothing out sharp movements in the currency. Total foreign currency reserves fell by \$1.2 billion, mostly in August and November, to stand at \$1.5 billion at the end of the period. The declines primarily reflected repayments of outstanding foreign exchange drawings made earlier in the year on the government's credit lines with Canadian and foreign banks.

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