FEDERAL RESERVE BANK OF KANSAS CITY

Economic Review

May/June 1990

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The *Economic Review* (ISSN0161-2387) is published bimonthly by the Federal Reserve Bank of Kansas City, 925 Grand Avenue, Kansas City, Missouri 64198-0001. Subscriptions and additional copies are available without charge. Send requests to the Public Affairs Department, Federal Reserve Bank of Kansas City, 925 Grand Avenue, Kansas City, Missouri 64198-0001. Second-class postage paid at Kansas City, Missouri.

POSTMASTER: Send address changes to *Economic Review,* Public Affairs Department, Federal Reserve Bank of Kansas City, 925 Grand Avenue, Kansas City, Missouri 64198-0001.

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Contents

May/June 1990

ments in the district. And these pressures come at a time when "fend-for-yourself federalism" threatens to spread state and local budgets even thinner.

To help citizens and public officials confront upcoming spending issues, Miller examines state and local government spending patterns in the district and discusses some of the factors that will keep upward pressure on spending. He concludes that economic and demographic factors will continue to exert pressure on several categories of spending by state and local governments in the district.

Bank Holding Companies, Cross-Bank Guarantees, and Source of Strength 54

By William R. Keeton

Regulators' concerns about unsafe practices by bank holding companies have increased recently because some BHCs have refused to come to the aid of their troubled banks. Practices such as this have forced the FDIC to pick up the tab when the banks subsequently failed.

In response, regulators and legislators have tried to make BHCs more responsible for the health of their banks. Congress has provided for a new system of "cross-bank guarantees," requiring BHCs to use the net worth of their healthy banks to reimburse the FDIC for losses from their troubled banks. The Federal Reserve would have BHCs serve as a "source of strength" by assisting troubled banks before they fail. A variant of this measure would make BHCs legally liable for all losses incurred by the FDIC in closing their banks.

Keeton reviews these recent efforts to protect the banking system from unsafe practices by BHCs. He concludes that cross-bank guarantees are beneficial, but that some kind of source-of-strength policy would further improve the safety of the banking system.

Has the Cost of Disinflation Declined?

By George A. Kahn and Stuart E. Weiner

With inflation showing few signs of ebbing after its sharp drop in the early 1980s, some policymakers are now calling for further disinflation. For example, a resolution before Congress (H.J. Res. 409) would direct the Federal Reserve to eliminate inflation in five years. Moreover, some Federal Open Market Committee members have argued that, with or without explicit legislation, merely capping inflation at its current rate is not enough and that the Federal Reserve needs to make further progress in eliminating inflation.

Calls for further disinflation have not generated unanimous support, however, because of disagreement over the relative costs and benefits of disinflation. A program of eliminating inflation would enhance the economy's long-run growth potential, but also likely cause unemployment to rise temporarily. While camps on both sides of the disinflation issue acknowledge difficulties in estimating the costs and benefits, proponents of further disinflation nevertheless believe the benefits exceed the costs. Opponents are not convinced.

Disinflation would clearly be more popular if it could be achieved with less cost. Whatever the benefits of disinflation, any reduction in its cost strengthens the case for further disinflation. Some proponents of further disinflation believe the sharp increase in unemployment accompanying the disinflation of the early 1980s might not accompany further disinflation today. Because of enhanced monetary policy credibility and increased wage and price flexibility, these proponents believe the Federal Reserve can lower inflation without imposing as large a cost as in the past.

This article examines evidence on the current cost of reducing inflation. The first section explains why past disinflations have been costly, showing how reductions in inflation have required substantial increases in unemployment. The second section finds little evidence that the relationship between inflation and unemployment has changed in recent years. The third section

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finds only limited evidence that monetary policy credibility and wage and price flexibility have increased in recent years. Thus, taken together, the available evidence provides little support for the view that the cost of disinflation is substantially lower today than in the past.

I. Disinflation in the Past

Inflation is indisputably costly. It discourages saving and investment by creating uncertainty about future prices. It forces businesses and individuals to spend time and money predicting future prices. And, through its interaction with the tax system, it can increase tax burdens by artificially raising incomes and profits. All of these factors cause the economy to operate less efficiently, hampering economic growth and ultimately reducing standards of living (Fischer 1984b).

But reducing inflation is also costly. History suggests that when an economy is operating at full employment, as it is today, the only way to reduce inflation is to temporarily generate slack in the economy. That is, growth of aggregate spending must be reduced so as to temporarily underutilize labor and capital resources. This underutilization of resources lowers output, lowers employment, and increases unemployment.

The historical record

The cost of disinflation has historically been quite high in the United States. One way of measuring the cost is to express it in terms of *point years of unemployment*, defined as the cumulative excess of the actual unemployment rate over the full-employment unemployment rate. For example, if the full-employment unemployment rate were 5½ percent, but the actual unemployment rate were 6½ percent one year and 6 percent the following year, then the number of point years of unemployment would be 1½—calculated as (6½ − 5½) + (6 − 5½). Estimates based on post-World War II data show that a permanent one-percentage-point reduction in inflation has required roughly two point years of unemployment. Thus, disinflation has come at a considerable cost.[1]

While this estimate of a point-year ratio of 2 is a convenient rule of thumb, specific estimates vary depending on the particular inflation measure used and the underlying assumption about the value of the full-employment unemployment rate. Nevertheless, virtually all estimates show that disinflations have inevitably required substantial increases in unemployment. This has been true of both sharp disinflations over short time periods (cold turkey disinflations) and smooth disinflations over longer time periods (gradual disinflations).[2] The disinflations of the late 1950s and the early 1980s illustrate this point.

The disinflation of the late 1950s began from an inflation level that was already quite low by today's standards. In 1957, inflation, as measured by the consumer price index, was running at 3 percent. Reflecting a combination of more restrictive fiscal and monetary policies, as well as some weakening of private demand, growth of total spending started to slow (Chandler and Goldfeld 1977). As a result, slack developed in the economy and inflation began to fall as unemployment began to rise.

The adjustment process took several years. Inflation declined gradually, falling to 2 percent in 1958 and to an average of 1 percent in 1961 and 1962. Unemployment, meanwhile, rose from 4.3 percent in 1957 to 6.8 percent in 1958, and then slowly declined, not returning to its full-employment level until 1964. By the end of the process, inflation had been reduced two percentage points at a cost of 4.5 point years of unemployment, implying a point-year ratio of slightly over 2.[3] Thus, the disinflation of the late 1950s—an example of a gradual disinflation—required a significant increase in unemployment.

The disinflation of the early 1980s occurred

in a much different environment. Inflation had escalated throughout the late 1970s until consumer price inflation had reached 12½ percent by 1979. The Federal Reserve responded in October 1979 by changing its operating procedure from interest rate targeting to reserve targeting and by adopting a restrictive disinflationary policy.

The restrictive policy had a strong impact. Within three years, inflation had fallen to 4½ percent, while unemployment had climbed from 5½ to 9¾ percent. In following years, inflation remained near 4½ percent, while unemployment only slowly returned to its full-employment level. Unlike the late 1950s disinflation, the early 1980s disinflation was administered cold turkey—growth of total spending was sharply curtailed, leading to sharp movements in inflation and unemployment. But the ultimate cost in terms of unemployment was similar. Inflation was reduced eight percentage points at a cost of 18 point years of unemployment, implying a point-year ratio, again, of slightly over 2.[4]

The disinflation process

Why is disinflation so costly? Why must so much slack be generated in the economy in order to achieve lower inflation?

In a perfectly flexible economy, an economy with perfect wage and price flexibility and complete monetary policy credibility, disinflation would be costless. The disinflation process would begin with monetary authorities announcing a disinflationary policy—that is, announcing their intention to lower inflation by tightening monetary policy. Workers and businesses would immediately and fully revise their expectations about the future course of monetary policy because announcements by the monetary authorities would be seen as fully credible. Workers and businesses would also know from experience that wage and price inflation, having no built-in inertia, would immediately moderate under such circumstances. As a result, workers and businesses would immediately lower their inflation expectations.

Lower inflation expectations would in turn speed the adjustment of prices and wages. Given lower expectations of inflation, businesses would immediately reduce the rate of price increases on their products to stay competitive. Businesses could take such action because, not only would the prices on all their input materials be moderating, but their labor costs would be moderating as well. Labor costs would be moderating because workers would have lowered their wage demands in light of lower expected inflation. Workers would realize that in an environment of lower inflation, they could maintain their real wage growth with lower nominal wage growth. They would also realize that if they did not lower their wage demands, they would become more costly to employers in terms of product prices and thus face possible layoffs.

In the end, the disinflation would have been achieved costlessly. Inflation expectations would have adjusted immediately. Price and wage inflation would have adjusted immediately. The full impact of the tighter monetary policy would be felt in lower inflation, with no loss of output or employment.

The real world, unfortunately, does not operate this way. Disinflations are costly because the economy is characterized by rigidities in expectations, prices, and wages.

Expectations rigidities arise from two sources. First, monetary authorities may not have full credibility. Rational workers and businesses may suspect the authorities will not keep their promise of a disinflationary policy. In particular, workers and businesses may be suspicious because they realize the monetary authority may have an incentive to renege on its disinflationary promise in order to temporarily generate higher output and employment.[5] A second reason expectations are rigid is workers and businesses have come to believe wages and prices adjust slowly.

Based on their knowledge of how the economy has functioned in the past, workers and businesses rationally expect inflation not to decline rapidly.[6]

Price rigidities arise because many businesses have an incentive to resist rapid adjustment of their prices when aggregate spending declines. One reason businesses may be slow in restraining their prices is the process of changing prices can be costly. Revising price lists and catalogs, for example, is an expense that businesses would prefer to incur only infrequently.[7] A second reason businesses may be slow in restraining their prices is the cost of their inputs—materials and labor—may remain high, partly because of long-term contracts. Businesses often enter into price agreements with materials suppliers far in advance of the time of delivery, imparting inertia to materials prices. Likewise, labor agreements between businesses and unions usually extend for several years, imparting inertia to wages. This inertia in the cost of inputs generates inertia in prices.

Wage rigidities arise because of long-term union contracts, incomplete inflation indexation, and productivity concerns. Union contracts in the United States typically last three years, implying that the wage structure for a particular year was largely negotiated in previous years. In theory, such multiyear contracts need not limit wage flexibility, because if wages were indexed to inflation, reductions in aggregate spending and inflation would automatically restrain wages. In practice, however, cost-of-living-adjustment clauses (COLAs) appear in less than half of union contracts, and where COLAs do appear, indexation is usually only partial (Weiner 1986b). Thus, long-term labor contracts, in conjunction with incomplete indexation, introduce rigidities into union wages. Moreover, because union wages sometimes set the pattern for nonunion wages, rigidities in the union sector indirectly introduce rigidities in the nonunion sector as well. Reinforcing rigidities in nonunion wages are fears that restraining wages will hurt worker productivity and fuel worker discontent. Therefore, businesses may be reluctant to lower wages for fear worker productivity will decline or their best workers will quit.[8] Consequently, wages are slow to adjust throughout the economy. As with prices, a good deal of wage inertia exists. Thus, in contrast to the perfectly flexible scenario described earlier, the U.S. economy operates in the presence of numerous rigidities, which make the disinflation process lengthy and costly.

A more accurate description of the disinflation process would go as follows. The monetary authority announces a disinflationary policy. Because workers and businesses question the authorities' commitment to the policy, they initially leave their expectations of inflation unchanged. As the monetary authority begins to act on its policy, aggregate spending in the economy starts to decline. With the decline in aggregate spending, production begins to outstrip demand, and inventories begin to rise. To help move these excess inventories, businesses are forced to reduce the rate at which they increase prices. However, workers' wage increases remain unchanged because the inflation expectations on which those wages were based—expectations that have been incorporated in current wage contracts—have not yet changed. So, not only does demand decline and inventories rise, but workers are now more costly relative to the prices businesses can get for their products. As a result, businesses begin to reduce their demand for labor, causing a decrease in employment and an increase in unemployment. Thus, the initial effects of the disinflation are a rise in unemployment and a decline in inflation.

The process is not over, however, because inflation expectations of workers and businesses begin to fall. The actual inflation rate is now somewhat lower than it had been initially. As a result, workers lower their inflation expectations and agree to lower their wage increases as labor contracts expire and new ones are negoti-

ated. After all, with inflation now lower, workers no longer require as large a wage increase to maintain their purchasing power. In turn, as wage increases moderate, businesses are able to further restrain their price increases and, assuming no further declines in aggregate spending, businesses begin to rehire workers. Consequently, the unemployment rate starts to decline. Eventually, the economy returns to its full employment level, with the inflation rate equal to what workers and businesses are expecting. There is no pressure for change. Thus, disinflation has been achieved, albeit at the cost of a temporary increase in unemployment.

Prospects

The disinflation process described above is highly simplified. Nevertheless, it accords well with actual disinflations to date. Are the prospects for future disinflations any different? Specifically, is there reason to believe the cost of disinflation would be lower than the rule-of-thumb estimate suggests?

The rule-of-thumb estimate indicates that eliminating inflation from its current 4½ percent level would require about nine point years of unemployment. For example, assuming a full-employment unemployment rate of 5½ percent, a cold turkey disinflation would require three years of 8½ percent unemployment (9 point years equals 3 years times (8½ − 5½) percentage points of unemployment). Alternatively, a gradual disinflation would require six years of 7 percent unemployment (9 point years equals 6 years times (7 − 5½) percentage points of unemployment).

Proponents of further disinflation correctly point out that estimates such as these are based on past experience and, as such, might not have any relevance for the future. Fundamental relationships in the economy could have changed so that disinflation in the future could be attained at a much lower cost than in the past. In particular, some or all of the rigidities discussed in the previous subsection could have lessened, moving the economy toward the perfectly flexible economy.

It might be argued, for example, that Federal Reserve credibility has increased in recent years, allowing workers' and businesses' inflation expectations to adjust rapidly to an announced disinflationary policy. Alternatively, it might be argued that wages and prices have become more flexible, so that for a given level of inflation expectations, businesses would now more rapidly restrain their price increases and workers would more rapidly restrain their wage increases in the face of reductions in aggregate spending. Such arguments appear reasonable. The Federal Reserve showed considerable resolve in reducing inflation in the early 1980s, a resolve that might have enhanced its credibility. Similarly, in the face of intense foreign competition and a decline in union power, businesses and workers now appear to have more incentive to rapidly adjust prices and wages.

Two types of evidence can help determine whether the cost of disinflation has declined. One type of evidence comes from empirical studies estimating the relationship between inflation and unemployment. Evidence that the relationship has recently changed could indicate a change in the cost of disinflation. However, the reliance of this evidence on historical relationships, and its inability to separate credibility changes from wage and price flexibility changes, tempers its conclusiveness. The other type of evidence comes from examining the factors affecting credibility and wage and price flexibility. But credibility and wage and price flexibility cannot be observed directly, so this evidence must also be carefully interpreted. Examining both types of evidence together provides a more accurate assessment of any potential changes in the cost of disinflation than examining either type of evidence alone. The next two sections take up this task.

II. Inflation-Unemployment Evidence

The historical relationship between inflation and unemployment can help determine whether the cost of disinflation has declined. While looking at this relationship over the entire post-World War II period gives a useful picture of the past cost of disinflation, determining whether this relationship has recently changed sheds light on whether the cost of disinflation today might be lower. This section looks for evidence of instability in estimated relationships between inflation and unemployment. Many studies have found these relationships to have remained unchanged through the early 1980s disinflation. Yet few studies have examined the more recent experience.[9] The relationships estimated in this section confirm earlier findings of stability, suggesting little evidence of a decline in the cost of disinflation.

The relationship between inflation and unemployment

For years, economists have explained the behavior of inflation by exploiting the empirical relationship between inflation and unemployment. This relationship, called the Phillips curve, associates falling inflation with temporary increases in unemployment above the full-employment unemployment rate. The Phillips-curve approach is consistent with the simplified characterization of disinflation described earlier, in which unemployment rises as monetary policy turns disinflationary. The increase in unemployment eventually puts downward pressure on inflation.

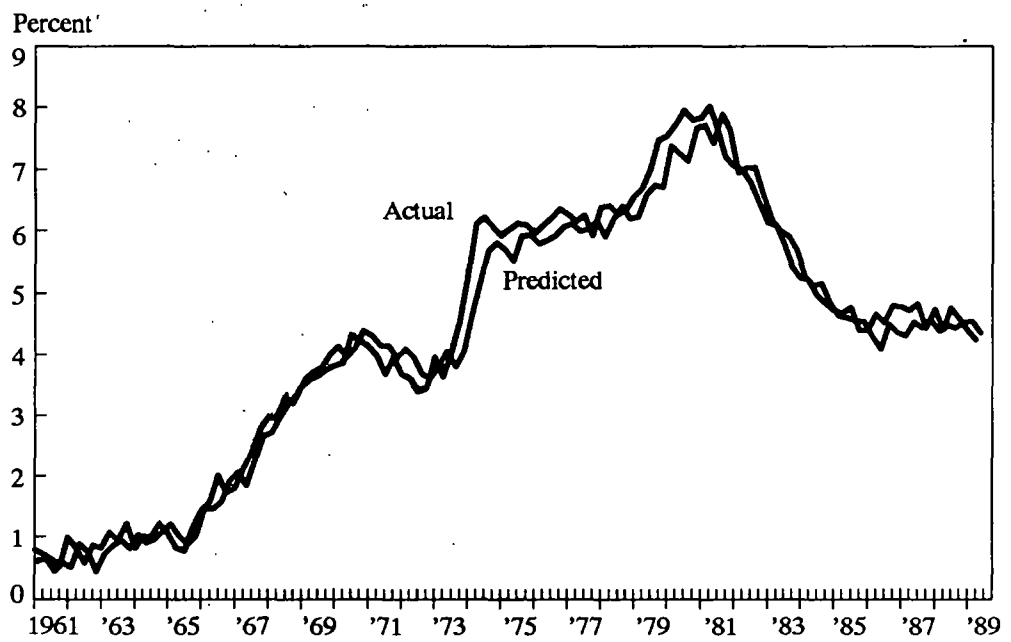
Falling inflation, in turn, causes inflation expectations to adjust downward. As pointed out in the last section, inflation expectations must fall during a disinflation to ensure that the economy eventually returns to full employment. This fall in inflation expectations reinforces the downward pressure on inflation coming from higher unemployment. Because inflation expectations cannot be directly observed, however, they are usually determined indirectly in the Phillips-curve approach. Typically, any variable thought to be used by individuals and businesses in forming their expectation of inflation is included as an additional variable explaining inflation. The most common of these variables is past inflation, but other variables such as past unemployment might also be required.[10] Along with current unemployment, these variables help explain inflation in the Phillips-curve approach.[11]

Phillips-curve evidence

The Phillips-curve estimation reported here provides little evidence that the cost of disinflation has declined. If the cost of disinflation were now lower because of such structural changes as enhanced monetary policy credibility or increased wage and price flexibility, the performance of estimated Phillips-curve relationships would deteriorate. Estimated Phillips curves do not incorporate credibility as an explanatory variable and assume constant wage and price flexibility over time. Thus, if credibility or wage and price flexibility had increased, estimated Phillips curves would overpredict inflation. Such an overprediction of inflation did not systematically occur during the early 1980s disinflation and has not systematically occurred since then. In fact, estimated Phillips curves remained quite stable throughout the decade. Thus, Phillips-curve evidence points to no significant change in the relationship of inflation to unemployment and hence gives little indication of a change in the cost of disinflation.

To illustrate the stability of the relationship between unemployment and inflation, a simple Phillips-curve equation—fully described in the appendix—was estimated through 1979 and forecast over the 1980s. Following the approach of Blanchard (1984), the equation was then sub-

Chart 1
Actual and Predicted Inflation



Notes: Actual inflation is measured by the fixed-weight deflator for personal consumption expenditures net of food and energy. Predicted inflation is based on the model described in the text. Actual and predicted inflation are smoothed by taking a four-quarter moving average of quarterly rates of change.

Source: Department of Commerce and authors' estimates based on the model described in the text.

jected to a number of tests for stability. The purpose of estimating a highly simplified Phillips curve was not to explain every wiggle in the data on inflation, but rather to test the stability of the inflation-unemployment relationship both over long periods of time as well as in recent years. Clearly, a more complicated specification of the Phillips curve could explain much more of the variation in inflation over time. What is important for the purpose of this article, however, is to examine whether the broad historical relationship that held in the past continues to hold today.

Although the estimated Phillips curve is highly simplified, it predicts both the disinflation of 1980 to 1986 and the stabilization of inflation after 1986. This performance is shown in Chart 1, which plots actual inflation against the inflation rate predicted by the Phillips-curve equation, estimated from 1961:Q2 to 1979:Q3.[12] While from 1980 to 1985 the equation slightly overpredicts inflation, the equation slightly underpredicts inflation from 1986 to 1988. These prediction errors, however, are too small to attribute to structural changes that would significantly reduce the cost of disinflation.[13]

Parameter estimates of the Phillips-curve equation confirm the impression of stability implied by the equation's forecasting ability. Table 1 reports parameter estimates from the Phillips-curve model that generated the predictions in the chart. The table shows how inflation has been related to unemployment and past inflation during various periods in the recent past. The table shows that, as years are added to a sample beginning in the second quarter of 1961

Table 1
Phillips-Curve Estimates

Period ending[1]	Constant	Sum of coefficients on unemployment	Mean lag on inflation	S.E.[2]	F[3]
1979:Q3	−2.39	−.70	2.08	1.04	—
	(1.55)	(1.64)			
1980:Q3	−2.03	−.61	2.05	1.05	1.20
	(1.34)	(1.45)			
1981:Q3	−1.89	−.59	2.07	1.05	.94
	(1.30)	(1.47)			
1982:Q3	−2.67	−.79	1.88	1.07	1.64
	(1.88)	(1.97)			
1983:Q3	−2.63	−.77	1.86	1.04	.16
	(1.99)	(2.06)			
1984:Q3	−2.80	−.82	1.91	1.02	.28
	(2.35)	(2.41)			
1985:Q3	−2.79	−.81	1.90	1.00	.09
	(2.46)	(2.49)			
1986:Q3	−2.63	−.77	1.90	1.00	.95
	(2.38)	(2.44)			
1987:Q3	−2.53	−.74	1.87	.99	.41
	(2.38)	(2.42)			
1988:Q3	−2.63	−.77	1.91	.99	1.15
	(2.50)	(2.54)			
1989:Q3	−2.56	−.77	1.91	.99	.87
	(2.45)	(2.53)			

Note: Dependent variable is the annualized change in the log of the fixed-weight personal consumption expenditure deflator, net of food and energy. Absolute values of t-statistics are in parentheses. Further details of the model are provided in the appendix.

[1] All periods begin in 1961:2.

[2] Standard error of the regression.

[3] Test statistic for the hypothesis of no change in the last year of the sample. Distributed F(4,x), x = 58, 62, . . . , 94. None of the statistics is significant at the 0.10 level.

and ending initially in the third quarter of 1979, the estimated response of inflation to increases in unemployment does not change much.[14] In particular, reported sums of coefficients on current and past unemployment, which measure the sensitivity of inflation to unemployment over several quarters, change little through 1989 as years are added to the sample. The coefficients range roughly from -0.6 to -0.8, with most of the variation occurring in the early 1980s and with the coefficients in the last half of the 1980s slightly higher in absolute value than in the first half.

While the coefficients on unemployment have risen slightly in absolute value, the mean lag on inflation has fallen slightly, from 2.1 in 1979 to 1.9 in 1989.[15] The fall in the mean lag on inflation implies that inflation now adjusts slightly faster to changes in unemployment than it did earlier in the decade. Together with the slight increase in inflation's responsiveness to unemployment (and a decline in the size of the constant term), the decline in inflation's mean lag suggests the possibility of a slight decline in the cost of disinflation. However, given the small magnitude of changes in the parameters over time, any overall change in the cost of disinflation would likely be very small and probably insignificant.

Moreover, despite slight variation in parameter estimates, the overall Phillips-curve relationship has remained extremely stable. The statistics reported in the last column of Table 1 test the hypothesis that the overall relationship changed when each extra year of data was added to the sample.[16] In no case was the test statistic significant, indicating that no statistically significant change occurred in the overall relationship in any year since 1979.[17] As a result, the estimated Phillips curves provide little evidence of a change in the cost of disinflation.

Limitations

At least two potential shortcomings in the Phillips-curve approach limit the reliability of the results. First, the approach is based on historical relationships. Consequently, the approach may not reliably predict future behavior under certain circumstances, mainly those outside the realm of historical experience. No matter how well Phillips curves predict past inflation, a major change in the conduct of monetary policy could still lead individuals and businesses to change fundamentally the way they form expectations about price and wage inflation. Even though the 1979 change in monetary policy did not apparently have this effect, future changes in the conduct of monetary policy could nevertheless make historical relationships obsolete.

Second, the Phillips-curve approach cannot identify sources of change in the cost of disinflation. It can only reveal whether a change has occurred. In the Phillips-curve approach, the estimated sensitivity of inflation to unemployment and other variables is a combination of expectations effects and wage and price flexibility effects. If, for example, information about unemployment helps people predict inflation, the coefficient on unemployment in estimated Phillips curves will represent a combination of at least two different effects—the effect of unemployment on expected inflation and the effect of unemployment on price and wage adjustment. The Phillips-curve approach provides no way to disentangle these two effects. Any change in the cost of disinflation must be attributed to an unknown combination of credibility effects and wage and price flexibility effects.[18]

III. Credibility-Flexibility Evidence

The evidence presented in the preceding section suggests the inflation-unemployment relationship has remained stable, implying the cost of disinflation has not declined. Indirectly, then,

this evidence suggests monetary policy credibility and wage and price flexibility have not increased. However, if credibility or flexibility had only recently increased, an estimated Phillips curve like that used in the preceding section might not be able to detect the change. Thus, it is imperative to look as well for direct evidence of changes in credibility or wage and price flexibility.

Credibility

Credibility is a nebulous concept. It cannot be observed and thus cannot be measured directly. Even if it could be measured directly, there is no guarantee its value today would be relevant tomorrow. But because credibility is so central to determining the cost of disinflation, one must attempt to infer what one can about it. A starting point is to be precise in defining credibility. For the purposes of this article, credibility means the public believes the Federal Reserve will follow through on its disinflation policy announcements and, as a result, the public is willing to lower its inflation expectations before it actually observes inflation declining. Credibility is said to have "increased" to the extent that the public is now more likely to believe the Fed's policy announcements than it was prior to the early 1980s disinflation. Both theoretical and empirical evidence can be brought to bear on the current state of Federal Reserve credibility.

On theoretical grounds, one may initially be inclined to believe that Federal Reserve credibility has increased substantially in recent years. The Federal Reserve showed considerable resolve in reducing inflation in the early 1980s, tolerating almost 10 percent unemployment in order to drive inflation down from its double-digit levels. Having demonstrated that resolve, the Fed presumably enhanced its reputation as an inflation fighter. And such a reputation is crucial. In the absence of formal rules that precommit a central bank to specific actions, establishing a reputation is paramount if a central bank is to have credibility in its policy announcements.[19]

But reputation—and, hence, credibility—does not automatically pass from one central bank regime to another. When a new group of individuals assumes leadership at a central bank, workers and businesses will be uncertain of their policy preferences. As a result, workers and businesses, acting rationally, will want to observe policymakers' actual performance for a while before they are willing to believe the central bank is truly committed to fighting inflation (Backus and Driffill 1985, and Barro 1986). Such a situation appears applicable today. Since the early 1980s disinflation, a completely new group of individuals has been appointed to the Federal Reserve Board, forming a majority on the Federal Open Market Committee. Under this new regime, there has been no further disinflation. The new regime has not yet established a track record in reducing inflation. As a result, workers and businesses may remain skeptical of the new regime's commitment to disinflation until some actual disinflation is observed.

Theoretical considerations, therefore, cast some doubt on the view that Federal Reserve credibility has significantly increased. What about empirical evidence? Are there any direct signs that Federal Reserve credibility has substantially risen? The answer here also appears to be no.

Studies of financial markets during the early 1980s disinflation suggest the Fed's reputation as an inflation fighter grew as the 1980s disinflation unfolded.[20] Interest rates, foreign exchange rates, and commodity prices all tended to move in a way consistent with a growing conviction that the Fed was serious about fighting inflation. However, part of these movements were reactions to declines in actual inflation, and such "learning" does not constitute credibility. Moreover, as just argued, this evidence is probably irrelevant anyway. It applies to the 1980s regime,

not the 1990s regime.

Evidence that does apply today is not encouraging. Federal Reserve officials in recent years have often claimed that achieving price stability is their long-run goal. Yet, market surveys show inflation expectations for the next five to ten years remain in the 4 to 5 percent range, and long-term interest rates remain at levels consistent with such expectations (Hoey 1990). Moreover, numerous economic forecasts in both the private and public sectors continue to project inflation of 4 to 5 percent over the next five years.[21] Market participants may question the Fed's ability to adhere to its commitment to price stability.

Some proponents of further disinflation believe Federal Reserve credibility would be greatly enhanced by passage of H.J. Resolution 409. This resolution, introduced in September 1989 and presently in committee, would direct the Federal Reserve to eliminate inflation in five years. Inflation would be deemed eliminated when "the expected rate of change of the general level of prices ceases to be a factor in individual and business decisionmaking."[22] Many of the resolution's supporters believe the resolution would give the Fed a mandate to pursue price stability, thereby enhancing the Fed's credibility. But there are reasons to be skeptical. For one thing, the resolution would not be enforceable. For another, several additional policy goals, including full employment, would remain in force under the Humphrey-Hawkins Act and the Federal Reserve Act. Thus, it is not clear that the resolution would provide a mandate for price stability and, as a result, it is not clear that workers and businesses would be any more inclined to believe the Fed was serious about reducing inflation. As in past disinflations, workers and businesses would likely take a wait-and-see attitude.

Wage and price flexibility

While there is little evidence of an increase in Federal Reserve credibility, there may be some evidence of a small increase in wage and price flexibility. Sources of increased flexibility include the greater influence of foreign trade on the U.S. economy, the decline of union power, and the rise of new forms of labor compensation that tie labor costs more closely to economic performance.

Because foreign trade is growing relative to GNP, more domestic businesses now compete directly with foreign businesses for customers. When the foreign exchange value of the dollar increases because of disinflationary monetary policy, inflation of prices for imported goods declines. As a result, domestic industries producing goods that compete with imports may become more cost conscious and more willing to lower profit margins to maintain market share. As more and more foreign goods and services enter the U.S. market, prices may respond more quickly to market signals. And with foreign goods possibly being produced by cheaper foreign labor, U.S. workers may accept greater downward wage flexibility, realizing that they now compete with foreigners for jobs.

What is the evidence that greater international trade has increased wage and price flexibility? Both macro and microeconomic studies find evidence of an increased influence of international trade on prices and wages in the early 1980s but typically do not examine more recent changes in the influence of international trade. Macroeconomic studies have shown, for example, that import prices help explain the early 1980s disinflation. Specifically, one recent study found that while the increasing importance of international trade accounts for less than one-fifth of the slowdown of wage growth in the private nonfarm economy, it accounts for as much as 35 percent of the wage growth slowdown in the manufacturing sector during the 1980s.[23]

Such studies, however, say little about recent changes in the cost of disinflation because they do not attempt to uncover structural changes in the late 1980s.

Microeconomic studies of the labor market also support the view that, in the early 1980s at least, growth of international trade had a small effect on wage flexibility. For example, in a study of collective bargaining settlements from 1959 to 1984, Vroman and Vroman (1989) estimate identical models of wage behavior for industries with an average import share above 8 percent and for industries with an average import share below 8 percent. They find that for both types of industries, import competition exerts some downward pressure on wages. Furthermore, the effect is more pronounced in industries with greater import competition. But despite this measured effect of import competition on wages, the authors find that other factors are much more important in explaining the deceleration of wages in the early 1980s. These factors include declining inflation expectations and high unemployment among prime-age men.

Another factor potentially increasing wage flexibility is the decline of union power.[24] Union employment has declined both as a share of total employment and as a share of employment in traditional union strongholds. Between the early 1970s and 1987, the share of union employment in full-time, nonexecutive, nonprofessional jobs in many traditionally highly unionized industries fell from 47 to 31 percent. Moreover, strikes have become much less frequent today than in the past—almost one-tenth fewer in 1988 than on average in the 1960s. And recent strikes have been unusually long, in part because employers have resisted wage demands and often hired replacement workers as permanent employees.[25]

These union-sector developments could lead to increased wage flexibility as wages in the union sector fall closer to competitive levels. In the current economic environment, union power will likely continue to moderate. As a result, the wage gap between the union and nonunion sectors should fall slowly. But this decline in the union wage premium is unlikely to be large enough to make union wages significantly more responsive to market forces. For this reason, developments in the union sector are unlikely to reduce significantly the cost of disinflation in the 1990s (Wachter and Carter 1989).

A final factor affecting price and wage flexibility is the advent of new forms of labor compensation potentially tied to economic performance. Two types of nonwage compensation have grown in popularity in the 1980s—lump-sum payments and bonus plans. Lump-sum payments exchange base wage increases in union wage settlements for one-time or annual payments to workers that are not directly related to worker or firm performance. Lump-sum payments potentially increase wage flexibility because they are not built into base wages and are therefore more easily denied in adverse economic circumstances. Bonus plans, such as employee stock option plans and profit sharing, differ from lump-sum payments in that they are explicitly tied to firm performance. As a result, they make labor compensation respond automatically to changes in economic circumstances (Bell 1989).

Lump-sum payments and profit sharing plans have become increasingly popular. These innovations were virtually unknown as recently as 1975. By 1987, however, almost 63 percent of all workers negotiating contracts received lump-sum payments, while over 30 percent of workers received some form of profit sharing (Bell 1989, pp. 50-51). Because of their greater popularity, lump-sum payments potentially influence wage behavior more than profit sharing does. But studies at the firm level provide only limited evidence that lump- sum payments increase wage flexibility (Bell and Neumark 1989). Nevertheless, if lump-sum payments become even more pervasive and if firms and workers allow lump sums to be paid or not paid

on the basis of economic circumstances, labor compensations could become more flexible, reducing the unemployment cost of disinflation.

IV. Conclusions

Few would deny that reducing inflation from current levels would bring benefits to the U.S. economy. By permitting the economy to operate more efficiently, lower inflation would enhance economic growth and ultimately raise standards of living. Thus, few would deny that further disinflation warrants serious consideration.

In the past, however, disinflation has been costly, requiring large, albeit temporary, increases in unemployment. Is there reason to believe the costs would be less severe today? Many proponents of further disinflation believe the answer is yes. They point to enhanced Federal Reserve credibility and increased wage and price flexibility as potential factors lowering the cost of disinflation.

This article has examined evidence on the current cost of reducing inflation. The article concludes that available evidence provides little support for the view that the cost of disinflation has substantially declined. To be sure, predicting the cost of future disinflation is inherently problematic because fundamental changes in people's behavior could make the next disinflation different. Nevertheless, in considering further disinflation, policymakers should recognize that the cost of disinflation has probably not declined substantially.

Appendix

The Phillips-Curve Equation

This appendix describes the Phillips-curve equation used in the text to predict inflation and identify periods of instability. After providing technical details of the approach, the appendix shows that the implied cost of disinflation in the estimated model is similar to the costs cited in the first section of the text.

The Phillips-curve model consisted of a single equation explaining inflation, estimated by ordinary least squares. Inflation was measured by growth in the fixed-weight personal consumption expenditure (PCE) deflator net of food and energy. The personal consumption expenditure deflator was chosen rather than the more familiar consumer price index (CPI) because of measurement errors in the CPI, which tended to exaggerate inflation, especially from 1978 to 1981.[26] The fixed-weight PCE deflator net of food and energy was chosen to avoid accounting for food and energy price inflation which, over the short run, is little influenced by slack in the economy. Explanatory variables included a constant term, three quarterly dummy variables, eight lagged values of inflation, and current and four lagged values of (the log of) the married male unemployment rate. Unemployment of married men was used as the measure of labor market slack because it is less sensitive than total unemployment to demographic factors that have tended to change the natural rate of unemployment.

Formally, the Phillips-curve equation that

was estimated is:

$$P_t = a_o + \sum_{i=1}^{3} a_i QTR_i + \sum_{i=1}^{8} b_i P_{t-i} + \sum_{i=0}^{4} c_i U_{t-i} + e_t$$

where P_t represents inflation, the QTR_i terms represent quarterly dummy variables, U_t represents unemployment, e_t represents a zero mean, finite variance error term, and the a_i, b_i, and c_i terms represent parameters to be estimated.

Data were quarterly, beginning in 1961:Q2 and ending at various dates from 1979:Q3 to 1989:Q3. As suggested by the natural rate theory of inflation, which argues there is no long-run inflation-unemployment tradeoff, the sum of lagged coefficients on inflation was calculated and found to be insignificantly different from one in all sample periods. The sum of these coefficients ranged from 0.97 to 0.999, for samples ending in 1979:Q3 and every subsequent year until 1989:Q3. Because the data did not reject the restriction that the sum of coefficients was one, the restriction was imposed in all regressions.

For the base period from 1961:Q2 to 1979:Q3, estimated residuals were examined for serial correlation. The hypothesis of serial correlation of order 1, 2, 4, 8, 10, and 12 was rejected by a Lagrange multiplier test at standard confidence levels. Also, residuals from both the base period and the 1979:Q4 to 1989:Q3 forecast period were compared with residuals from a naive model that forecast no change in inflation each period. The estimated Phillips-curve equation performed only slightly better than the naive model in the base period and slightly worse than the naive model in the forecast period. However, in forecasting several steps ahead, the estimated equation clearly outperformed the naive model. This longer term forecasting ability is more important for studying disinflation, which occurs over many quarters, than the ability to forecast high-frequency movements in inflation.

One potentially important omitted variable is import prices. Although the use of the PCE deflator less food and energy was designed to avoid considering supply shocks, it did not eliminate the influence of import prices and the foreign exchange value of the dollar on domestic inflation. When four lagged values of the difference between growth in nonpetroleum import prices and growth in the PCE deflator are added to the right-hand side of the inflation equation, in-sample performance improves, but out-of-sample forecasts deteriorate.

In the equation including import prices estimated from 1961:Q2 to 1979:Q3, the sum of coefficients on relative import price inflation was statistically significant. However, this sum declined over time as years of data were added, one at a time, to the sample. Furthermore, including relative import price inflation caused the constant term to rise in absolute value and the sum of coefficients on unemployment to fall in absolute value as years were added. Despite these movements in coefficients, the hypothesis of no structural change as years were added to the sample could not be rejected except, at the 0.10 significance level, in the sample ending in 1986:Q3. This suggests a possible structural shift in the data after 1985 that might invalidate tests of stability as years of data are added to the sample ending in 1986:Q3.

Although including relative import prices improved in-sample performance, out-of-sample forecasts from 1979:Q4 to 1989:Q3

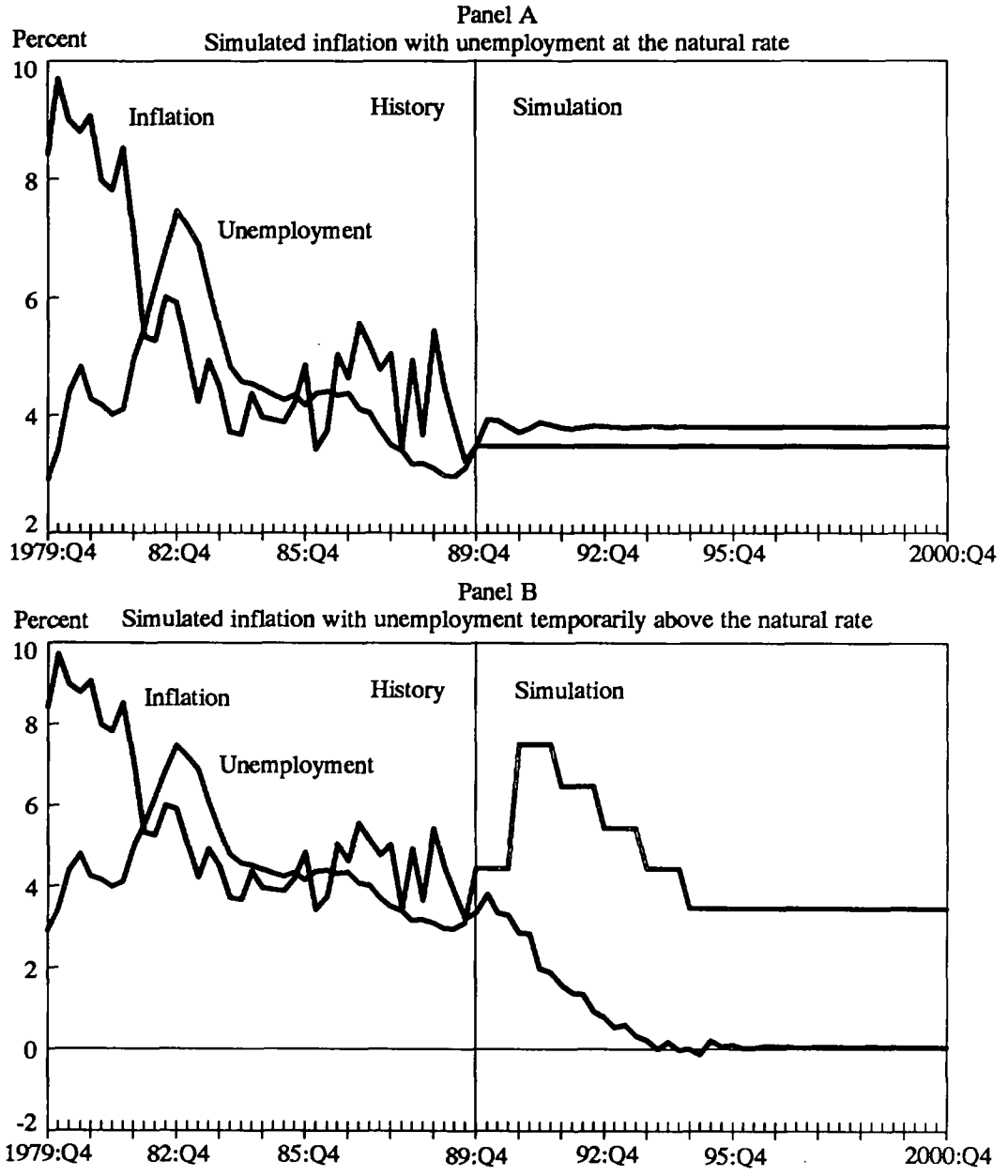
deteriorated. In particular, inflation was consistently underpredicted from 1983 to 1986. This underprediction would imply, if anything, an increase in the cost of disinflation, not a decrease. More likely, however, the underprediction, along with steady changes in the size of coefficients as years of data were added to the sample, indicates instability in the relationship of relative import price inflation to overall inflation. Because of these problems, relative import prices were left out of the analysis in the text.

In generating the forecasts shown in Chart 1, the model without import prices was estimated through 1979:Q3 and forecast out-of-sample from 1979:Q4 to 1989:Q3. The forecasts were static in the sense that actual values of the right-hand-side variables were used in generating predicted inflation. Static forecasts were presented to avoid confusing accumulated past errors with current errors. However, a dynamic simulation of the inflation equation was well able to predict the disinflation of the early 1980s and the subsequent stabilization of inflation. Thus, in both dynamic and static forecasts, the results indicated no systematic tendency to overpredict inflation and therefore gave no sign of a decline in the cost of disinflation.

The implied cost of disinflation in the model is broadly consistent with the cost implied in other Phillips-curve-type models. Chart A-1 shows some of the properties of the model estimated over the entire sample period from 1961:Q2 to 1989:Q3. In particular, Panel A shows a simulation of the model based on a return of the unemployment rate in 1989:Q4 to its natural rate. The model estimates the natural unemployment rate for married men to be 3.5 percent, which is slightly higher than the average unemployment rate for married men from 1961 to 1989. The simulation shows inflation eventually stabilizing at a rate close to its 1989:Q3 rate of just under 4 percent.

Panel B, in contrast, shows the effect of a disinflationary policy that pushes married male unemployment quickly up to 7.5 percent, then allows it to fall gradually back down to the natural rate. The experiment assumes heroically that monetary policy has direct short-run control over unemployment and, therefore, that unemployment is an exogenous variable. The effect of the disinflationary policy is the virtual elimination of inflation by 1993. The cost of this disinflation is 11 point years of unemployment. With inflation falling by roughly four percentage points, the point-year ratio is slightly below three.

Chart A-1
Simulated Inflation



Note: Unemployment is the rate for married men. Inflation is measured by the fixed-weight deflator for personal consumption expenditures net of food and energy.

Source: Department of Commerce and authors' estimates based on the model described in the text.

Endnotes

[1] The full-employment unemployment rate used in the point-year approach actually refers to the "natural rate of unemployment;" for discussion, see Weiner 1986a. For further discussion of the point-year approach to measuring the cost of disinflation, see Blinder 1987, Friedman 1988, Congressional Budget Office 1989, and Okun 1978.

[2] For a theoretical explanation of why the cost of disinflation may be independent of the time horizon, see Dornbusch and Fischer 1987, pp. 528-29. Gordon (1989, pp. 266-68) presents empirical simulations supporting this view. Alternative projections by Data Resources, Inc. (Brinner and Probyn 1989, Wyss and Aguais 1989) also support this view.

[3] More precisely, the point-year ratio equals 2.3. The full-employment unemployment rate estimates underlying this calculation are taken from Gordon 1989, pp. A2. Inflation, measured by the consumer price index, is calculated December over December.

[4] More precisely, the point-year ratio equals 2.2. The full-employment unemployment rate underlying this calculation is assumed to be 5.5 percent; inflation, measured by the consumer price index, is calculated December over December. Using a full-employment unemployment rate estimate of 6.0 percent lowers the ratio to 1.7. Using an alternative inflation measure, the fixed-weight GNP deflator (fourth quarter to fourth quarter)—a measure less distorted by the early 1980s dollar appreciation—raises the ratio to 3.0.

[5] The monetary authorities' temptation to inflate stems from the "time-inconsistency problem." For discussion, see Sibert and Weiner 1988.

[6] Note it is in their interest to take account of these rigidities. For example, if a business were to naively assume perfect wage and price flexibility in the economy and, acting on that assumption, cut its prices, it would eventually be forced out of business as materials prices and labor costs did not fall accordingly.

Wage and price rigidities, and resulting expectations of those rigidities, are a particularly onerous source of costly disinflation. Fischer (1984a) presents simulations of a hypothetical economy showing that even with full monetary policy credibility, the cost of disinflation would be reduced by only half in the presence of wage and price rigidities.

[7] These costs are often referred to as "menu costs." For a full discussion of menu costs and other sources of price and wage rigidities, see Gordon 1989, pp. 212-42.

[8] This source of wage rigidities is formally developed in "wage efficiency" models. See Gordon 1989, pp. 229-31.

[9] Examples of studies finding stability in the inflation-unemployment relationship through the early 1980s are Blanchard 1984; Englander and Los 1983a, 1983b; and Gordon 1985. A recent study implying stability in the behavior of inflation through 1987 is Gordon 1988.

[10] The approach is consistent with rational expectations if agents base their inflation expectations on all available information and have full knowledge of the economy and if the Phillips curve accurately captures aggregate supply behavior in the economy.

[11] In addition to inflation expectations, supply shocks also affect inflation. Supply shocks can cause inflation to fluctuate even when inflation expectations and monetary policy are unchanged. For example, if import prices fall relative to the overall price level, firms will enjoy lower costs for imported inputs and may, as a result, lower prices. Such a beneficial supply shock could reinforce a disinflationary monetary policy by putting added downward pressure on inflation. Besides relative import prices, other supply variables that are sometimes included in the Phillips-curve approach are food and energy prices and the exchange rate. See Kahn 1984 for a more detailed discussion of aggregate supply.

[12] The starting date for the estimation was determined by data availability and the lag structure of the estimated equation. The ending date was designed to coincide with the Federal Reserve's switch to new operating procedures and a disinflationary monetary policy. Thus, data from the early 1980s disinflation are excluded from the estimation period.

[13] Moreover, despite frequent statements by Federal Reserve officials that further progress against inflation continues to be an important goal of monetary policy and anecdotal evidence of increased wage and price flexibility, predicted and actual inflation stopped falling in the post-1986 period. If credibility or wage and price flexibility had increased, these statements would have reduced expected inflation below what it otherwise would have been. As a result, inflation would have fallen more than otherwise. Yet a Phillips curve equation, estimated without benefit of data after 1980, closely predicts the recent behavior of inflation. Whatever information was contained in the policy statements apparently was not translated into a reduction in inflation expectations and a lowering of inflation. If it had been, the Phillips curve would have overpredicted inflation after 1986. This overprediction would have resulted because the equation would have been estimated without post-1979 data and, therefore, without taking into account post-1986 policy statements and the possibility of a post-1979 increase in wage and price flexibility.

[14] Blanchard (1984) used the same approach to examine the stability of a Phillips-type wage equation. In particular, Blanchard estimated a wage-inflation equation based on the DRI model as specified in 1978—an equation that is similar to the price equation used in this article and described in the appendix. Although Blanchard found signs of instability in the third quarter of 1982, he attributed them to unusually high unemployment rather than credibility effects stemming from the 1979 shift to a disinflationary monetary policy. Blanchard's results showed an increase in the constant term and an increase (in the absolute value) of the coefficient on unemployment. Moreover, Blanchard found evidence of a decrease in the mean lag of price inflation in the wage equation. His overall results, however, imply "no evidence of a major shift in the Phillips curve" (p. 213). Thus, they are consistent with those presented in Table 1.

[15] As indicated in the appendix, the sums of coefficients of lagged inflation were constrained to equal one. As a result, the mean lag of inflation is presented instead of coefficient estimates.

[16] This is the same test used by Blanchard (1984). Results obtained are similar to Blanchard's.

[17] Other stability tests were also conducted. Specifically, when years are added two at a time to a sample that begins in 1961:Q2 and ends initially in 1979:Q3 (that is, 1961:Q2-1979:Q3 vs. 1961:Q2-1981:Q3, 1961:Q2-1981:Q3 vs. 1961:Q2-1983:Q3, and so forth), no sign of instability is detected. Similarly, when years are added cumulatively to the same initial sample (that is, 1961:Q2-1979:Q3 vs. 1961:Q2-1980:Q3, 1961:Q2-1979:Q3 vs. 1961:Q2-1981:Q3, 1961:Q2-1979:Q3 vs. 1961:Q2-1982:Q3, and so forth), no sign of instability is detected. Finally, a test for stability of the sample from 1961:Q2 to 1979:Q3 against separate subsamples split at 1973:Q1 cannot be rejected, and a test for stability of the sample from 1961:Q2 to 1989:Q3 against subsamples split at 1979:Q3 cannot be rejected.

[18] Another potential shortcoming is that data from 1960 provide only two periods of steadily falling inflation on which to base predictions about future disinflations. Although inflation fell sharply in 1974, only in the early 1970s and early 1980s did inflation fall steadily over several quarters. More importantly, since 1986, inflation has remained steady. With no further disinflationary monetary policy—gradual or cold turkey—since the early 1980s, the current cost of disinflation as measured in the Phillips-curve approach cannot differ much from the estimated cost of the last disinflation. On the other hand, even though there has been no further disinflation, there have been policy announcements and product and labor market developments that might have had an effect on expected and actual inflation. These developments were not detected, however, in forecasting the Phillips-curve equation and examining its stability.

[19] The role of reputation in establishing credibility is formally examined by Barro and Gordon (1983a, 1983b). For a general discussion of reputation and credibility, see Sibert and Weiner 1988, Blackburn and Christensen 1989, and Alesina 1989.

[20] Blanchard 1984, Frankel and Hardouvelis 1985, and Barnhart and Hardouvelis 1989.

[21] Caton 1989-90, *Blue Chip Economic Indicators* 1990, Congressional Budget Office 1990.

[22] The resolution and testimony by Alan Greenspan are contained in *Zero Inflation* 1989. More recent testimony includes Feldstein 1990, Christ 1990, Friedman 1990, Hoskins 1990, Parry 1990, Black 1990, Corrigan 1990, Keran 1990, Straszheim 1990, and Almon 1990.

[23] Vroman and Vroman 1989. See also Gordon 1982, Gordon and King 1982, and Kahn 1985.

[24] This discussion draws heavily on Wachter and Carter 1989.

[25] Brainard and Perry 1989. For anecdotal evidence, see Kilborn 1990.

[26] The most important measurement problem with the CPI is its treatment of homeownership and mortgage interest costs before 1983. For further information on this issue, see Blinder 1980. When growth in the CPI less food and energy is substituted for growth in the fixed-weight PCE deflator less food and energy in the Phillips-curve equation, both in-sample and out-of-sample performance deteriorates. Estimated residuals show signs of serial correlation and inflation is systematically underpredicted after 1979. This underprediction implies, if anything, an increase in the cost of disinflation, not a decrease.

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Is the Business Cycle Disappearing?

By C. Alan Garner and Richard E. Wurtz

The United States is currently enjoying the longest economic expansion in its peacetime history. Moreover, most forecasters do not expect a recession in the near future. Given such a background, it is reasonable to ask whether the business cycle is disappearing, where "disappearing" is defined as a situation in which the frequency and severity of recessions are decreasing so much that uncertainty about cyclical fluctuations will no longer be a major factor in business and household decisions.

This article concludes that the business cycle is not disappearing. The first section presents historical evidence showing the cycle is moderating—that is, recessions are becoming less frequent and less severe. But to predict whether this moderation will ultimately lead to the business cycle disappearing, it is necessary to understand why the cycle is moderating. Thus, the second section identifies major factors behind the moderation of the business cycle. The third section finds that, while moderating factors will continue to influence the economy, the business cycle is unlikely to disappear because the economy will remain vulnerable to domestic and foreign shocks.

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I. Has the Business Cycle Moderated?

Economic activity has displayed wavelike fluctuations, known as business cycles, throughout U.S. history.[1] Peaks in economic activity have been followed by contraction phases in which real output and employment decline. The decline in economic activity ends with a business cycle trough, followed by renewed economic expansion in which output and employment rise. The most famous example of a cyclical contraction remains the Great Depression of the 1930s.

Virtually all economists agree the Great Depression—and, indeed, the entire period between and including the two world wars—was marked by unusually severe business fluctuations. Thus, the major disagreement among

researchers has been whether business cycles after World War II, the postwar period, have been more moderate than cycles before World War I—typically called the prewar period.

Evidence of postwar moderation

The view that the business cycle has moderated in the postwar period is based on a wide range of historical evidence. The official statistics on real GNP, the broadest inflation-adjusted measure of output, indicate the severity of real output fluctuations has declined substantially in the postwar period. The historical record of real GNP growth can be divided into three major periods from 1890 to 1989: the prewar period from 1890 to 1914, the period from 1915 to 1945, and the postwar period from 1946 to the present (Chart 1). Fluctuations in real GNP growth were quite severe in the prewar period (Panel A). Such fluctuations were even more severe in the period containing the two world wars and the interwar years (Panel B). In the period after World War II, however, fluctuations in real GNP growth were much less severe than in the two previous periods (Panel C).[2]

Postwar moderation of the business cycle is also evident in the widely used business cycle chronology produced by the National Bureau of Economic Research (NBER). This dating of business cycle peaks and troughs shows the frequency of recessions has diminished in the postwar period. Business cycles have differed in total length, the percent of the cycle spent in the expansion and contraction phases, and the severity of movements in output. The NBER data for the postwar period exclude the current expansion because it is not yet part of a complete cycle. The average length of the business cycle has increased from 48 months in the prewar period to 56 months in the postwar period (Table 1). Also, the average length of the contraction phase has decreased over this period. As a result, contractions have become less frequent, making up only 20 percent of the average postwar cycle compared with 48 percent in the prewar period. On a similar basis, the postwar period also appears more moderate if only peacetime business cycles are considered.[3]

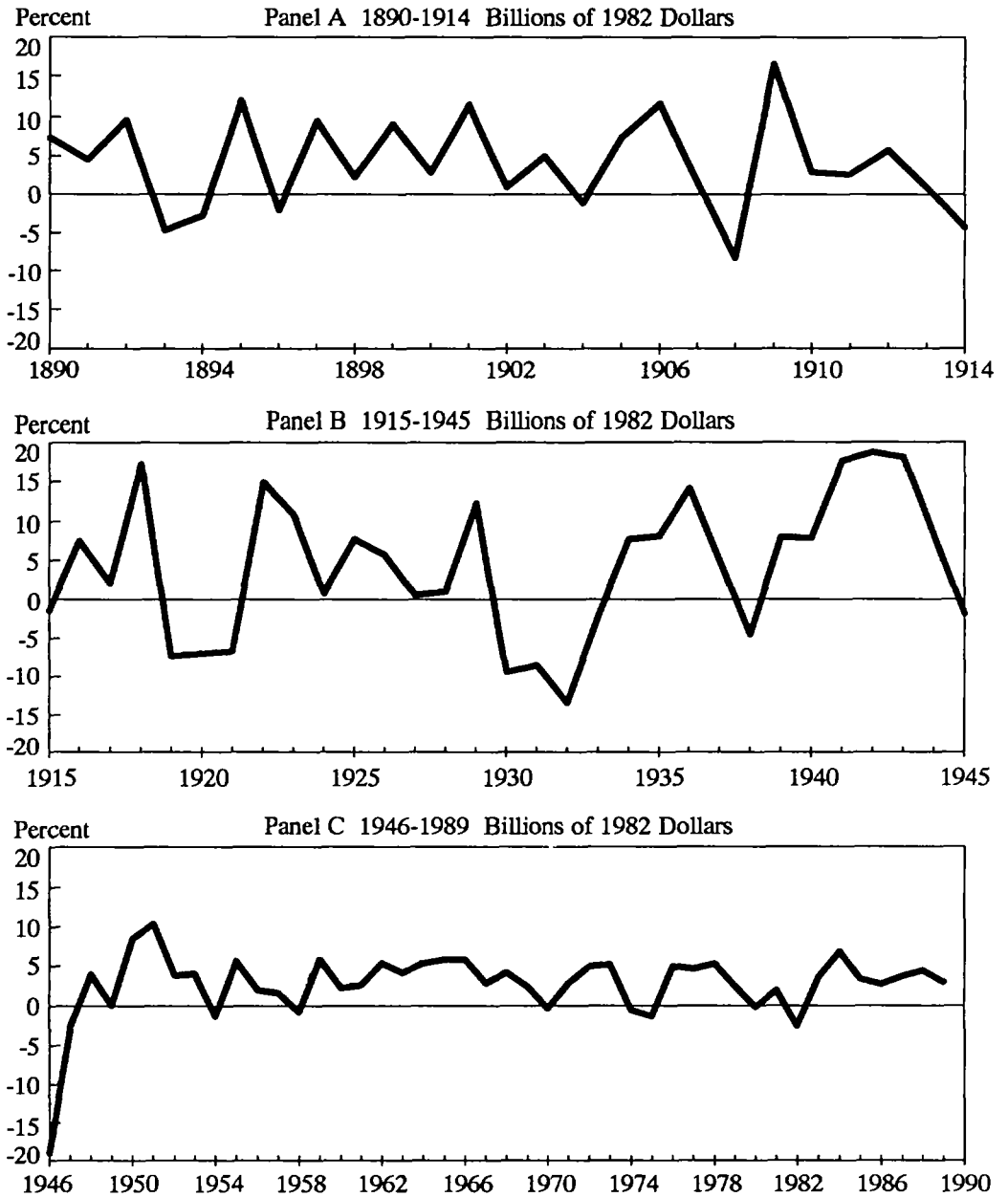
Besides becoming less frequent, the cyclical contractions designated by the NBER have become less severe in the postwar period. Zarnowitz (1989) found industrial output declined 15 percent in an average prewar business contraction but only 11 percent in an average postwar contraction. And employment fell 10 percent in an average prewar contraction but only 3 percent in an average postwar contraction. Other economic statistics, such as steel output and the money supply, also fluctuated more moderately in the postwar period.[4]

Recent debates about postwar moderation

Some economists have recently challenged the view that the business cycle has moderated in the postwar period. Their challenge is based on the belief that comparisons between the prewar and postwar periods are distorted by statistical errors in the prewar data. In particular, Romer (1989) believes the official estimates of real GNP for the prewar period are inaccurate because the estimates are based on commodity output, a volatile sector of the economy. The real GNP estimates, she asserts, do not give adequate weight to less volatile components of real output and, therefore, overstate the severity of prewar business cycles.[5]

Romer develops alternative estimates of prewar GNP showing greatly reduced cyclical fluctuations. Romer uses statistical relationships from the post-World War II period to correct for the supposed inaccuracies in the prewar data. Compared with the official postwar data, Romer's statistics on real GNP growth actually show a small reduction in the severity of real output fluctuations since World War II. However, Romer finds the difference in severity between the

Chart 1
Real GNP Growth from 1890 to 1989
Annual Percent Change



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 1
Average Lengths of the Business Cycle and Contraction Phase

	Length of cycle (months)	Length of contraction (months)	Contractions (as percent of cycle)
Average, all cycles			
Prewar period, 1854-1914	48	23	48
World wars and interwar period, 1914-45	53	17	32
Postwar period, 1945-82	56	11	20
Average, peacetime cycles			
Prewar period, 1854-1914	46	22	48
World wars and interwar period, 1914-45	46	20	43
Postwar period, 1945-82	46	11	24

Note: Length of cycle is measured from trough to trough. Length of contraction is measured from peak to trough.
Source: U.S. Department of Commerce, *Business Conditions Digest*, July 1989.

prewar and postwar periods to be statistically insignificant. Thus, in Romer's view, postwar business cycles appear more moderate because of statistical errors, not because of any major change in the cyclical properties of the economy.[6]

Historical data developed by other researchers support the view that the business cycle has moderated. For example, Balke and Gordon (1989) have developed improved estimates of real GNP in the prewar period. These GNP statistics are preferable to Romer's because the estimates incorporate new information about prewar output in the transportation, communications, and construction sectors. In contrast, Romer's revised statistics do not incorporate new historical data and are based on statistical relationships that assume away major changes in the economy over the last century. The more plausible Balke-Gordon estimates of real GNP fluctuate as severely, on average, in the prewar period as the official estimates, thus confirming postwar moderation of the business cycle.[7]

Changing the time periods for comparison also supports the view that the business cycle has moderated in the postwar period. Although economic research has focused on comparing the prewar and postwar periods, the interwar period also provides valuable evidence on the frequency and severity of U.S. business cycles and should not be excluded. The two cycles containing world wars might legitimately be excluded because these cycles were affected by large external disruptions to the normal functioning of the economy. But the peacetime cycles during the interwar period were no more disrupted by external factors than many cycles in the prewar and postwar periods. And as Table 1 shows, peacetime recessions were more frequent during the interwar period than during the postwar period.

Including the long expansion of the 1980s in the cyclical record also supports the view that

the business cycle has moderated. The current economic expansion began with the trough in November 1982 and had lasted for 88 months as of March 1990. Adding this expansion—the longest in peacetime U.S. history—to the data will increase the average length of postwar business expansions and reduce the postwar frequency of recessions.

Thus, the no-moderation viewpoint appears to be incorrect. Additional research is undoubtedly needed to develop better estimates of the frequency and severity of recessions in the prewar period. However, an examination of the best available statistics and the complete historical record suggests the U.S. business cycle has moderated in the postwar period.

II. What Factors Caused the Business Cycle to Moderate?

The historical evidence of business cycle moderation is reinforced by theoretical explanations of why the cycle has moderated in the postwar period. Identifying these theoretical factors is important not only to explain past cyclical moderation but also to understand how future changes in these factors may affect the frequency and severity of recessions. Commonly cited moderating factors include a larger economic role for government, changes in private spending behavior, and a more stable financial system.

A larger economic role for government

The government sector—including federal, state, and local government bodies—has played a much larger role in economic activity in the postwar period. Government purchases currently represent about 20 percent of total economic output. In contrast, the government sector represented less than 5 percent of total output before World War I.[8] Government has also played a larger economic role in the sense that government policies have been varied more often in the postwar period to deliberately influence the course of the business cycle.

The larger postwar share of government in economic activity is a moderating factor because government spending is relatively unaffected by fluctuations in real GNP and employment.[9] For example, government typically does not curtail new highway construction because of an unexpected business contraction. As a result, construction workers and their suppliers have jobs and continue to purchase other goods and services. Thus, the growth of the government sector as a share of economic activity moderates the business cycle because government purchases make total income and spending less sensitive to contractions in private business activity.[10]

Some components of government budgets, called automatic stabilizers, have a stronger moderating effect than other budget items. Automatic stabilizers change in ways that partially offset fluctuations in private business activity. For example, unemployment compensation supports consumer spending in a business contraction by providing income to laid-off workers. In addition, the state and federal tax burdens of households fall if their income falls during an economic contraction. Lower tax burdens moderate the fall in household income and therefore help maintain consumer spending. And because consumer spending accounts for nearly two-thirds of GNP, the cyclical decline in GNP is reduced. Automatic stabilizers generally were not an important factor prior to the Great Depression but have increased substantially in importance during the postwar period.[11]

The federal government in the postwar period has also used discretionary fiscal policy in an attempt to moderate the business cycle. By deliberately varying government spending or taxation to smooth fluctuations in business activity, the government can help maintain private spending in an economic downturn. The government has, at times, varied income tax rates to stimulate or restrain the economy. For example, federal

taxes were cut in 1963 and 1981 to speed the pace of economic activity. The federal government also made discretionary changes in unemployment compensation programs during the 1975 recession. By increasing and extending unemployment benefits, the government provided further support for consumer income and spending during the recession.

In addition to fiscal policy, monetary policy has helped temper the ups and downs of the business cycle in the postwar period. The Federal Reserve influences the pace of economic activity because its policy actions affect the cost and availability of credit. If economic growth is too weak, the Federal Reserve can increase the quantity of bank reserves, leading to an expansion of the money supply and bank lending. This growth of money and credit causes interest rates to decline—assuming inflationary expectations are unchanged. In turn, lower interest rates stimulate interest-sensitive spending, increasing business output and employment. Conversely, the Federal Reserve can adopt policies to slow the economy if rapid growth in spending threatens to raise inflationary pressures.

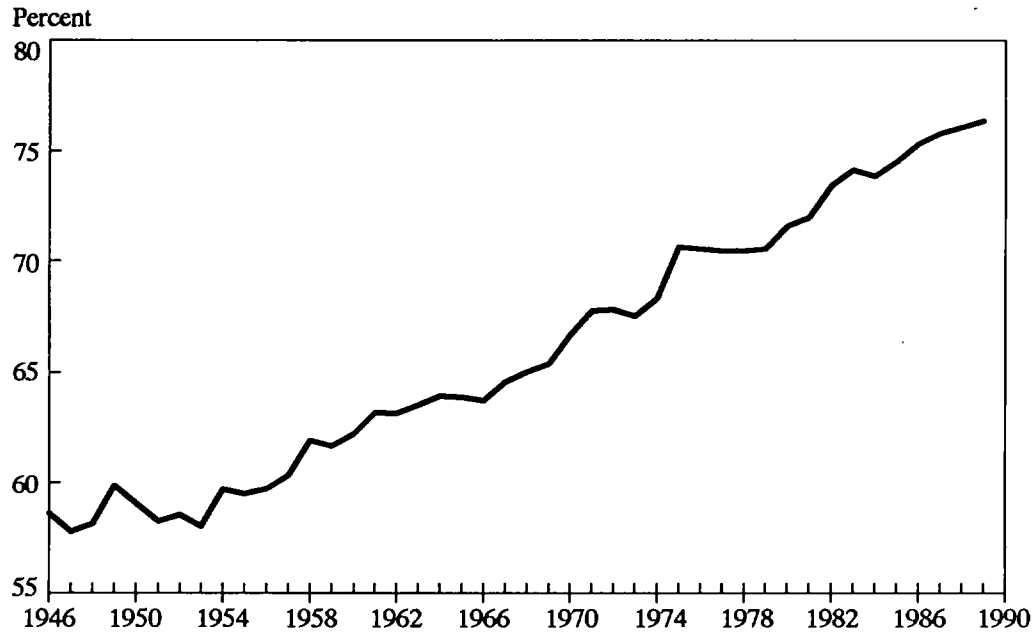
Monetary policy has played a greater moderating role in the U.S. economy since World War II for two reasons. First, and most important, the Federal Reserve has played a more active role in economic policy during the postwar period. After World War II, Congress committed the nation more explicitly to achieving such goals as full employment, economic growth, and price stability.[12] This more active approach to economic policy has been reflected in monetary policy actions, as well as government spending, taxation, and regulatory policies. Second, monetary policy has benefited from advances in economic knowledge and statistics. For example, improvements in the quality and coverage of the government's economic statistics have allowed policymakers to better assess the current state of the economy.

Changes in private spending behavior

Changes in the private sector of the economy have also moderated the business cycle in the postwar period. Growth of the service sector has been one moderating factor. Service-producing employment as a share of total nonfarm employment has risen from 59 percent in 1946 to over 76 percent in 1989 (Chart 2).[13] Service-producing jobs are more stable than goods-producing jobs because the need for many services does not change during an economic contraction. For example, although consumers can usually delay the purchase of a new automobile if economic conditions are unfavorable, medical services typically are not postponable. Employment in medical services is therefore more stable than employment in the automobile industry. Thus, rising service-sector employment moderates the business cycle because household income becomes more stable. In addition, service industries do not have large inventory holdings because services are not storable. As a result, the service sector does not experience sudden swings in inventory investment that could worsen the business cycle.

Another moderating factor has been the growth of international trade since World War II. Growth in imports and exports as a share of GNP indicates the rising importance of international trade to the U.S. economy (Chart 3). A higher share of imports implies foreign producers absorb more of the impact of a downturn in domestic spending. During an economic contraction, spending declines for imported goods as well as domestic goods. Thus, weaker purchases of imported goods will vent part of the effect of a spending decline to foreign producers. The growth of exports as a share of GNP could also moderate the business cycle in some cases. Because U.S. business contractions do not necessarily coincide with slowdowns in other nations, strong foreign demand for U.S. exports could supplement domestic spending and thereby

Chart 2
Service-Producing Employment as a Share of Total Nonfarm Employment



Source: U.S. Department of Labor, Bureau of Labor Statistics.

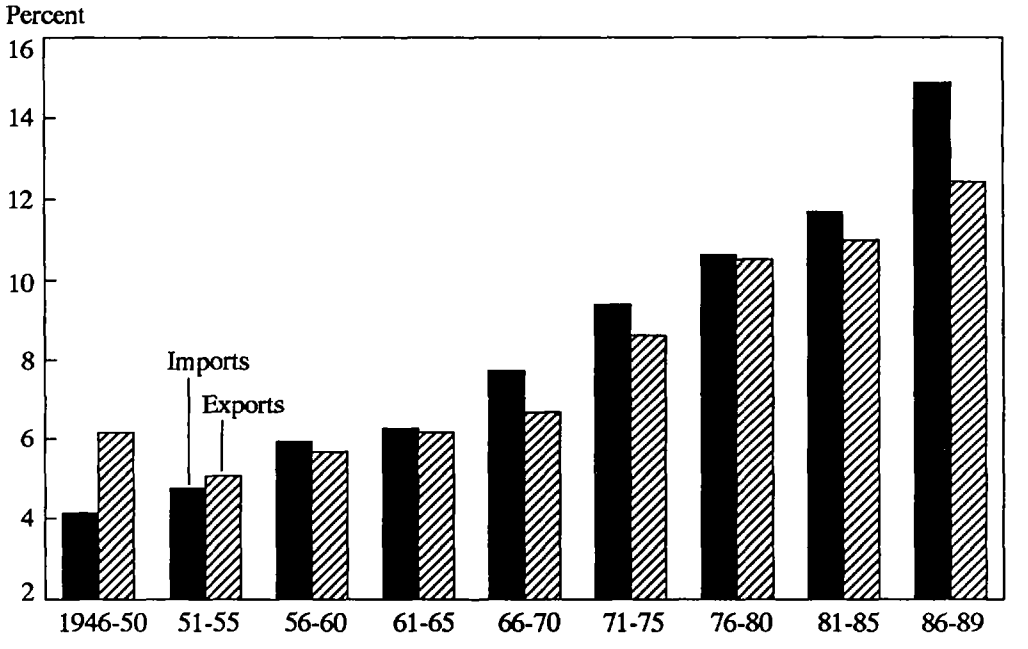
moderate some business contractions. Export growth is not necessarily a moderating factor, however, because foreign business contractions might coincide with U.S. contractions, causing exports to fall at the same time as domestic spending.

Changes in household and business expectations regarding the economy may have further moderated postwar business cycles. As other economic factors reduced the frequency and severity of recessions, producers and consumers may have started to expect milder cycles in the future and, as a result, altered their behavior in stabilizing ways (Baily 1978). For example, after observing milder cycles in the late 1940s and the 1950s, individuals may have grown less concerned about suffering a long spell of unemployment. Therefore, individuals may have become less likely to reduce consumer spending at the start of a slowdown. Similarly, businesses facing a cyclical decline in sales may have become less inclined to reduce production and employment because such declines are believed to be shorter and milder. This greater stability of production and employment may have had additional moderating effects on consumer income and spending.

A more stable financial sector

Changes in the U.S. financial structure have also moderated the business cycle in the postwar period. In particular, deposit insurance and closer regulation of financial institutions have enhanced

Chart 3
Imports and Exports as a Percent of GNP



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

public confidence in the banking system and diminished financial crises.

Many economic downturns in the prewar and interwar periods were associated with financial crises and periods of reduced access to credit and other banking services. Public fears that deposits were unsafe often caused runs on banks, creating bank failures and liquidity crises—times when requests for large withdrawals of deposits outstripped the ability of banks to provide funds. Because of reduced access to money and credit, firms and households often had to curtail their spending plans, worsening the contraction in economic activity.

Various financial reforms enacted in the 1930s have reduced the severity of financial crises. In particular, Congress created the Federal Deposit Insurance Corporation in 1933 to insure bank deposits. Deposit insurance has boosted public confidence in the soundness of the financial system. In turn, greater public confidence has eliminated banking panics and reduced liquidity pressures on solvent institutions. And confidence in the banking system is enhanced by the knowledge that the Federal Reserve stands ready to act as a lender of last resort—that is, the Federal Reserve can inject funds into the banking system to avert a liquidity crisis.

New financial instruments in the postwar period may have stabilized private spending by giving individuals and businesses greater access to credit (DeLong and Summers 1986). Credit cards and other kinds of consumer credit, for

example, help individuals maintain their consumption during temporary declines in income. And because consumption is such a large part of real GNP, a more stable consumption pattern thus moderates the business cycle. Also, business investment may have become less sensitive to changes in the availability of bank credit. Increased issuance of commercial paper and securities, for example, allows businesses to bypass banks and borrow funds directly from the public.

In summary, the postwar moderation of the U.S. business cycle reflects many factors. Government policy has played a larger and more active role in achieving the nation's economic goals. In the private sector of the economy, employment has shifted toward the less-cyclical service industries, and growth of international trade has diminished the effect of changes in domestic spending on U.S. producers. Moreover, an improved financial system has reduced banking crises and their accompanying effects on business activity.

III. Will the Business Cycle Disappear?

Will the factors identified in the previous section continue to change in ways that further moderate the business cycle? Indeed, might such factors cause the business cycle to disappear—that is, to moderate so much that uncertainty about cyclical fluctuations is no longer a major factor in business and household decisions? Or will these factors move differently than in the past, causing recessions to become more frequent and more severe?

Prospects for further moderation

A number of reasons suggest the U.S. business cycle is likely to moderate somewhat further in the years ahead. However, a general tendency toward business cycle moderation does not preclude a severe recession or sharp expansion caused, for example, by some unexpected shock to the economy. Thus, any conclusions about future business cycle moderation apply only to average business cycle behavior.

Past sources of business cycle moderation are unlikely to be reversed, although many of these factors may cause no further reduction in the frequency and severity of recessions. For example, government spending is likely to remain a larger share of economic activity than in the prewar and interwar periods. Although recent international developments may allow some cuts in defense spending, government spending is unlikely to shrink substantially because of the strong demand for other government-provided goods and services, such as infrastructure investment and education. Also, discretionary policy should continue to play a more moderating role than in the prewar and interwar periods. Moreover, deposit insurance, the Federal Reserve's role as lender of last resort, and automatic stabilizers in the federal budget may not cause additional moderation of the business cycle, but the past moderating effects will persist.

Some of the factors causing past moderation of the business cycle probably will moderate the cycle even more in the future. For example, a rising share of service employment will probably continue to stabilize household income and consumer spending. According to projections by the Bureau of Labor Statistics (Personick 1989), 79 percent of nonfarm jobs will be in service-producing industries by the year 2000, up from 76 percent in 1988.[14]

International trade also may have a larger moderating effect in the future. As discussed previously, domestic output becomes less sensitive to disturbances in domestic spending as the tendency to import rises. In the future, the tendency to import may increase further because international trade is still a smaller share of the U.S. economy than of many other industrial economies. Moreover, many foreign firms

expanded their U.S. distribution facilities in the 1980s and advertised heavily to inform U.S. consumers about their products. Such investments may continue to win new customers for foreign firms. Exports also may increase somewhat as a share of economic activity in response to strong foreign economic growth and improved competitiveness of U.S. export industries. To be sure, changes in the import and export shares of GNP will also depend on such factors as the foreign exchange value of the dollar and possible protectionist legislation.

Three additional factors may moderate future business cycles after having relatively little effect on cycles earlier in the postwar period. Greater wage and price flexibility is one of these factors. Most economists believe greater wage and price flexibility would reduce the frequency and severity of recessions because wage and price adjustments help eliminate supply and demand imbalances in the labor and product markets. Wage and price flexibility was not a source of postwar moderation in the business cycle because the flexibility of wages and prices either decreased or was unchanged in most of the postwar period.[15] But wages and prices may have become more flexible in the 1980s because of several factors, including a decline in unionization of the labor force, growing international competition in the goods markets, and deregulation of such industries as the airlines, long-distance telecommunications, and trucking.[16]

Greater exchange rate flexibility is the second factor that may moderate future cycles after having only limited effects in much of the postwar period. When economic growth is rapid, higher U.S. real interest rates may cause foreigners to demand dollars for investment in the United States. The resulting upward pressure on the foreign exchange value of the dollar increases U.S. imports and weakens exports. Such a deterioration of the trade balance tends to moderate economic growth. Similarly, when economic growth weakens, downward pressure on the foreign exchange value of the dollar improves the trade balance and strengthens economic growth. Flexible exchange rates also give monetary policymakers greater independence from the effects of other nations' monetary policies. As a result, the U.S. economy is less affected by sudden changes in foreign monetary policy, which might be inappropriate for U.S. economic conditions and might even initiate a recession.[17]

Better inventory management by U.S. corporations is a third factor that may moderate future business cycles. During the postwar period as a whole, inventory investment has been no more stable than in the pre-World War II period. Firms have adjusted their production sluggishly to changes in sales. As a result, excess inventories have accumulated when sales declined, eventually requiring large production cutbacks. These cutbacks have sometimes worsened business contractions. In the 1980s, however, many U.S. firms have adopted better inventory management techniques, such as greater computerization and just-in-time delivery of parts. If such techniques reduce excessive inventory accumulation, fewer large cutbacks in production and manufacturing employment will be necessary.[18]

Thus, various factors may cause further moderation of the business cycle in the future. But will these factors be enough to make the business cycle disappear?

Reasons the cycle will not disappear

Some economists have argued the business cycle is disappearing because of the strength of the moderating factors described above. Although few go so far as to declare the business cycle dead, several economists claim recessions are becoming so rare and so mild that uncertainty about business fluctuations will no longer be an important factor in economic decisions. For example, Evans (1989) asserted the U.S. econ-

omy "may be able to avert another economic downturn indefinitely."

There is reason to doubt such claims. For one thing, the U.S. economy remains subject to unpredictable disturbances. In general, the moderating factors identified previously cannot eliminate these unexpected disturbances. Instead, the moderating factors merely reduce the effects of unpredictable disturbances on general business activity. Thus, any unexpected disturbance—or a combination of unexpected disturbances—that is strong enough could still cause an economic downturn.

Some unpredictable economic disturbances originate domestically. A drought in U.S. agricultural regions, for example, can depress farm output and real GNP growth. The severe drought in 1988 slowed real GNP growth but did not cause a business contraction. But if such a drought were to appear when the economic growth rate was already quite low, the disturbance might tip the economy into recession. Other examples of domestic disturbances are a sudden change in the tax laws or an unexpected shift in the willingness of U.S. firms to invest in new plant and equipment.

The U.S. economy is also subject to unpredictable disturbances originating abroad. For example, the economy can be affected by foreign supply shocks, such as an increase in the price of imported crude oil. Many economists believe large increases in imported crude oil prices in 1973-74 and 1979 helped cause recent U.S. recessions. Furthermore, the U.S. economy remains vulnerable to other foreign disturbances.[19] A sudden tightening of Japanese fiscal policy, for example, could reduce Japanese purchases of U.S. products, thereby lowering U.S. employment and income.

Thus, the economy will likely continue to be affected by a variety of foreign and domestic shocks. Discretionary monetary and fiscal policy can often prevent recessions or reduce their severity by offsetting shocks to the economy. But discretionary policy may not always succeed in fully offsetting these sudden foreign and domestic shocks.

A major reason discretionary policy may not always succeed is because the constantly changing structure of the economy creates uncertainty about the effects of policy actions. For example, financial deregulation may have made the effects of monetary policy actions less certain in the 1980s.[20] Financial deregulation has helped stabilize private spending by relaxing financing constraints in recessions. Yet many economists believe it also has made less certain the relationship between monetary growth and such economic variables as real GNP growth and inflation. Because financial deregulation has probably changed the interest sensitivity of the economy, policymakers may find it more difficult to judge the effects of their actions.[21]

Recent changes in the economic system also may have worsened the economy's response to unexpected disturbances. The most notable change is the higher level of corporate and personal debt. Judicious use of credit can help stabilize private spending, but many observers feel current debt levels have become excessive. Corporations increased the ratio of debt to the book value of their equity from 36 percent in 1984 to 52 percent in 1988. Faust (1990) concluded such a surge in debt will increase the risk of corporate bankruptcy in future recessions. Higher bankruptcy risks will make it more difficult for firms to raise funds and disrupt business relationships with customers and suppliers. As a result, firms will be more likely to curtail their business activities, thereby worsening the recession.[22]

One variant of the disappearing business cycle viewpoint emphasizes rolling recessions, or periods of declining activity in individual industries or regions within the national economy. Yardeni and Moss (1988) have asserted rolling recessions are gradually replacing economy-wide contractions. Rolling recessions,

they argued, reduce the likelihood of general excess production—and therefore a general economic contraction—by eliminating excess production in particular business sectors on a rotating basis. Possible examples of sectors experiencing rolling recessions in the 1980s included the farm economy, the energy sector, the semiconductor industry, and Wall Street brokerage houses.

Empirical evidence, however, does not show any tendency toward more rolling recessions in the 1980s. McKelvey (1989) found that cross-industry variation in output growth actually reached a 40-year low in 1987, the latest year for which data are available. And cross-state variation in income growth has not increased significantly in the 1980s. This evidence implies rolling recessions were no more common in the 1980s than in the preceding postwar years.

Thus, the business cycle is unlikely to disappear for several reasons. The U.S. economy will probably remain more open to foreign disturbances because of the growth in world trade and capital flows. Moreover, the economy will continue to experience domestic disturbances, such as droughts and unexpected changes in private spending. Because discretionary monetary and fiscal policy may not always be able to fully offset such disturbances, the United States should continue to experience economic upturns and downturns.

IV. Conclusion

Economic contractions have become less frequent and less severe in the postwar period. Major reasons for this moderation include a larger and more active role for government, changes in private spending behavior, and a more stable financial sector. These factors—along with greater flexibility of wages, prices, and exchange rates—may moderate the business cycle even further in the future. However, the business cycle is unlikely to disappear in the future because the economy will remain subject to a variety of disturbances, both domestic and foreign. In other words, uncertainty about future cyclical fluctuations will continue to be an important factor in business and household decisions.

Endnotes

[1] Cyclical movements in real output are wavelike in that real output has temporary upward or downward movements that later tend to be reversed. However, the business cycle is not wavelike in the sense that real output fluctuations follow a regular predictable pattern. Some recent empirical studies—for example, Campbell and Mankiw 1987, and Nelson and Plosser 1982—have challenged the common view that real output has such cyclical movements. However, other recent studies—for example, Clark 1987 and Cochrane 1988— have supported the existence of cyclical movements in real output.

[2] The standard deviation of real GNP growth was 6.0 percent in the period from 1890 to 1914, and 8.9 percent in the period from 1915 to 1945. In the period from 1946 to 1989, however, the standard deviation of real GNP growth fell to 4.3 percent. The prewar real GNP statistics in this article are the Kendrick-Kuznets estimates published in U.S. Department of Commerce 1975.

[3] Business cycles are measured from trough to trough in Table 1. The prewar period includes 15 complete cycles. The period containing the world wars and the interwar years includes seven complete cycles. And the postwar period includes eight complete cycles but does not include the long 1980s expansion. Wartime cycles were designated for the Civil War, World Wars I and II, the Korean War, and the Vietnam War.

[4] Zarnowitz's prewar period is defined as 1885-1912, a shorter period than in Table 1. Schultze (1986) showed fluctuations of steel output and the money supply have been less severe in the postwar period.

[5] Romer has not used her new estimates of prewar real output to develop a business cycle chronology comparable with the NBER chronology. As a result, recent academic debates have considered the severity of real GNP fluctuations but not the frequency of recessions.

[6] Several other empirical studies have also challenged the view that the business cycle has moderated. Romer (1986a, 1986b) argued that standard measures of prewar unemployment and industrial output are excessively volatile. Shapiro (1988) claimed stock price data support the hypothesis that the business cycle has not moderated. And Sheffrin (1988) found the business cycle did not moderate substantially during the postwar period in five of the six European countries he examined.

[7] Zarnowitz (1989, pp. 2-3) provided a more extensive critique of Romer's revised GNP data. DeLong and Summers (1986) and Weir (1986) also examined the historical data and concluded the business cycle has moderated in the postwar period.

[8] The prewar estimate uses Gross Government Product as a share of Gross Domestic Product and is an average covering the years from 1869 to 1916. The data are from Department of Commerce 1975. The postwar share of government is measured by government purchases of goods and services as a percent of GNP.

[9] However, the higher postwar share of government in economic activity may not be positive in all respects. In theory, a large government sector can reduce the real output of the economy. One reason is that additional taxes required to fund a large government sector may distort private economic decisions, causing inefficiency and a loss of output. For example, business investment decisions may be made to avoid taxes rather than expand productive activities. And individuals may reduce the number of hours worked if their incomes are taxed too highly. A second reason is that government may use resources less efficiently than the private sector because government has no profit motive to encourage cost minimization. Although many economists accept these arguments at a theoretical level, there is disagreement about whether the government sector is currently too large in the United States.

[10] To a lesser degree, government spending has moderated business contractions by speeding the economy's adjustment to labor market imbalances. Government spending on transportation—particularly highways, bridges, and airports—facilitates the movement of labor from depressed industries or regions to prosperous industries or regions. For example, such spending made it easier for labor to migrate from economically weak regions of the country to the prosperous southwestern states during the recessions in the early 1980s. Moreover, government expenditures on education in the postwar period may have produced a labor force better able to change jobs.

[11] For example, unemployment insurance was created in the 1930s, and income taxes have become more important sources of government revenue in the postwar period. Other examples of automatic stabilizers include corporate income taxes and payroll taxes.

[12] Two important laws affecting the Federal Reserve's postwar role are the Employment Act of 1946 and the Full Employment and Balanced Growth Act of 1978.

[13] The definition of service-producing employment used here actually includes government employees. Government employment is relatively insensitive to the business cycle and therefore moderates household income and consumer spending. However, the share of employment in *private* service-producing industries also shows a strong upward trend in the postwar period.

[14] Differences in productivity growth—growth in output per hour—will likely cause employment in the service sector to grow faster than employment in the goods-producing sector. Service employment will probably have to grow substantially to increase service output because productivity growth is weak in the service sector. In contrast, smaller employment gains will be needed to increase goods output because productivity growth is stronger in the goods-producing sector.

[15] Cagan (1975) and Sachs (1980) found that wages and prices have become less flexible in the postwar period. However, Gordon (1980) and Schultze (1981) concluded that wage and price flexibility were relatively unchanged in the postwar period.

[16] The union proportion of nonagricultural employees fell from 36 percent in 1956 to 18 percent in 1986. According to Freeman (1988), this decline represents the "most significant change" in labor market institutions since the Great Depression.

[17] Under a system of fixed exchange rates, the monetary policies of other nations would affect the U.S. money supply unless the Federal Reserve undertook offsetting policy actions. However, under a system of perfectly flexible exchange rates, currency values would fluctuate with no change in U.S. bank reserves or the money supply. In recent years, exchange rates have not been perfectly flexible because countries have intervened in exchange markets to influence the values of their currencies. But exchange rates have remained much more flexible than under the fixed exchange rate system existing before 1973. Further discussion of flexible exchange rates and the national economy can be found in Kohn 1975.

[18] Strongin (1990) asserted better inventory management techniques will help smooth future business cycles. How-

ever, McKelvey (1989) argued that better inventory management has not contributed to business cycle moderation. And Zarnowitz (1989) summarized evidence that inventory investment did not become more stable in the postwar period as a whole. Such evidence does not refute Strongin's view, however, because the major changes in inventory management have only occurred in recent years.

19 Although perfectly flexible exchange rates would insulate the U.S. economy from sudden changes in foreign monetary policy, changes in foreign fiscal policy would still affect U.S. production and employment. Moreover, the U.S. economy is not completely insulated from changes in foreign monetary policy because exchange rates are not perfectly flexible.

20 Some economists claim discretionary policy has become less important because private credit markets stabilize the economy more effectively than in the past. For example, Yardeni and Moss (1988) asserted, "In the global credit markets, bondholders push yields up rapidly when they perceive an inflation threat. Such preemptive strikes reduce the likelihood that inflation will become a serious problem again." However, there has been little economic research to either substantiate or refute this view.

21 Roth (1987) described the breakdown of the relationship between the M1 monetary aggregate and economic activity as a result of financial deregulation. Kahn (1989) found a reduction of the economy's overall interest sensitivity in the 1980s. In addition, Kahn found the time between a change in the federal funds rate and its effect on real output was longer, and the uncertainty about the real effects of monetary policy actions was greater.

22. Similar concerns have been expressed about the growth of debt in the household sector. For example, Volcker (1986, p. 7) stated, "It appears that households, like businesses, have become more willing to take on debt, at the expense of more vulnerable financial positions."

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Pressures on Tenth District State and Local Government Spending

By Glenn H. Miller, Jr.

State and local governments in the Tenth Federal Reserve District enter the 1990s facing strong pressures to increase their spending. Renewing infrastructure, improving the public educational system, and assuring adequate health care for an aging population are just some of the challenges confronting state and local governments in the district. And these pressures come at a time when "fend-for-yourself federalism" threatens to spread state and local budgets even thinner.

To help citizens and public officials confront upcoming spending issues, this article examines state and local government spending patterns in the district and discusses some factors that will keep upward pressure on spending. The first section shows that relatively rapid growth of spending by state and local governments in the district since 1978 was not fast enough to bring district spending levels up to the U.S. average. The second section discusses some primary economic pressures on spending growth and identifies demographic changes that may add to those pressures in the 1990s.

The article concludes that economic and demographic factors will continue to put upward pressure on several categories of district spending in the 1990s—including infrastructure, education, and health and hospital services. In response, state and local governments in the district may be forced to choose between boosting total expenditures and revenues or making hard choices about spending priorities. A subsequent article will examine some options open to state and local government policymakers as they confront the pressures for continued rapid growth in spending.

I. Spending by District State and Local Governments in the 1980s

To compare spending across states, this article defines spending as direct general expenditures, which are expenditures for public purposes served by government activities, including such basic functions as education, transportation,

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public safety, and social services. Excluded from direct general expenditures are certain types of spending not common to the state and local government sector in all states.[1]

Data on spending by state and local governments are consolidated in this article. Consolidation is necessary because functions paid for and performed by one level of government in some states may be the responsibility of another level of government in other states. For example, state governments make no direct expenditures for elementary and secondary education in about two-thirds of the states. But in Hawaii, where the state operates the schools, local governments make no direct expenditures for elementary and secondary education.

To facilitate comparisons across states, public per capita spending is used. Per capita spending—the measure most commonly used when comparing interstate differences in furnishing government services—adjusts total spending for differences in population size. Spending per capita is also a useful measure because it includes population as an approximation of expenditure need.[2]

Per capita spending comparisons are made both over time and at a certain point in time. To compare growth in public services over time, spending per capita must be adjusted for inflation. Thus, this article uses real, or inflation-adjusted, per capita spending in discussing the growth of public spending. To compare public spending levels across states at a point in time, however, spending per capita need not be adjusted for inflation.[3]

Public spending in the district: 1978-88

To chart the growth in public spending, a base year must be selected. Two events make 1978 a useful benchmark year for state and local public finance. First, 1978 saw the adoption of Proposition 13, which placed constitutional limitations on the growth of California state spending. Measures similar to Proposition 13 were subsequently adopted in other states. While not always completely effective, these measures signaled resistance by citizens to rising public expenditures and increased taxes. Second, 1978 was the peak year for federal outlays for grants-in-aid to state and local governments—whether measured in inflation-adjusted dollars, as a percent of federal outlays, or as a share of GNP. Since then, reduced federal aid has forced state and local governments to make spending decisions based on greater dependence on their own resources.

From 1978 to 1988, state and local government spending in the district grew much faster than both population and the level of prices.[4] Spending in the seven district states increased about 136 percent during the ten-year period, while district population grew only about 11 percent. Consequently, spending per capita more than doubled. Most of the increase in spending was due to inflation, however. Adjusted for the rise in prices, district spending increased 28 percent over the ten-year period. Allowing for both population growth and inflation, real per capita spending by state and local governments in the district grew about 15 percent from 1978 to 1988, or at an average rate of 1.4 percent per year (Table 1). This growth was equal to growth in the nation for the same period.

Per capita spending in the district: 1988

Despite its growth in the 1980s, spending by district state and local governments has remained below national levels.[5] When compared on a per capita basis, state and local government spending in the district fell short of the national average in 1988. Spending nationally was $2,857 per person, compared with $2,527 in the district (Chart 1).

Per capita spending also varied considerably across district states in 1988, ranging from $2,139 in Missouri to $4,279 in Wyoming. Put

Table 1
Real Per Capita State and Local Spending, 1978-88

	Tenth District			United States		
	(1982 dollars)		Average annual	(1982 dollars)		Average annual
	1978	1988	growth	1978	1988	growth
Total[1]	1,742	2,006	1.4	1,981	2,268	1.4
Education	718	770	.7	751	795	.6
Social services	345	398	1.4	432	489	1.2
Transportation	212	228	.7	183	206	1.2
Public safety	120	154	2.5	154	199	2.6
Environment and housing	129	148	1.3	155	191	2.2
Administration	86	113	2.7	100	121	2.0
Interest	49	130	10.3	80	143	6.0
Other	83	67	−2.2	126	123	−.2

[1] Direct general expenditures.
Source: Bureau of the Census.

another way, per capita spending in district states ranged from 75 percent of national per capita spending in Missouri to 150 percent in Wyoming. Per capita spending fell below the national average in five district states—Kansas, Missouri, Nebraska, New Mexico, and Oklahoma.

Per capita spending on most government activities in the district was below national average levels in 1988 in spite of the spending growth of the 1980s (Table 2). Major spending activities include education, social services, transportation, public safety, and housing and the environment. Among the major spending functions, only transportation spending—particularly highway spending—exceeded the national average in 1988. High levels of highway spending in the district are not surprising, given the large land area to be served. Per capita highway spending in the district was 112 percent of the national average, ranging from Missouri's 85 percent of the U.S. average to Wyoming's 247 percent. Only in two district states—Missouri and Oklahoma—was highway spending below the national average.

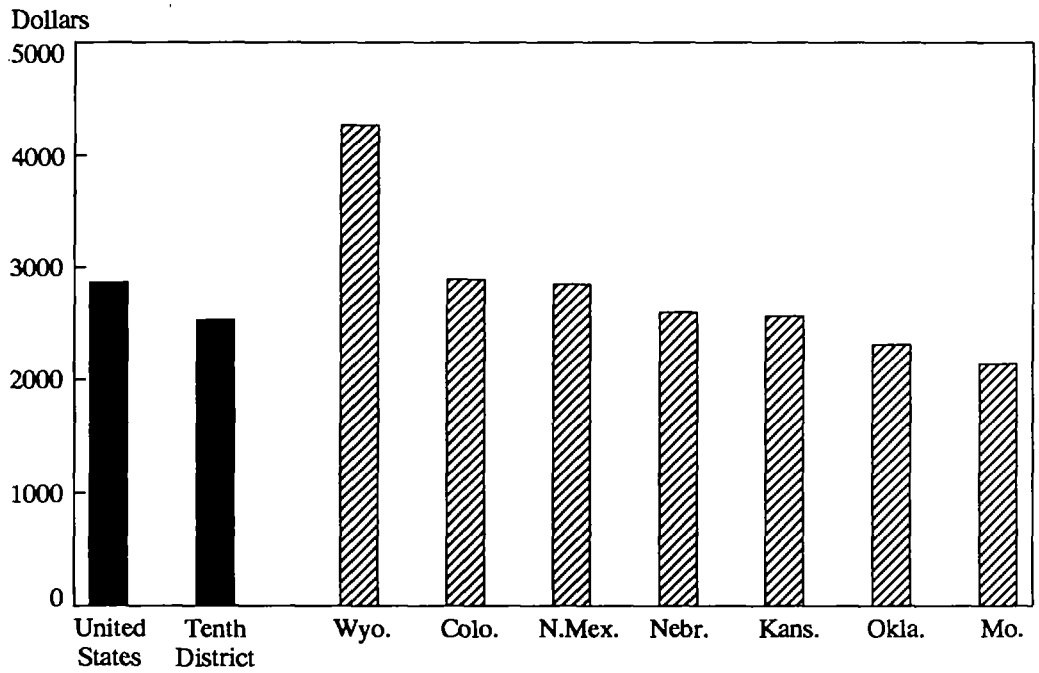
A mixed picture emerges from comparing spending on education in the district and the nation. District spending on all education services was slightly below the national average. Four district states exceeded national average per capita spending—Colorado, Nebraska, New Mexico, and Wyoming. Wyoming spent the most on education among district states, with 160 percent of the national average; Missouri spent the least with 84 percent.

The shortfall in per capita spending on education in the district was concentrated in the elementary and secondary education sector. All district states but Colorado and Wyoming spent less per capita than the national average on elementary and secondary education. On the other hand, all district states except Missouri spent more per capita than the national average on higher education.

Chart 1

Per Capita State and Local Government Spending

United States and Tenth District States, 1988



Source: U.S. Department of Commerce.

Spending shares in the district: 1988

Comparing the way state and local governments distribute their spending among government activities or spending functions can shed additional light on public support for public services. Citizens or public officials in various states may value a particular activity differently, leading to different shares of total spending for that activity. Spending on the various functions as shares of total spending tend to reflect differences from state to state in relative preferences of electorates for those expenditures.

The largest share of state and local government spending in the district goes to education (Table 3). While the same is true on average for the nation, every district state spent a larger share on education than the national average in 1988. Education spending in the district ranged from 37 percent of total spending in New Mexico to more than 39 percent in Missouri and Nebraska, compared with a national average of 35 percent.

Most state and local government spending for education is for elementary and secondary (K-12) schooling. Such expenditures accounted for about one-fourth of spending nationally in 1988. Spending for K-12 education in New Mexico matched the national average. The other six district states bettered the national average, with Missouri's share the largest in the district. All district states spent a larger share of total spending on higher education than the national average. District state shares were lowest in Wyoming and highest in Kansas.

Social services spending—spending for public welfare expenditures and health and hospitals—makes up the second largest share of total spending in both the district and the nation.

Table 2
Per Capita State and Local Government Spending, 1988

	U.S.	Colo.	Kans.	Mo.	Nebr.	N. Mex.	Okla.	Wyo.	Dist.
Total expenditures[1]	$2,857	$2,889	$2,562	$2,139	$2,597	$2,841	$2,308	$4,279	$2,527
Education	1,002	1,084	999	840	1,024	1,056	877	1,614	970
Elementary and secondary	690	743	668	593	676	686	586	1,122	660
Higher	255	304	301	211	301	324	258	415	273
Social services	616	504	448	458	565	497	536	782	501
Health & hospitals	252	218	217	223	279	228	233	572	238
Transportation	260	309	327	220	337	358	242	570	287
Highways	226	255	312	193	286	298	219	558	253
Public safety	251	248	166	180	156	228	177	241	194
Police protection	107	116	77	86	71	98	71	121	88
Corrections	77	68	45	48	40	74	54	56	54
Environment and housing	241	256	151	154	185	203	166	317	186
Administration	152	199	165	105	117	162	117	227	142
Interest	180	206	192	119	127	227	131	342	163
Other	155	85	115	64	86	110	62	187	84

[1] Direct general expenditures.
Source: Bureau of the Census.

District states differ more among themselves in spending for social services than in spending for education.

Transportation represented the third largest share of total state and local government spending in both the district and the nation in 1988. Every district state spent a larger share on highway construction and maintenance than the national average. Highway spending in the district ranged from almost 9 percent of total spending in Colorado to 13 percent in Wyoming, compared with about 8 percent nationally.

District spending characterized

After a decade of fairly rapid growth, per capita government spending in the Tenth District overall, as well as in five district states, still falls short of national per capita spending. Yet per capita spending is larger in the district than in the nation for some functions. Expenditures per capita for higher education and highways are larger in the district and in most district states. Based on the distribution of total spending between functions, citizens and public officials in district states choose to direct more of their expenditures to education and transportation, and less to social services, public safety, and housing and the environment, than does the nation as a whole. With few exceptions, the same is true for every district state.

The district, therefore, may be characterized as fiscally conservative overall, because its level of per capita spending is less than the

Table 3
Percentage of State and Local Government Spending by Function, 1988

	U.S.	Colo.	Kans.	Mo.	Nebr.	N. Mex.	Okla.	Wyo.	Dist.
Total expenditures[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Education	35.1	37.5	39.0	39.3	39.4	37.2	38.0	37.7	38.4
Elementary and secondary	24.2	25.7	26.1	27.7	26.0	24.2	25.4	26.2	26.1
Higher	8.9	10.5	11.7	9.9	11.6	11.4	11.2	9.7	10.8
Social services	21.6	17.4	17.5	21.4	21.8	17.5	23.2	18.3	19.8
Health & hospitals	8.8	7.5	8.5	10.4	10.7	8.0	10.1	13.4	9.4
Transportation	9.1	10.7	12.7	10.3	13.0	12.6	10.5	13.3	11.4
Highways	7.9	8.8	12.2	9.0	11.0	10.5	9.5	13.0	10.0
Public safety	8.8	8.6	6.5	8.4	6.0	8.0	7.7	5.6	7.7
Police protection	3.7	4.0	3.0	4.0	2.7	3.4	3.1	2.8	3.5
Corrections	2.7	2.4	1.8	2.2	1.6	2.6	2.4	1.3	2.1
Environment and housing	8.4	8.9	5.9	7.2	7.1	7.1	7.2	7.4	7.4
Administration	5.3	6.9	6.4	4.9	4.5	5.7	5.1	5.3	5.6
Interest	6.3	7.1	7.5	5.6	4.9	8.0	5.7	8.0	6.5
Other	5.4	2.9	4.5	3.0	3.3	3.9	2.7	4.4	3.3

[1] Direct general expenditures.
Source: Bureau of the Census.

national average. But the district also may be characterized as willing to prioritize spending for some highly valued functions, such as education. Each district state seems to appraise education about as highly as do its district neighbors and somewhat more highly than the national average, in terms of education's share of total public spending. But district per capita spending for education is less than national per capita spending because district citizens and public officials choose to spend less per capita on government services overall than the national average. That is, per capita education spending in the district falls below the national per capita level, not because education is less valued here than other government spending activities, but because of the electorates' decisions on the distribution of resources between the public and private sectors. As the decade of the 1990s unfolds, state and local governments will face increasing pressures to spend more on public services and perhaps to change the ways they distribute their spending dollars.

II. Pressures for Increased State and Local Government Spending

In recent years several factors have pressured state and local governments to spend public funds—and many of the same factors are likely to persist in the years ahead. These factors affect all parts of the nation, and state and local governments in the district will also have to face them. For example, government and business leaders

see a continuing need to renovate, replace, and add to existing physical infrastructure. Moreover, to enhance prospects for economic growth and competitiveness and to elevate the quality of citizenship and personal life, further attempts to improve the quality of education are likely. And "fend-for-yourself federalism" will increase pressures on state and local government spending. Other factors, such as population changes in some district states, may exert changing pressures on spending in the 1990s. This section explores these upward pressures on state and local government spending.

Infrastructure renewal

Perhaps the most noticeable source of pressure for increased state and local government spending is the nation's physical infrastructure. As the primary caretakers of the nation's infrastructure, state and local governments are responsible for a wide range of public facilities—from roads, airports, and fire stations, to water and sewerage systems. Yet because many communities have put off rehabilitating public structures or building new facilities, the public services these facilities provide are often lacking. Not only are governments "feared to be seriously underinvesting in public infrastructure. . . even more alarming is the pervasive expectation that matters are getting worse" (Johnson and others 1988).

Among the many infrastructure problems, one of the most critical is the condition of America's highways, roads, and bridges. The nation's system of about 4 million miles of federal, state, county, and local roads has many deficiencies. The Federal Highway Administration reported about 53 percent of U.S. nonlocal roads to be in fair or poor condition in the mid-1980s. The nation's local rural road system (roads maintained by counties or townships) shows evidence of deteriorating rapidly, with bridges of particular concern (Baumel and others 1989). Bridges outside the federal-highway-aid system fare especially poorly, with 55 percent of such bridges labeled deficient in 1986. While the bridge-deficiency problem is national in scope, four district states—Missouri, Nebraska, Oklahoma, and Kansas—are among the 12 states with the largest number of deficient bridges (Baumel and others 1989).

All levels of government participate in highway finance, yet recent financing patterns point to more and more involvement by state and local governments.[6] About two-thirds of the 1987 national "road bill" of about $66 billion was financed by user taxes (such as fuel taxes) and tolls. Most of the rest was paid for by state and local governments from other revenue sources (Small and others 1989).

Federal support for the nation's roads and bridges has lessened in recent years. From 1977 to 1986, real total federal highway aid per mile fell about 23 percent. Moreover, General Revenue Sharing (GRS) for local governments was discontinued in 1986. Because some GRS funds were used for highway purposes at the discretion of local governments, their discontinuation represented a further loss to counties and other local governments responsible for roads and bridges (Walzer and McFadden 1989).

The nation's deficient road system is expected to remain under continuing strain, bringing strong pressures for improvement. With federal financial aid for highway purposes declining, much of the burden of financing more and better roads will be left to state and local governments. Attempts to shoulder the burden of highway improvement and other infrastructure renewal are likely to keep upward pressure on state and local government spending in the current decade.

Education improvement

The top spending priority of state and local governments in the district and the nation is

education, yet many observers question whether satisfactory educational services are being provided. Concerns are especially great at the elementary and secondary education level. For example, a presidential commission report issued in 1983 was highly critical of the K-12 education system. Spurred by concerns about the school system, and aided by stronger economic growth and lower inflation, spending on education by state and local governments trended upward after the early 1980s. Real per capita spending for K-12 schooling grew much faster after 1982 than in the previous four years, both in the district and in the nation.

Yet the growth in spending has not relieved all concerns about the satisfactory provision of education services. For example, a study of labor force training presented to the Kansas legislature this year suggested the state's K-12 educational system could better prepare students for work by emphasizing basic education skills (Sullinger 1990). Moreover, many concerns arise from recognition of America's need to compete in a world economy where technological and other skills must rest on a firm educational foundation. A recent study of education spending in 16 industrial countries reported that educational effort in the United States ranks generally near the bottom, when K-12 educational expenditures are compared in relation to size of national incomes (Rasell and Mishel 1989). While the authors of this study agree that spending increases alone will probably not bring better quality education, they also doubt the objective can be attained without spending increases.[7]

Those concerned with the quality of education agree on the importance of progress toward education excellence. Yet they do not all agree on the extent to which more spending will bring the desired improvement. Nevertheless, further pressure for increased spending in the near future is likely to be part of any drive toward higher quality education.

Fend-for-yourself federalism

A strong move to devolve spending from the federal government to the state and local levels promises to keep upward pressure on state and local government spending in the Tenth District. Fiscal federalism entered a new epoch after 1978, the high-water-mark year for federal grants to state and local governments. According to one observer, state and local governments now operate "in a fairly harsh and politically risky fend-for-yourself fiscal environment" (Advisory Commission on Intergovermental Relations 1989).

Federalism's present fiscal environment can be better understood by comparing it with the more affluent fiscal environment that existed from the end of the Korean War to 1978. Where the earlier period was characterized by heavy state and local government reliance on federal aid, reduced federal aid in the 1980s has forced state and local governments to finance more of their own spending. The shift represents a return to a more decentralized allocation of fiscal responsibilities within the federal system, which existed through most of the nation's history before the 1950s. The recent appearance of fend-for-yourself federalism is thus not an innovation but a return to an earlier fiscal environment. Nonetheless, the impact of fend-for-yourself federalism on state and local government spending is real.

Increased pressures on state and local government spending are underlined by two features of the return to fend-for-yourself federalism. The first feature concerns federal grants-in-aid to state and local governments. Federal grants are payments to individuals passed through state and local governments, or other grants (including shared revenues) generally spent directly by state and local governments with some discretion in their spending choices. With the return to fend-for-yourself federalism, fewer federal grants allow for spending discretion by state and local governments, and more grants are

simply passed through state and local governments to individuals.

A large decline in federal grant funds, over which state and local governments had considerable discretion in spending, has constrained state and local government spending. Exemplifying the decline in this kind of federal funding was the end of general revenue sharing for states in 1980 and for local governments in 1986. Federal outlays for grants-in-aid to state and local governments (including shared revenue) declined about 15 percent in constant 1982 dollars from 1978 to 1989. Meanwhile, the share of grants made as payments to individuals, primarily Aid to Families with Dependent Children and Medicaid, increased from 31 percent to 54 percent (Table 4). Thus, while federal grant funds passed through state and local governments to individuals increased about 49 percent from 1978 to 1989, grant funds spent directly by state and local governments declined about 44 percent from 1978 to 1989.

The second feature of fend-for-yourself federalism is a turn toward regulatory federalism. Regulatory federalism describes a range of actions through which the federal government controls and regulates various activities of state and local governments by means of direct legal authority rather than by providing financial aid for specified purposes.

A continued trend toward regulatory federalism has accompanied the decline in federal grants, strengthening a tendency toward unfunded federal mandates to state and local governments. Mandates and grants differ significantly in character. A grant is a transfer of funds, usually conditional on the recipient's complying with a set of conditions set by the giver. A mandate is a set of conditions backed by the force of law to achieve some purpose.[8]

In the American system of federalism, Congress and the federal courts have imposed mandates on state and local governments. Mandates are direct orders that force compliance with conditions set out in statutes or court orders under threat of civil or criminal penalty. The federal government finds mandates attractive because they have no budgetary cost and can help the federal government implement its own policy initiatives by requiring state and local governments to enforce and finance them. But because mandates usually provide no funds to carry out the initiatives, state and local governments naturally tend to oppose them.

Federal mandates have increased substantially over the past decade, putting increasing pressure on state and local governments for higher spending. For example, many states have been required by federal court decisions to upgrade and enlarge their prison facilities. Corrections spending increased rapidly in the 1980s, due partly to the growing prison population but also partly to court-ordered improvements in liv-

Table 4
Federal Grants-in-Aid to State and Local Governments

	1978	1989
Total grants	109.7	93.4
Payments for individuals	34.0	50.6
Other	75.8	42.8
Payments for individuals as percent of total	30.9	54.2
Grants as percent of federal outlays	17.0	10.7
Payments for individuals	5.3	5.8
Other	11.7	4.8
Grants as percent of GNP	3.6	2.4
Payments for individuals	1.1	1.3
Other	2.4	1.1

Source: *Budget of the United States Government: Fiscal Year 1991*, p. A-321.
Note: Grants are federal outlays including shared revenue expressed in billions of FY1982 dollars. Years are fiscal years.

ing conditions for prisoners. At least 35 states were subject to such orders in the late 1980s (Gold 1987). Further increases in prison populations and continuing mandates for enlarging and improving institutions will likely keep upward pressure on corrections spending.

To offset the burgeoning costs of federal mandates, state and local governments have sought relief through legislation requiring federal reimbursement for the costs accompanying mandates (Whitman and Bezdek 1989). Whether states and localities can effectively make their case and whether the federal government will become more sensitive to state and local government concerns are open questions.

As long as federal aid grants do not grow substantially, and unless mandating becomes less prevalent, fend-for-yourself federalism is likely to remain the order of the day. Consequently, state and local governments will continue to be forced to support their rising expenditure needs primarily from their own resources.

Changing demographics

Changing demographics can have a strong influence on the need for government services. Examining population projections for 1995 for two age groups—persons aged 5 through 17 and 65 and older—reveals how demographic changes could significantly affect spending patterns in this decade.

School-age population. Increases in state and local government spending for K-12 education in the years ahead will depend on three factors: how many school age persons are served, how much prices rise, and how much is spent per school-age person. The first of these factors—how many school-age persons are served—will depend largely on changes in the size of the 5 through 17 age group.

Table 5 illustrates some of the potential for higher district K-12 education spending in 1995. District population aged 5 to 17 is projected to be about 3,608,000 in 1995, about 7.3 percent more than in 1988 (U.S. Bureau of the Census 1988). If district spending per school-age person in 1995 is unchanged from its 1988 level, total spending will be $12.6 billion—7.3 percent higher than in 1988 (1995 column 1).

This illustration does not provide for any inflation between 1988 and 1995, however, and some rate of price increase should be assumed. If the implicit deflator for state and local government purchases increases annually from 1988 to 1995 at the 1989 rate of 4.7 percent, the price level would be about one-third higher in 1995 than in 1988. If prices rise that much, keeping district real spending per school-age person at its 1988 level would require total spending of about $16.7 billion in 1995—about 43 percent more than in 1988 (1995 column 2).

But what if district citizens and public officials decide to try to improve the quality of education by increasing real spending per school-age person? Increasing total spending to the 1988 national average level of $3,739 per person, taking into account the projected population increase but allowing for no inflation, would bring district state and local government spending on K-12 education in 1995 to about $13.5 billion (1995 column 3). With the same price rise assumed earlier, total district spending in 1995 to provide real spending per school age person equal to the 1988 national average level would be about $17.9 billion, about 53 percent more than total spending in 1988 (1995 column 4).

These spending amounts for 1995 are simply illustrative; they are not forecasts. Price increases may be smaller, the population projections may be wrong, and electorates may make different choices about education spending. But simply as illustrations, these numbers give some sense of the potential for increased K-12 education spending in the district in the early 1990s.

How do these illustrations compare with earlier growth in district K-12 education spending? Total K-12 spending in the district more than

Table 5
Illustrations of Potential 1995 Spending for K-12 Education in the Tenth District

	1988	1995			
	Actual	1	2	3	4
School-age population	3,364,000	3,608,000	3,608,000	3,608,000	3,608,000
Spending per school-age person	$3,485	$3,485	$4,635	$3,739	$4,961
Total K-12 spending	$11.7 bil.	$12.6 bil.	$16.7 bil.	$13.5 bil.	$17.9 bil.

Column 1: Per person spending at 1988 district level; no inflation adjustment.
Column 2: Per person spending at 1988 district level; adjustment for inflation.
Column 3: Per person spending at 1988 U.S. average level; no inflation adjustment.
Column 4: Per person spending at 1988 U.S. average level; adjustment for inflation.

Source: Bureau of the Census and Federal Reserve Bank of Kansas City.

doubled from 1978 to 1988, rising from $5.2 billion to $11.7 billion. Although much of the increase was eroded away by rapidly rising prices, real spending still rose significantly. Moreover, the district population aged 5 through 17 declined by about 2.5 percent over that ten-year period, permitting real spending per school-age person to increase significantly from 1978 to 1988. Yet even with these increases, district spending per person remained below the national average level in 1988. In Table 5, column 1995-4 illustrates some increase in district real spending per school-age person from 1988 to 1995, but still not enough to equal the national average level if the latter increases at all.

Among district states, the projected increases from 1988 to 1995 in population aged 5 through 17 vary widely. The projected increases range from 1 percent in Nebraska and Oklahoma to 12 percent in Colorado and 25 percent in New Mexico. These variances suggest different spending pressures from state to state. Based on the potential effects of these demographic changes alone, the pressures for more K-12 education spending appear to be greater in New Mexico and Colorado than in Nebraska and Oklahoma. But all district states except Oklahoma and Wyoming are projected to have faster growth in school-age population from 1988 to 1995 than they had over the previous ten years. Three states—Kansas, Missouri, and Nebraska—are expected to return to positive growth in the age group after experiencing a decline from 1978 to 1988.

The search for improved quality of education and the influence of demographic factors will put upward pressure on education spending in district states, especially at the K-12 level. With such spending accounting for about a fourth of district direct general expenditures, pressure for substantial spending increases for K-12 education will force district citizens and public officials to make important choices about overall spending increases or a reordering of spending priorities.

The older population. The aging of the population and the rapidly rising cost of medical care put strong upward pressures on the growth in district public spending for health and hospital

services in the 1980s. In the Tenth District, the population group aged 65 and over grew nearly twice as fast as the total population from 1978 to 1988. Persons 65 and older made up 12.4 percent of the district's population in 1988, up from 11.6 percent in 1978.

The increase in the size of the 65-and-older age group has made health and hospital services a major element of total state and local government spending. From 1978 to 1988, inflation-adjusted government spending for health and hospital services in the district rose faster than total expenditures.[9] Over the same period, district real per capita spending for health and hospital services rose fairly steadily. By 1988, the health and hospitals share of total spending in the district stood at 9.4 percent, not much smaller than the spending shares for higher education and highways.

According to Census Bureau projections, the number of persons 65 and older in the district is expected to grow much more slowly from 1988 to 1995 than during the previous ten years, but still more rapidly than the total population. Growth in this age group in the district is also projected to be significantly slower than in the nation from 1988 to 1995. The percentage share of the total population age 65 and older is expected to be only slightly larger in 1995 than in 1988. Growth in the 65-and-older age group will probably not put as much upward pressure on district state and local government spending in the first half of the 1990s as growth in the school-age population. Yet faster growth in the number of persons 85 and older in the 1990s will probably put further pressure on state and local government spending for health services, because of this group's greater need for costly medical care.[10]

Just as for the school-age population, the projected changes in the 65-and-older age group vary widely among district states. The size of the age group is expected to decline in Wyoming from 1988 to 1995, while the group is expected to grow as much as 20 percent in New Mexico. Unlike growth in the school-age group, however, the older population in all district states is projected to grow more slowly from 1988 to 1995 than in the previous ten years.

III. Conclusions

State and local governments in the Tenth District are facing strong pressures to increase their spending in the 1990s. District expenditures grew fairly rapidly in the 1980s, but generally remained below national average levels as the decade drew to a close. Closing this gap is not necessarily a goal that by itself will push spending up, although it might be a factor. But other factors that have brought pressure for increased state and local government spending in the past are likely to persist in the current decade. Renewing the infrastructure, especially the road system, and improving the quality of education are examples of major tasks expected to call for increases in major components of public spending. Continuing the devolution of spending from the federal government to the state and local levels also promises to maintain upward pressure on state and local government spending in the district. Moreover, demographic changes in district states may well apply additional upward pressure to public spending.

In an atmosphere of resistance to overall increases in public spending and taxes, however, pressures to increase and improve major components of public services may not translate directly into overall spending increases. Electorates and public officials can make choices about spending priorities as well as about boosting total expenditures. Decisions about changes in state and local government spending will continue to be made against a background of citizen resistance to rising public expenditures and in an environment of fend-for-yourself federalism. Thus, state and local governments will make choices in the context of greater

dependence on their own resources, constrained by citizens' resistance to tax increases and a district economy that is likely to continue growing only slowly.

Endnotes

1 Direct general expenditures differ from total expenditures mainly because the former exclude some specific classes of spending—utility expenditures, liquor store expenditures, and insurance trust expenditures. Utility expenditures include spending for construction of facilities and for production and distribution of services provided by government owned and operated water, electric, gas, and transit systems. Liquor store expenditures include purchases of liquor for resale, and provision and operation of alcoholic beverage distribution facilities, where governments maintain alcoholic beverage monopoly systems. Insurance trust expenditures include payments to beneficiaries of social insurance programs operated by governments, such as employee retirement and unemployment compensation programs.

2 Population is only a rough approximation of need, however, especially where particular expenditure functions are concerned. For example, school-age population is a more refined measure of need for education spending, and land area or highway mileage could be better indicators of highway spending need. Per capita expenditure comparisons also do not allow for differences from state to state in the price or quality of public services. For example, a state with a lower cost of living may be able to purchase the same amount of education services with less public spending than a state with a higher cost of living (Aronson and Hilley 1986).

3 This assumes the absence of state measures of the price level.

4 The price measure used in this article is the implicit deflator for state and local government purchases of goods and services.

5 National average spending by all state and local governments can be used as a standard to measure district spending. The national level is primarily a reference point, however, and is not necessarily a level to be attained, since regional factors and social preferences may prompt state and local governments to support public services at different levels.

6 The Federal-Aid Highway Program provides assistance funds to state and local governments for highway purposes, and other federally provided funds can also be used by states and localities for highway purposes.

7 This study has been criticized, partly for using spending measures which may not be appropriate for international comparisons but primarily because solutions to the education system's problems may require curricular and structural changes only, rather than increased spending (Hood 1989).

8 For further discussion of these definitions and of intermediate situations, see Whitman and Bezdek 1989.

9 Expenditures by state and local governments for health and hospital services are payments for services provided directly by governments through their own hospitals and health agencies, and payments to other governments for such purposes. Vendor payments made directly to private purveyors of medical care are not included in this category. Such payments are classed as public welfare expenditures and included in that category of the Social Services spending function.

10 The number of persons age 85 and older is projected to grow faster in the district from 1988 to 1995 than in the earlier 1980s. Growth in this population group is also expected to far outpace growth in the number of persons age 65 and older.

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Bank Holding Companies, Cross-Bank Guarantees, And Source of Strength

By William R. Keeton

Regulators have long been concerned about unsafe practices by bank holding companies. Their concerns intensified in the late 1980s with the sharp increase in bank failures in Texas, a state where multibank holding companies are especially common. In several cases, holding companies with troubled banks behaved in ways regulators considered irresponsible. In particular, holding companies refused to use the resources of their healthy banks and nonbank subsidiaries to cover the losses of their troubled banks, forcing the Federal Deposit Insurance Corporation (FDIC) to pick up the tab when the banks subsequently failed.

Whatever advantages bank holding companies (BHCs) may have as a form of organization, the Texas experience emphasizes they can also reduce bank safety and soundness. Three problems in particular stand out. First, geographic and product diversification through BHCs may not significantly reduce the rate of bank failures if profits and losses are not pooled. Second, BHCs may encourage their banks to engage in transactions with affiliates that boost the holding company's profits at the expense of the FDIC. Finally, BHCs may rely too heavily on debt as their source of funds, reducing their incentive to manage their banks prudently.

Responding to these concerns, regulators and legislators have tried to make BHCs more responsible for the health of their banks. Last August, on the urging of the FDIC, Congress provided for a new system of "cross-bank guarantees" in the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA). Under this provision, BHCs can be required to use the net worth of their healthy banks to reimburse the FDIC for the losses from their troubled banks. A more comprehensive approach advocated by the Federal Reserve is to make BHCs serve as a "source of strength" to their troubled banks. That is, a BHC must assist its troubled banks before failure is imminent and, if necessary, draw on both its bank and nonbank resources. In a variation of this approach, some legislators have proposed BHCs be legally liable for all losses incurred by the FDIC in closing their banks.

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This article reviews the recent efforts by regulators and legislators to protect the banking system from unsafe practices by BHCs. The article concludes that cross-bank guarantees are beneficial, but that some kind of source-of-strength policy is probably necessary to more completely address all the safety-and-soundness problems posed by BHCs. The first section of the article reviews the BHC form of organization and explains the ways BHCs can reduce bank safety and soundness. The second section shows how cross-bank guarantees can alleviate some of these problems. The third section explains how a source-of-strength policy solves those problems not addressed by cross-bank guarantees.

I. BHCs and Safety and Soundness

Both cross-bank guarantees and the source-of-strength policy are intended to alleviate safety-and-soundness problems associated with the BHC form of organization. To provide a background for evaluating these policies, this section briefly reviews the BHC form of organization, explains its potential adverse effects on the safety and soundness of the banking system, and outlines alternative remedies.

What are BHCs?

Holding companies are a common form of organization in banking and other lines of business. A holding company is a company that owns or controls other companies and operates those companies as separately incorporated subsidiaries. An important feature of all holding companies is that they enjoy limited liability against the claims of private creditors on their subsidiaries. In other words, with very few exceptions, an individual or business cannot go after the assets of the holding company to satisfy a claim against the subsidiary.

A BHC is a holding company that owns or controls a bank. Three types of BHCs can be distinguished, depending on what the company owns besides a bank.

A one-bank shell is a BHC that owns only one bank and has no other assets. One reason investors create such shells is to borrow the funds necessary to acquire a bank without assuming personal liability for the loan. Another reason is to take advantage of the tax deductibility of interest on BHC debt (Eisenbeis 1983).

A multibank holding company (MBHC) is a BHC that owns more than one bank. Because such companies share many of the advantages of a branch system, they are especially common in states like Texas where branching is prohibited or restricted.

The third type of BHC is one that not only owns one or more banks but also owns nonbank assets—usually in the form of shares in a nonbank subsidiary. BHCs often set up nonbank subsidiaries to carry out activities prohibited for banks. However, BHCs are also restricted in the activities they can pursue outside their banks. Specifically, the Glass-Steagall Act prohibits BHC subsidiaries from being "principally engaged" in securities underwriting, and the Bank Holding Company Act restricts BHC subsidiaries to activities "closely related to banking." As a result, BHCs typically have few nonbank assets relative to bank assets (Liang and Savage 1990).

While similar in form to other holding companies, BHCs differ in a crucial respect—the liabilities of their bank subsidiaries are federally insured. In most industries, there is little need to worry about the safety and soundness of a holding company's subsidiaries because the failure of a subsidiary imposes no cost on the public. Only the creditors of the subsidiary are hurt by failure, and they can be trusted to protect their own interests. In contrast, the failure of a bank subsidiary of a BHC imposes an external cost on the public by increasing FDIC losses and depleting the insurance fund. This external cost justifies some form of government regula-

tion to limit practices by BHCs that increase their banks' risk of failure.

How BHCs can reduce safety and soundness

BHCs can impair the safety and soundness of their banks in three principal ways. One way is by preventing diversification from reducing the risk of bank failures. Another is by encouraging improper transactions among banks and affiliates. A final way is by allowing the parent company to become undercapitalized. All three problems reflect rational responses by BHCs to the current deposit insurance system, which places much of the burden of bank failures on the FDIC.[1]

Reduced benefits from diversification. Banking analysts have long argued that greater geographic and product diversification would increase the stability of the banking system and reduce the incidence of bank failures. For example, a bank with branches in many regions could spread its lending among the branches, enabling it to use profits from loans to prosperous regions to offset losses from loans to depressed regions. This pooling of profits and losses would make the bank less likely to fail than if its lending were concentrated in one region. Similarly, a bank offering a variety of products besides traditional banking services could use profits from successful products to cover losses from unsuccessful products, reducing its probability of failure.

Although greater diversification by banks could significantly reduce their risk of failure, future diversification is more likely to occur within BHCs than within banks. Under current law, banks cannot open branches in more than one state. Consequently, the only way a banking organization can diversify across state lines is by forming an MBHC with separate subsidiaries in each state. The other form of diversification—product expansion—also seems more likely to occur within BHCs than within banks. Advocates of expanded powers often argue that new activities like securities underwriting be restricted to the nonbank subsidiaries of BHCs, thereby insulating banks from the risks. The most recent effort by Congress to repeal the Glass-Steagall Act adopted this approach, and future efforts will probably do the same.[2]

Diversification within BHCs will not necessarily reduce the risk of bank failures because diversified BHCs may choose to let their troubled banks fail. Consider a bank subsidiary suffering heavy losses because it specialized in loans to a region in a severe but temporary slump. If the bank has a good chance of returning to profitability in the future, it will be in society's interests for the BHC to use the profits of its healthy banks and nonbank subsidiaries to cover the bank's current losses and keep it open. However, if the bank's current losses are large relative to its future expected profits, it may well be in the BHC's interest to let the bank fail. Letting the bank fail forces the BHC to give up the bank's future expected profits but has the advantage of shifting the bank's current losses onto the FDIC.

Improper transactions between affiliates. A BHC with more than one bank or with nonbank operations has an incentive to encourage improper transactions between affiliates—transactions that raise the BHC's expected profits but also increase the chance that some of its banks will fail. Such improper transactions fall into two categories, those between sister banks and those between banks and nonbank affiliates.

Because the costs of failure are borne largely by the FDIC, MBHCs have an incentive to transfer resources from troubled banks to healthy banks through mispriced business deals. For example, an MBHC may encourage a troubled bank to charge too low a rate on loans to healthy sister banks. Or the MBHC may encourage the troubled bank to purchase loans from healthy sister banks at book value even though the market

value has fallen due to a lower probability of repayment. The MBHC will neither gain nor lose from such transfers if the troubled bank remains in business. However, if the troubled bank fails, the MBHC will gain from the transfers because the cost to the troubled bank will fall on the FDIC while the benefit to the healthy banks will accrue to the company.

BHCs with nonbank operations have similar incentives to promote improper transactions between banks and nonbank affiliates. First, by shifting resources from banks to nonbank affiliates, BHCs can reap the same benefits as by shifting resources from troubled banks to healthy banks. Suppose, for example, that a BHC induces a bank to undercharge nonbank affiliates for loans or to overpay them for management and data processing services. Then if the bank fails, the cost of the mispricing will be borne by the FDIC. Second, BHCs can profit from excessively risky bank loans to nonbank affiliates. When a bank lends to an outside firm, the BHC will want the bank to make sure the borrower avoids projects with a high payoff but low chance of success. But when the bank lends to an affiliate, the BHC may be quite willing for such risky projects to be undertaken. If the projects succeed, the BHC will reap all the profits. And if the projects fail, the cost will fall on the FDIC.[3]

Current controls on interaffiliate transactions are unlikely to eliminate the various abuses described above. The most important controls are those in Sections 23A and 23B of the Federal Reserve Act. These laws limit the total amount a bank can lend to nonbank affiliates, require loans to nonbank affiliates to be fully secured, and prohibit banks from buying "low-quality" assets from either bank or nonbank affiliates (Miles 1988).[4] One problem with the laws is that they do not cover certain types of transactions, such as loans between sister banks and daylight overdrafts on banks by nonbank affiliates. Some parts of the laws are also difficult to enforce. For example, a BHC may be able to transfer bad assets to a troubled bank without detection by regulators because it has private information about the quality of the assets. Finally, a BHC may be caught in a violation of the laws, but only after the damage has already been done.

Undercapitalization of the parent company. Even if each bank of a BHC is highly capitalized, the parent company may have so little capital and so much debt that it is tempted to manage its banks imprudently. Some BHCs may borrow heavily to make equity investments in their banks—the practice known as "double leveraging" (Rose 1978, pp. 169-75 and Sinkey 1986a). Other BHCs may borrow only moderately but suffer heavy losses in their nonbank operations that sharply reduce their net worth. Whatever the cause, a BHC owing significantly more than the value of its nonbank assets will be tempted to have its banks take big risks in order to pay off its debt. If the gambles succeed, the BHC will stay in business and earn a positive profit. And if the gambles fail, causing the BHC and its banks to go under, the FDIC and the BHC's creditors will bear the losses.

BHCs have an incentive to borrow and a disincentive to raise capital because their creditors care only about their own losses and not those of the FDIC. Creditors will realize that the more a BHC borrows, the greater will be its incentive to have its banks take big risks. But in deciding how much to lend and what rate to charge, creditors will take into account only the adverse effect of the additional risk-taking on their own return. They will ignore the adverse effect of the additional risk-taking on the FDIC.

Alternative remedies

How can policymakers solve the three problems BHCs pose for the safety and soundness of the banking system? Since the cost of bank failures to the FDIC is the main reason for worrying about unsafe BHC practices, cutting back on deposit insurance might seem a natural

solution. However, reducing deposit insurance could heighten financial instability by increasing bank runs and making it harder for banks to provide liquidity during crises. Another possibility would be to replace BHCs with "universal" banks—banks that can branch freely and exercise new powers directly. This approach would ensure that diversification reduced the risk of bank failures and would eliminate concerns about improper interaffiliate transactions and inadequately capitalized BHCs. But banning BHCs would force banking organizations to give up a convenient way of decentralizing their operations. And allowing banks to exercise new powers directly would expose the FDIC to greater risk of loss than if new powers were confined to separate BHC subsidiaries.[5]

Fortunately, there are other remedies for the safety-and-soundness problems of BHCs that do not require giving up the benefits of deposit insurance or the BHC form of organization. Cross-bank guarantees are one such remedy and source-of-strength policies another.[6]

II. Cross-Bank Guarantees

Last year when Congress enacted FIRREA, it included a provision requiring each bank in an MBHC to guarantee the FDIC's claims on its sister banks. This section concludes that the new cross-bank guarantees will solve some of the safety-and-soundness problems posed by BHCs and will not have excessively serious side effects.

What are cross-bank guarantees?

The main impetus for cross-bank guarantees was the difficulty regulators encountered in the late 1980s closing Texas banks belonging to MBHCs. During the recent energy and real estate recession, it was common for some banks in an MBHC to become insolvent while others retained positive net worth. Although these MBHCs had operated as integrated entities, much like multibranch banks, they made little or no effort to use the resources of their healthy banks to cover the losses of their troubled banks. In one case, that of First RepublicBank Corporation, regulators negotiated an agreement that made it possible to close all the banks in the company, including those that had been solvent. But in other cases, such as that of MCorp, regulators could not negotiate such agreements and thus were unable to touch the company's healthy banks.

In response to these problems, Congress included a provision in FIRREA making the healthy banks in an MBHC responsible for the FDIC's losses from failing banks (House of Representatives 1989).[7] In particular, whenever the FDIC incurs a loss closing or assisting an insured bank or S&L, the other insured banks and S&Ls in the company can be required to reimburse the FDIC up to their net worth. If the healthy banks are unable to pay the FDIC in full and are forced to close themselves, the FDIC receives whatever is left over after paying off the bank's depositors and subordinated debtholders.

FIRREA allows two major exceptions to the new guarantees. For failed S&Ls acquired by BHCs before last August, the guarantees do not go into effect for five years. Also, the FDIC can waive the guarantees for a particular bank or S&L, in which case transactions with sister banks must satisfy the same Section 23A and 23B restrictions as transactions with nonbank affiliates.

Favorable effects on safety and soundness

One way cross-bank guarantees alleviate the safety-and-soundness problems posed by BHCs is by ensuring that greater geographic diversification by BHCs will reduce the risk of bank failures. Under the old system, an MBHC with both successful and unsuccessful banks had an incentive to let the unsuccessful banks fail and

keep the profits from the successful banks to itself. With cross-bank guarantees, however, an MBHC cannot avoid using the profits of its healthy banks to cover the losses of an unsuccessful bank. If the MBHC lets the unsuccessful bank fail, the MBHC will still have to use the profits of its successful banks to reimburse the FDIC. Thus, a highly diversified MBHC will let a troubled bank fail only if it should fail—that is, only if it has little chance of returning to profitability.

Another way cross-bank guarantees increase safety and soundness is by eliminating an MBHC's incentive to transfer resources from its troubled banks to its healthier banks. Under the new law, an MBHC has nothing to gain by having a troubled bank overpay for assets or services purchased from its sister banks or undercharge for assets or services sold to its sister banks. If the troubled bank remains open, its increased losses will just offset the increased profits from the healthy banks, leaving the MBHC's total profits unchanged. And if the troubled bank fails, the MBHC must use the increased profits of its healthy banks to reimburse the FDIC.

Possible adverse effects

Cross-bank guarantees will ensure that geographic expansion by BHCs reduces the risk of bank failures, but they may also discourage such diversification. Suppose, for example, that two groups of banks in different regions are considering merging under the same MBHC. Before merger, shareholders benefit from the fact that the FDIC will bear part of the banks' losses if the banks fail. That is, no matter how big the banks' losses are, shareholders in each group cannot lose more than their equity investment, leaving the FDIC to make up the difference. When the two groups merge, however, some of this benefit will be lost. If the banks in either group fail, a smaller portion of their losses will be borne by the FDIC, because the MBHC will have to use the profits from the other group to reimburse the FDIC. Indeed, the FDIC will not have to pay anything if the banks in one group fail and the banks in the other group earn enough to cover the failed banks' losses. Thus, a merger will force shareholders to bear more of the banks' losses, making the two groups of banks more valuable independent than merged.

Cross-bank guarantees may also slow the growth of MBHCs that have already diversified geographically. Because the FDIC will bear a smaller share of their losses, these MBHCs will not be able to promise as high a return to shareholders, making it harder for them to attract the new capital they need to grow.

These adverse effects on the formation and growth of geographically diversified MBHCs are potentially serious but can be mitigated by varying insurance premiums or capital requirements to reward diversification. Under the current system, a bank's insurance premium and capital requirement are independent of the degree of geographic diversification. But with cross-bank guarantees, it may be appropriate to set lower premiums or capital requirements for MBHC banks spread over many different regions than for independent banks located in the same areas. The justification for varying premiums or capital requirements in this way is that it will generally cost the FDIC less to insure the deposits of the MBHC banks than the deposits of the independent banks. Of course, like all risk-based schemes, such an approach would unfairly penalize some banks (independent banks with diversified loan portfolios) and unfairly reward others (MBHC banks with loans concentrated in the same industry). On the positive side, though, the scheme would give banks in different regions more incentive to merge and make it easier for geographically diversified MBHCs to sell new equity.

Another adverse effect of the new guarantees may be to increase the government's cost of

disposing of the assets of failed banks and S&Ls (Klinkerman 1989, and Silverberg 1989, p. 23). These institutions tend to have assets whose future returns are highly uncertain. In many cases, the least costly way to dispose of such assets is to persuade someone to take over all the assets and liabilities of the failed institution in what is called a "whole-bank" transaction (Bovenzi and Murton 1988). Resolving failures in this way helps preserve customer relationships and maintain the institution's value as a going concern. The problem with cross-bank guarantees is that they discourage BHCs from undertaking such whole-bank acquisitions by forcing BHCs to risk their investment in healthy banks.

One way of addressing this problem is to waive cross-bank guarantees for failed banks and S&Ls but subject them to closer supervision. Under FIRREA, the FDIC can exempt a failed bank or S&L from the guarantees if such action would reduce the net cost to the insurance fund. To be sure, a BHC might then be tempted to transfer resources from the acquired institution to its other banks, especially if the institution performed worse than expected and was about to fail. But by monitoring exempt institutions more closely, regulators could probably limit such abuses.[8] And even if increased supervision did not limit the abuses, a BHC's incentive to exploit the acquired institution would be no greater than under the old system, while its incentive to exploit its other troubled banks would be less. Thus, even if increased supervision were not successful, the new cross-bank guarantees would still be an improvement over the old system.

III. Source of Strength

Cross-bank guarantees address some of the safety-and-soundness problems posed by BHCs, but they do not address all the problems. The guarantees do not ensure that BHC product diversification will reduce the risk of bank failures. They do not curb improper transactions between banks and nonbank affiliates. And they do not prevent undercapitalization of the parent company.

A more comprehensive approach addressing these remaining problems would be to require BHCs to serve as a source of strength to their banks. This section considers two versions of the source-of-strength policy—the policy the Federal Reserve has attempted to enforce, plus a proposed variation that would make BHCs legally liable for FDIC losses. It is argued that source-of-strength policies would increase safety and soundness and that their adverse effects have been overstated.

What is source of strength?

The Federal Reserve's source-of-strength policy has two components. The first is that a BHC should have sufficient managerial and financial resources to assist its banks in case they get into trouble. The second is that a BHC should *use* those resources to assist its troubled banks.[9]

Until recently, most of the Fed's efforts were directed toward the first part of the source-of-strength policy—ensuring that BHCs have the financial and managerial resources to support their banks. In the early 1970s, the Fed began invoking its authority under the Bank Holding Company Act to deny applications for mergers or acquisitions by companies unable to serve as a source of strength to their banks—for example, BHCs with heavy debt-servicing requirements.[10] Another way the Fed tried to ensure that BHCs would be capable of assisting their troubled banks was to impose capital guidelines on BHCs. At first, these guidelines were informal. Then in 1981, when the Fed, FDIC, and Comptroller of the Currency imposed minimum capital requirements on banks, the Fed simultaneously imposed explicit minimum capital requirements on BHCs. As capital requirements were modified in subsequent years, the Fed continued to maintain separate requirements for BHCs.[11]

During the recent upsurge of bank failures, the Fed has had more occasion to worry about the second component of the source-of-strength policy—ensuring that BHCs assist their banks when they get in trouble. To date, however, the Fed has had difficulty enforcing this part of its policy.

The first publicized effort to require a BHC to come to the aid of its banks came in early 1987, when the Fed ordered Hawkeye Bancorp of Iowa to inject capital into one of its failing agricultural banks. Hawkeye refused and the bank failed, prompting the Fed to initiate disciplinary action. Because the Fed later dropped the charges, however, its authority to order assistance remained unclear.

A second test of the policy came in 1988 when many of the banks owned by MCorp of Texas appeared on the verge of failure. At the time, MCorp had roughly $400 million in nonbank assets. The Fed and the Comptroller pressured MCorp to draw on these assets to assist its failing banks, but the company resisted. Several months later 20 MCorp banks were closed, and the holding company declared bankruptcy without having used any of its nonbank assets to recapitalize the banks.[12]

The Fed's recent difficulties in getting BHCs to assist their troubled banks suggest the source-of-strength policy may need to be formalized to be effective. The House Government Operations Committee (GOC) advanced one such proposal in a report considering how BHC powers could be expanded without threatening the safety of their banks (Committee on Government Operations 1987). Like other studies, the GOC report concluded that new powers should be conducted only by nonbank subsidiaries of BHCs. In a departure from other studies, however, the GOC recommended BHCs also be made legally liable for any losses incurred by the FDIC in closing or liquidating their banks. Under this approach, BHCs would be allowed to close their banks in order to limit their losses. That is, in contrast to the Fed's policy, BHCs would not be asked to recapitalize troubled banks to keep them open. The GOC also recommended that BHCs continue to be subject to minimum capital guidelines. These guidelines would be set by the oversight agency for BHCs and would be enforced by raising capital requirements for any bank whose holding company fell below the guidelines.

Favorable effects on safety and soundness

One beneficial effect of source-of-strength policies is to help ensure that product diversification by BHCs reduces the risk of bank failures. Without any source-of-strength policy in effect, a BHC with successful nonbank subsidiaries but unsuccessful banks may well prefer to let the banks fail rather than use its nonbank profits to recapitalize them. The Fed's source-of-strength policy addresses this problem by forcing BHCs to use their nonbank resources to keep troubled banks open. The GOC proposal would make BHCs liable for FDIC losses after a bank fails, giving BHCs an incentive to support troubled banks that are expected to be profitable over the long run. Thus, under either source-of-strength policy, BHC expansion into new activities should reduce the risk of bank failures.[13]

A second favorable effect of source-of-strength policies is to eliminate a BHC's incentive to transfer resources from banks to nonbank affiliates through mispriced business deals. A BHC can benefit from such transfers only if the banks fail and the cost of the transfers is shifted to the FDIC. Under the Fed's source-of-strength policy, however, the BHC must draw on its nonbank assets to prevent its banks from failing. And under the GOC proposal, the BHC can let its banks fail but must then reimburse the FDIC for its losses, preventing the cost of the transfers from being shifted to the FDIC. Thus, with either policy, the BHC gains nothing from the transfers.[14]

The last way source-of-strength policies in-

crease safety and soundness is by making parent companies hold enough capital that they manage their banks prudently and avoid excessive risks. The Fed has made the capital adequacy of BHCs a key part of its source-of-strength policy, refusing to approve expansion plans by overleveraged BHCs and imposing explicit capital requirements on BHCs. As noted earlier, the GOC proposal also calls for minimum capital guidelines for BHCs, though the guidelines would be enforced somewhat differently.[15]

Possible adverse effects

One criticism levied against the Fed's source-of-strength policy is that it forces BHCs to "throw good money after bad" (Shadow Financial Regulatory Committee 1987). The Fed's source-of-strength policy prevents BHCs from letting their banks fail for the purpose of shifting losses onto the FDIC. In some cases, however, the policy may also force BHCs to prop up banks that ought to be closed—banks that have little hope of returning to profitability in the future. This criticism of the Fed's policy is a valid one. However, the problem can be overcome by adopting the GOC approach—that is, by permitting BHCs to let their banks fail, but forcing them to reimburse the FDIC for the cost of resolving the failures. Under this approach, a BHC would let a bank fail only if it believed the bank was not viable over the long run.

A second adverse effect may be to discourage product diversification by BHCs and slow the growth of those BHCs that have already diversified (FDIC 1987, 1989; and Silverberg 1989, pp. 50-51). The disincentive to diversify could exist under either the Fed's policy or the GOC proposal. For example, suppose a BHC is considering acquiring a nonbank firm. If the BHC's banks suffer heavy losses but the nonbank firm earns high profits, owning the nonbank firm will reduce the amount of the banks' losses the BHC can shift onto the FDIC. The BHC will have to use the profits of the nonbank firm either to prop up the banks (the Fed's policy) or to reimburse the FDIC for its losses (the GOC proposal). Thus, the nonbank firm will tend to be worth less to the BHC than to the firm's current owners, discouraging acquisition. By the same token, BHCs already owning nonbank firms will not be able to promise as high a return to their shareholders, making it harder for such BHCs to raise the extra capital they need to grow.

As in the case of cross-bank guarantees, regulators may be able to reduce the adverse effect on BHCs' incentive to diversify by varying insurance premiums or capital requirements in the appropriate manner. Currently, insurance premiums and capital requirements are independent of the degree of product diversification. But if a BHC with substantial nonbank assets is required to use those assets to cover a subsidiary bank's losses, the expected cost to the FDIC of insuring the bank's deposits will generally be lower than the expected cost of insuring other banks' deposits. Thus, under a source-of-strength policy, it will be fair to set a lower premium or capital requirement for banks whose holding companies have substantial nonbank assets. Admittedly, such a scheme would account only imperfectly for differences in product diversification across banks. On balance, however, BHCs would be more adequately compensated for the beneficial effects of product expansion on banking stability.[16]

A final criticism of source-of-strength policies is that they arbitrarily subject corporate shareholders to greater liability than personal shareholders (Shadow Financial Regulatory Committee 1987, and FDIC 1987). Under current law, the personal shareholders of banks enjoy limited liability against all claims on the bank. That is, their liability is limited to their investment in the bank, putting the rest of their assets out of reach of creditors. In contrast, source-of-strength policies subject the corporate shareholders of banks to unlimited liability

against claims by the FDIC. Thus, unlike personal shareholders, a corporation that owns a majority of a bank's shares can lose not only its investment in the bank but also its entire net worth. Some critics of source-of-strength policies argue such a distinction between the liability of personal and corporate shareholders is arbitrary.[17]

The distinction is not necessarily arbitrary, however. One justification for the distinction is that an effective unlimited liability policy reduces the liquidity of bank shares, which harms BHCs less than individual shareholders. To see why an effective unlimited liability policy reduces the liquidity of bank shares, suppose a bank is in danger of failing. With unlimited liability, shareholders will try to escape liability for the bank's losses by selling their shares. But the only investors willing to buy the shares will be those with few personal assets to lose. Thus, the new shareholders will be unable to reimburse the FDIC, defeating the whole purpose of the policy. This example illustrates that an unlimited liability policy will be effective only if regulators carefully screen each sale of bank shares to make sure the buyer has enough resources to satisfy future claims against the bank. This screening process will be inconvenient for any bank shareholder needing to sell shares. But the process will be less onerous for a BHC than an individual bank shareholder because the BHC's shareholders will still be relatively free to sell their shares.[18] Thus, contrary to the claim of source-of-strength critics, imposing unlimited liability on BHCs but not on individual bank shareholders may be justified.

The argument that it is arbitrary to treat corporate and personal shareholders differently also ignores that imposing unlimited liability on personal shareholders may force some investors to bear excessive risk. Making the individual owners of a closely held bank personally liable for the bank's losses would force the owners to risk their entire wealth and face extreme financial insecurity. By contrast, when only BHCs are subject to unlimited liability, the most any individual can lose is his investment in the BHC—a more efficient allocation of risk-bearing between the FDIC and investors.[19]

IV. Conclusions

Dissatisfaction with the way BHCs in Texas have handled their failing banks has led Congress to enact a new system of cross-bank guarantees and has increased demands that BHCs serve as a source of strength to their banks. This article has evaluated cross-bank guarantees and source-of-strength policies in terms of their ability to solve three important problems posed by BHCs. One problem is the failure of geographic and product diversification by BHCs to reduce the rate of bank failures. Another is the incentive of BHCs to have their banks engage in improper transactions with sister banks and nonbank affiliates. The final problem is the disincentive of undercapitalized BHCs to manage their banks prudently.

Cross-bank guarantees solve some of these safety-and-soundness problems but not all. The guarantees will ensure that interstate expansion by BHCs reduces the risk of bank failures and will eliminate the incentive for BHCs to transfer funds from their failing banks to their healthy banks. But the guarantees will not ensure that BHC product diversification reduces the rate of bank failures. Nor will they decrease improper transactions between banks and nonbank affiliates or ensure that BHCs hold adequate capital.

To address these remaining problems, a good case can be made for implementing a source-of-strength policy. Both the Fed's source-of-strength policy and the variation proposed by the Government Operations Committee would help fill the gaps left by cross-bank guarantees. However, the Committee's proposal to make BHCs legally liable for FDIC losses has the important advantage over the Fed's policy of letting BHCs decide which of their banks to keep in business.

Both cross-bank guarantees and source-of-strength policies have disadvantages. For example, cross-bank guarantees may discourage the formation of interstate multibank holding companies, while source-of-strength policies may dissuade BHCs from taking advantage of expanded powers. Also, cross-bank guarantees and source-of-strength policies may reduce BHCs' interest in acquiring failed banks and S&Ls. This article has argued that such adverse effects can be mitigated. For example, regulators can waive the guarantees for failed institutions but supervise them more closely to prevent abuse by the holding company. And regulators can vary insurance premiums and capital requirements to make sure BHCs are more adequately compensated for the risk-reducing effects of diversification. Assuming such steps are taken, cross-bank guarantees should be beneficial on balance, and source-of-strength policies better still.

Endnotes

1 For alternative discussions of the effect of BHCs on bank safety and soundness, see Rose 1978, Sinkey 1986b, and Saunders 1988. It should be noted that BHCs can have other adverse effects besides the three considered here. For example, banking analysts have long worried about the "contagion" problem—the possibility that heavy losses at a nonbank subsidiary will generate runs by the uninsured depositors of a BHC's banks (Flannery 1986). Banking analysts have also worried that courts might "pierce the corporate veil" and hold a BHC's banks responsible for the debts of a failed nonbank subsidiary (Black, Miller, and Posner 1978). Such concerns may be justified, but because they are not addressed by either cross-bank guarantees or source-of-strength policies, they will not be discussed further.

2 In April 1988, the Senate passed a bill that would have allowed BHCs to underwrite securities through nonbank subsidiaries. The House version was never passed but would also have restricted new powers to separate subsidiaries.

3 It might seem that a bank lending money to an outside firm with a highly risky project could always charge a high enough loan rate to make the loan attractive despite the high risk of default. But charging a higher loan rate may be self-defeating. For example, a higher loan rate may increase the probability the borrower will default and the bank will have to incur collection costs. Or, a higher loan rate may induce the firm to alter the project in a way that raises the payoff but reduces the chance of success. When a bank and nonbank firm are owned by the same holding company, such considerations are irrelevant. Instead, the bank and firm can act together to increase their joint expected profits at the expense of the FDIC.

4 Besides having to comply with Sections 23A and 23B, banks are subject to regulatory restrictions on overpayment for services from affiliates and on tax accounting practices that divert funds to the parent (Board of Governors 1990, 4-870 and 4-876, and Wall 1985).

5 Although it may be undesirable to let banks exercise new powers directly, a better case can be made for letting them branch across state lines. The only disadvantage would be to complicate the regulation of state-chartered banks. Even if interstate branching were allowed, however, some banking organizations could choose the MBHC method of expansion in order to shift their losses onto the FDIC. Thus, there would still be a need for policies like cross-bank guarantees.

6 Other remedies that would not require giving up the benefits of deposit insurance and BHCs include a) raising capital requirements for banks and monitoring their capital more closely and b) tightening controls on interaffiliate transactions. The first option would encourage BHCs to manage their banks more prudently and make it easier to close a BHC's failing banks before the burden on the FDIC became very large. However, it would not solve all problems due to the difficulty of determining a bank's true capital in a timely manner. The second option also has merit, especially for transactions like daylight overdrafts that are now unrestricted. But tighter controls could be difficult to enforce, and if too strong, could eliminate any synergies between banking and nonbanking activities. Tighter controls would also do nothing to solve the diversification problem or prevent BHCs from becoming undercapitalized.

7 In 1988, the FDIC suggested a different approach, proposing that the Federal Reserve be given authority to force the merger of healthy and failing banks in a MBHC. The Fed expressed some reservations about the proposal, and nothing came of it (Banking Expansion Reporter 1988).

8 Abuse would also be limited by the requirement in FIRREA that exempt institutions satisfy tougher restric-

tions on transactions with sister banks—in particular, the same restrictions as on transactions with nonbank affiliates.

9 The fullest official explanation of the policy is in an April 1987 statement reprinted in Board of Governors 1990, Section 4-878. The Fed had already incorporated the source-of-strength policy in its official rules in 1983 (Section 225 of Regulation Y), but the 1987 statement was more specific.

10 The Fed's authority to deny applications on these grounds was challenged in court but upheld by the Supreme Court in 1978 in the case of the Board of Governors versus First Lincolnwood. For further details on the early history of the Fed's source-of-strength policy, see Cornyn and others 1986.

11 The Fed's capital requirements for BHCs apply not to the parent company but to the "consolidated" company—the organization obtained by lumping together all the assets and liabilities of the parent and its subsidiaries and netting out all intracompany relationships. The justification for imposing requirements on the consolidated company is discussed in note 15 below.

12 After bankruptcy was declared, the Fed tried to get MCorp to transfer assets to its failed banks on the grounds it had abused the source-of-strength policy. As this article was going to press, a federal appeals court blocked the Fed's action, ruling that the Fed has no authority under the Bank Holding Company Act to force BHCs to inject capital in their banks (BNA Banking Report 1990).

13 Even with a source-of-strength policy in effect, expanded BHC powers could fail to reduce the risk of bank failures for two reasons. First, the returns to the new activities could be highly correlated with the returns to banking. In this case, a BHC's nonbank subsidiaries would tend to suffer losses at the same time as its banks, preventing the BHC from helping the banks. Second, the new activities could be highly risky. Because source-of-strength policies do not require a BHC to use the profits of its banks to cover the losses of its nonbanks, the pursuit of highly risky nonbank activities would not directly increase the banks' risk of failure. However, the new activities would increase the chance of the BHC suffering a decrease in net worth sometime in the future—a decrease that could reduce its incentive to manage the banks prudently. Most empirical studies conclude that the kinds of nonbank activities likely to be allowed are neither highly correlated with bank activities nor exceptionally risky (Saunders 1988, pp. 169-73).

14 It is important to note that source-of-strength policies do not eliminate the incentive for excessively risky bank loans to nonbank affiliates. This incentive will remain as long as there is some chance the BHC will be unable to cover the lending bank's loss if the affiliate defaults on the loan. In other words, as long as the holding company itself can fail, the FDIC will bear part of the cost of risky loans to nonbank affiliates, preserving the incentive to make such loans. For this reason, restrictions on loans to nonbank affiliates would continue to be necessary under either source-of-strength policy. The GOC report even suggested banning such loans entirely.

15 As noted earlier, the Fed's capital requirements apply to the consolidated holding company rather than the parent. The lower the capital-asset ratio of the parent, the lower the capital-asset ratio of the consolidated company will tend to be. However, even if the parent is highly capitalized, the consolidated company can have a low capital-asset ratio due to heavy outside borrowing by nonbank subsidiaries. One reason for restricting such borrowing—and thus one reason for imposing capital requirements on the consolidated company—is that highly leveraged nonbank subsidiaries have a greater chance of suffering losses that reduce the parent's net worth to an unacceptably low level.

16 As suggested earlier, BHC expansion into new activities could fail to reduce the risk of bank failure if the returns to the new activities were highly correlated with the returns to banking or if new activities were highly risky. On average, however, banks belonging to BHCs with substantial nonbank assets would probably cost the FDIC less to insure than other banks, justifying a lower premium or capital requirement.

17 For the general case against using different liability rules for personal and corporate shareholders, see Posner 1976. It should be noted that corporations do not always enjoy limited liability against claims on their subsidiaries. An interesting exception noted by Mayer 1988 is the Pension Benefit Guaranty Corporation (PBGC), the government agency that insures private pension plans. If a subsidiary of a holding company terminates its pension plan, the PBGC can hold each other subsidiary of the company liable up to 30 percent of its net worth. For further details, see Ippolito 1989.

18 Under the Change in Bank Control Act of 1978, sales of bank stock and BHC stock are both subject to regulatory control. In particular, any group seeking to raise its stake in a bank or BHC above 25 percent must give at least 60 days' notice (Spong 1985). With unlimited liability for all bank shareholders, regulators would need to screen sales of bank stock more closely. But since BHC shareholders would still enjoy limited liability, there would be no need to screen sales of BHC stock more closely. It should be noted that imposing unlimited liability on the shareholders of other firms would also reduce share liquidity (Halpern, Trebilcock, and Turnbull 1980; Easterbrook and Fischel

1985; and Woodward 1985). The only difference is that restrictions on the transfer of shares would be imposed by private creditors seeking to protect their own interests rather than by regulators.

19 This argument against unlimited liability for personal shareholders may not apply to widely held banks. If a bank's shares are spread among many investors who are sure of contributing equally to the FDIC's claim against them, the potential loss to each shareholder will be small. But at a bank with many shareholders, unlimited liability has another cost—each investor must monitor the others to make sure they do not spend their wealth or sell out to less wealthy investors (see Jensen and Meckling 1976 and the references above). Also, at such banks, there is less benefit from unlimited liability. One reason for imposing unlimited liability on bank shareholders is to discourage "insider deals" that benefit a bank's shareholders at the expense of the FDIC. The scope for such deals is smaller at a bank owned by many investors with diverse business interests than at a bank owned by a small group of investors who control other businesses that are potential customers of the bank.

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Economic Review
Federal Reserve Bank of Kansas City
Kansas City, Missouri 64198-0001
May/June 1990, Vol. 75, No. 3