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Short-Term Interest Rates since 1979

One of the great mysteries of economics in the last several years has been the persistently high level of interest rates, particularly short-term rates. NBER Faculty Research Fellow **Richard H. Clarida** and Research Associate **Benjamin M. Friedman** examine this issue in *Working Paper No. 1273, The Behavior of U.S. Short-Term Interest Rates since October 1979*.

Relying on work done for this paper and for an earlier study, the authors conclude that "the high average level of interest rates has been due to a combination of slow growth of (nominal) money supply and continuing price inflation." This means that "real balances"—the supply of money deflated by the prevailing level of prices—were small in relation to prevailing levels of real economic activity.

The authors do not attribute the high short-term rates—as distinct from long-term rates—to the budget deficit. For one thing, in terms of the full-employment budget balance—that is, the deficit or surplus that would occur if the nation had full employment—there was only a mild deficit through the time covered by this study: the 15 quarters from October 1979 (when the Federal Reserve System shifted to a policy of paying more attention to growth in the money supply than to the level of interest rates) to mid-1983. In fact, the deficit amounted to only 0.6 percent of GNP in 1982, according to the full-employment budget.

In the case of long-term bond issues, the fear of the Fed abandoning its anti-inflationary monetary policy might push up interest rates, Clarida and Friedman note. But such a fear would not boost rates on 90-day Treasury bills, used as the measure of short-term rates in this study.

"The concern that the Reagan Administration's fiscal policy, combining massive tax cuts with rapidly increasing military spending, would require high enough real interest rates to 'crowd out' large amounts of private investment is plausible enough—but only after the economy had recovered from the 1981–82 recession, which involved the excess private savings also usually associated with weak economic activity," the two write. "This concern would not have affected short-term yields either, at least during the period to 1983."

They continue: "The idea that increased interest rate and asset price volatility in the financial markets has led to higher risk premia is quite plausible too, but it again applies only to long-term instruments subject to substantial capital risk. If anything, the effect of greater volatility should be to increase the demand for short-term instruments, and hence to reduce their yields."

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Nonetheless, the rate on three-month Treasury bills from the fourth quarter of 1979 to mid-1983 averaged 11.67 percent. That is far above the average discount of 5.27 percent on these bills from 1953 to the third quarter of 1979.

This jump, the authors continue, is also true of real interest rates—the rate after subtracting the

broadest measure of inflation: the GNP deflator. The comparable numbers are 4.71 percent for the later period versus 1.39 percent for the prior years.

In an earlier paper, the authors used a small structural econometric model to address two questions: Have U.S. short-term interest rates been “too high,” given the relevant historical relationships connecting interest rates and other key aspects of broad (macroeconomic) policy? And if so, why?

The answers they got were “yes,” short-term rates were too high, and the reason for that was a combination of tight money and high inflation.

But that earlier model made several specific assumptions about what drives the economic system and thereby affects interest rates. In this paper, the authors use a different set of empirical tools that does not depend on such specific assumptions, summarizing in a less restricted way the relationships among key macroeconomic variables in the United States. Again, the finding is that short-term rates are “too high.” And although this procedure cannot directly answer the question as to why these rates have been so high, the results do “correspond well with the main conclusions based on the earlier structural model,” Clarida and Friedman maintain. DF

Air Pollution and Lost Work

Air pollution has a statistically significant and quantitatively important effect on the number of days lost from work, according to NBER Research Associates **Jerry A. Hausman** and **David A. Wise**, and **Bart D. Ostro** of the Environmental Protection Agency (EPA). Moreover, in their *NBER Working Paper No. 1263, Air Pollution and Lost Work*, the three authors find a substantial relationship between smoking in a household and days lost from work by its nonsmoking members.

Using the level of total suspended particulates (TSP) in the air as a measure of pollution, the authors find that a one-unit increase in annual average TSP would increase the expected number of days lost from work by 0.7 percent. An increase of one standard deviation in TSP is associated with about a 10 percent increase in workdays lost; reducing pollution by two standard deviations would reduce the expected number of days lost by 23 percent. Put another way, “if, in areas where pollution is very

high . . . pollution were reduced to the mean, workdays lost would be reduced by over 20 percent,” according to the paper.

Hausman, Ostro, and Wise also observe that an increase of 20 cigarettes per day, a pack, is associated with a substantial increase in workdays lost by nonsmokers in the household. They make some preliminary comparisons using other samples and pollution data and find that air pollution has a greater adverse effect on smokers than on nonsmokers.

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Given the wide range of data on individuals in their sample, the three authors were able to observe certain other characteristics associated with days lost from work. For example, married men miss 23 percent fewer days of work than unmarried men, and married men with working wives miss 28 percent fewer days than those whose wives do not work.

Blue-collar workers miss 18 percent fewer days on average than those in other occupations; nonwhites miss about 40 percent fewer days than whites. Finally, older workers miss more days than younger workers, and workers who report chronic health conditions miss about twice as many days as those who report no such conditions.

While the evidence (based on observational studies) for some relationship between pollution and health is substantial, in the past judgments about their *causal* connection were clouded by uncertainty about the effect of unmeasured characteristics of cities and individuals. These characteristics might also affect health but are not controlled for in the statistical analysis. This paper uses microdata with more information on individual attributes than was available to earlier investigators; thus, the possible bias caused by excluded variables is reduced. Hausman, Ostro, and Wise also use sophisticated statistical techniques designed to control for the effects on workdays lost of unmeasured characteristics of the site (city) itself.

The data used in this paper come from a series of national surveys of individuals conducted weekly during 1976 that asked, among other things, how many workdays were lost because of illness. The authors study about 5500 males who live in medium-sized cities and do not smoke. In their sample, the average number of days lost from work is 6.24 per year. Additional data came from the EPA, the Census Bureau, and the National Oceanic and Atmospheric Administration.

Expected Future Deficits and Current Economic Activity

Federal budget deficits have been the subject of almost as much discussion as the weather in recent years. Nearly everyone is worried about the size of the deficits, but there is little agreement about why deficits affect the economy.

A new study by NBER Research Associate **Ray C. Fair** suggests a way that deficits may affect activity: the Federal Reserve may respond to expected future deficits. In *Working Paper No. 1293, Effects of Future Government Deficits on Current Economic Activity*, Fair also shows that the Fed's reactions make stimulative fiscal policy less effective than it otherwise would be.

In his macroeconomic model, Fair examines the Fed's reaction to interest rates. He finds that in "leaning against the wind," the Fed raises short-term interest rates in response to increases in real economic activity, inflation, and growth of the money supply.

In this paper, Fair considers the possibility that the Fed also is influenced by expected future deficits. The estimated effect of future deficits on Fed policy is statistically significant in all of the numerous estimations he performs. In particular, he finds that an increase in the expected deficit of 1 percent of GNP will cause the Fed to raise the short-term interest rate 22 basis points. The long-run impact is about 2 percentage points.

Interestingly, there is no evidence that the Fed responds to current or past deficits. Fair cautions that these results are quite tentative. For one thing, he searched for the future quarterly deficit that gave the best results. For another, the tests are based on the assumption that the equations for Fed reaction to interest rates are a proper estimate of Fed behavior, which may not be the case.

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Fair examines how much difference the Fed's response to future deficits makes to the economy. Fed behavior could have a powerful influence on the impact of fiscal policy because the short-term interest rate has important direct and indirect effects on consumption and investment.

The results are quite striking. Assuming no Fed reaction to higher expected deficits, a sustained increase in government purchases of 1 percent of GNP

raises real GNP by 79 percent above its baseline level after eight quarters. When the Fed responds to the higher expected deficits as Fair estimates, real GNP is 0.12 percent below the baseline level after eight quarters. After 12 quarters the respective values are 0.47 percent above baseline and 0.85 percent below. With no Fed response, the GNP deflator is 0.53 percent higher after 12 quarters; the deflator is only 0.01 percent higher with the full Fed response. The results fall between those two extremes when the Fed's response to expected future deficits is half as strong and are closer to "no response" than to "full response."

Fair concludes by noting that the estimates of the Fed's reactions need to be confirmed using future data before much confidence can be placed in them. Thus, the overall results of the paper should be taken as only suggestive of what might be the case. AE

Accounting for the Decline in Union Membership

The percentage of the American work force that is unionized has declined considerably since the early 1950s but *not* primarily because of a decline in the heavily unionized core industries, according to *NBER Working Paper No. 1275* by Faculty Research Fellows **William T. Dickens** and **Jonathan S. Leonard**.

In *Accounting for the Decline in Union Membership*, Dickens and Leonard note that by 1954, the percentage of private workers, not in agriculture or construction, who belonged to national unions or their local affiliates had risen to 39.2. By 1980, that percentage had fallen to 23.6 and even the total number of union members was falling.

There are only three ways in which unions may lose members. First, a decertification election may be held in a unionized plant and the union may be voted out. Second, the union may voluntarily leave a plant after failing to negotiate a contract. Third, economic forces—that is, plant closings, layoffs, or slower growth in core manufacturing industries—may be the cause. Conversely, new members are the result of successful organizing.

According to Dickens and Leonard, the rate of decertification has risen rapidly since 1950 but is still unimportant. Organizing activity and "success rates" have been declining over time, however. Although constant during most of the 1960s, the rate of organizing was falling both in the 1950s and in the

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1970s, and the success rate followed a similar pattern. The decline in the organization rate is responsible for about 30 percent of the drop in union membership; the downward trend in the success rate accounts for about 17 percent of the loss in union membership. However, the authors estimate that

the two factors interact and together represent 63 percent of the observed downward change.

The net growth (or loss) of membership from economic causes, on the other hand, has been stable relative to the business cycle. Economic factors caused the strongest growth in union membership during the late 1960s. In sum, they were responsible for about 35 percent of the total change in union membership from 1950–80.

Dickens and Leonard conclude that “no single factor can account for the decline in the percent of the work force organized since the early 1950s.” However, decertifications had no perceivable impact on that figure.

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