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Stock Prices and Economic News

Financial journalists often write that various economic events have prompted stock prices to rise or fall. The market dipped, they may claim, because of "disappointing unemployment figures" or rose because of "encouraging news on the inflation front."

However, there has been little systematic evidence of the quantitative impact such news has on stock prices. **Douglas K. Pearce** and NBER Research Associate **V. Vance Roley** attempt to remedy that lack of evidence in *NBER Working Paper No. 1296, Stock Prices and Economic News*.

One obstacle to research on this subject is the difficulty in distinguishing that portion of an announcement that was anticipated. The stock market should already have taken account of an anticipated change prior to the announcement, according to the efficient-markets hypothesis, a theory about how stock markets work. The markets would react only to the unanticipated change. For instance, if the participants in the market widely anticipated a rise of \$4 billion in the supply of money one week, then if that actually happened, there should be no price change for stocks at the time of the announcement. The markets would already have taken account of that anticipated news. If the money supply actually rose, say \$6 billion, market prices might drop because of the unanticipated \$2 billion increase. That extra \$2 billion truly would be news for investors.

Pearce and Roley use survey data on market participants' expectations of economic announcements to measure unexpected changes or surprises. They look at the effect on stock prices of announcements

about the money supply, inflation, real economic activity, and the discount rate. Among their conclusions are that new information, directly related to monetary policy, significantly affects stock prices. In particular, announced increases in the money supply that are surprisingly large have a significantly negative effect on stock prices in the period studied—from September 1977 to October 1982. In the latter part of the period, starting with the Federal Reserve System's announcement in October 1979 that it would attempt to control the money supply more closely and focus less intently on interest rates, discount rate changes have also had a significant effect.

"Announced increases in the money supply that are surprisingly large have a significantly negative effect on stock prices."

They further find only limited evidence to support the view that surprises in either inflation (measured by the Consumer Price Index of the Producer Price Index) or real economic activity (measured by the unemployment rate and industrial production) affect stock prices.

However, in the pre-October 1979 subsample of data, surprises in the Producer Price Index have caused price changes in the stock market on the day of the announcement, but these were offset by the end of the week.

The empirical results of the research indicate that the anticipated components of economic announcements do not significantly affect daily movements in stock prices. This is in keeping with the efficient-markets hypothesis.

Some evidence suggests that the response of stock prices to new information may persist beyond the announcement day. But this is not the case for most economic announcements. The efficient-markets hypothesis maintains that stock prices essentially should respond immediately to new information.

There are, Pearce and Roley point out, two theories of why the stock market reacts negatively to unexpectedly high money growth numbers. One is that investors may believe that the Federal Reserve System will react to unexpectedly high money growth by quickly moving to a more restrictive monetary policy. This would lead to higher interest rates because money market investors react by selling bonds or other instruments immediately to avoid losses. Since stocks then would become less attractive in comparison with investments in bonds, stock prices fall too.

The second view is that investors revise upward their expectations of inflation when money growth is faster than anticipated. They demand higher interest rates on bonds or other money market investments to offset the damage to their investment caused by higher inflation. This then hurts stocks too. Moreover, higher inflation hits real, aftertax corporate profits and, this being widely known, stock prices fall at once rather than later.

Whatever theory holds, a \$1 billion surprise in the basic measure of money (M1) in recent times results in a decline in stock prices of about 1.09 percent, the authors find.

In theory, surprises in the inflation numbers could have the same effect on stock prices. Unexpectedly high inflation could also prompt policymakers to enact more restrictive policies that would hit corporate cash flow and thus lower stock prices. But Pearce and Roley, as noted, find little evidence of such an impact, except for a brief impact of a surprise in producer prices when this occurred prior to October 1979.

Similarly, surprising news on unemployment or industrial production might cause investors either to fear more restrictive policies or to look forward to better corporate earnings. But again the authors find little proof of stock price shifts.

Prior to October 1979 the discount rate primarily followed shifts in the federal funds rate (the interest rate at which banks lend surplus reserves to one another, usually overnight). So changes were no surprise. After that date, with the Fed paying less attention to interest rates, a change in the discount rate usually signified a change in Fed thinking on monetary policy, which did have some effect on stock prices, the authors find.

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How Successful Is Affirmative Action?

Affirmative Action, as mandated in 1965 by Executive Order 11246, has been criticized for being ineffective, for helping well-educated minorities to the detriment of those with less education and fewer skills, and for imposing a system of rigid quotas on employers. In a series of recent NBER studies, Faculty Research Fellow **Jonathan S. Leonard** evaluates each of these criticisms.

Under Affirmative Action, employers who receive federal contracts must set goals and timetables for minority and female hiring. Also, employers may be randomly selected for a compliance review and asked to improve their existing Affirmative Action plans.

In *NBER Working Paper No. 1346, What Promises Are Worth: The Impact of Affirmative Action Goals*, Leonard asks how goals affect subsequent employment. He finds that establishments that promise to employ more minorities and females actually do so in subsequent years. This is true even though employers tend to promise more than they deliver. That is, "... on average a projected 11 percentage point increase in the growth rate of black male employment share results in an actual increase of one percentage point. ..."

Has Affirmative Action, on average, been successful in putting more minorities and women to work? Yes, Leonard finds, in *NBER Working Paper No. 1310, The Impact of Affirmative Action on Employment*. Using data for 1974 and 1980 from more than 68,000 establishments with more than 16 million employees, he shows that minority and female employment have increased faster at establishments covered by Affirmative Action (federal contractors) than at "noncontractors." He also finds that compliance reviews, although poorly targeted, have had an effect on these establishments.

"Affirmative Action has increased the demand for minority males relative to white males."

Among contractors, Affirmative Action increased the demand for black males relative to white males by almost 15 percent between 1974 and 1980. The relative demand for nonblack minority males rose over 6 percent in that period, and the relative demand for white females rose nearly 3 percent.

The black males' share of employment increased about 0.8 percentage points more in nonreviewed contractor establishments than elsewhere, and compliance reviews raised that employment share by

close to 0.2 percentage points. Thus, Leonard concludes, the total impact of the contract compliance programs was to raise black males' employment share by one percentage point in the contractor sector from 1974-80.

Finally, in *NBER Working Paper No. 1327, Splitting Blacks? Affirmative Action and Earnings Inequality Within and Across Races*, Leonard asks whether the best-educated minorities have been made better off at the expense of those with fewer skills and less education. He finds that, in general, minority males earn more in the Affirmative Action sector, and this applies to both the well educated and the poorly educated.

A 10 percentage point increase in covered (by Affirmative Action regulations) employment would increase wages of minority males by 3.9 percent and result in a 1 percent increase in nonwhites' wages relative to those of whites. This would reduce the average black/white wage gap of 75¢/hour by more than 2 percent.

Judging from the relatively higher wages paid in cities and industries with many federal contractors subject to Affirmative Action, and the increased employment of minorities in covered establishments, Leonard concludes that Affirmative Action has increased the demand for minority males relative to white males. Moreover, that demand appears to have increased both for those who are less educated and for better-educated minority males.

The Behavior of U.S. Deficits

Hardly anyone would disagree with the proposition that the federal budget deficits of the last few years have been without precedent in peacetime, either in absolute magnitude or as a percentage of gross national product. The conventional wisdom holds that there has been a fundamental, and unfortunate, shift in U.S. fiscal policy toward a regime of higher deficits and rising public debt. But new research by **Robert J. Barro** raises serious questions about that view. Barro's work suggests that the 1982 and 1983 deficits actually were in line with past fiscal policy, given the severity of the recession and the level of anticipated inflation. In *NBER Working Paper No. 1309, The Behavior of U.S. Deficits*, Barro maintains that recent deficits are consistent with a pattern that has persisted since 1920.

Barro analyzes the character of deficits in the context of a "tax-smoothing" model he developed in 1979. Under this model, the government attempts to maintain reasonably stable tax rates over time in

order to avoid large variations in the incentives to work, produce, and consume. The government faces a stream of real expenditures and a stream of real taxable income that Barro assumes is a fixed fraction of real GNP. The tax rate equals the ratio of normal spending (including real interest payments on the public debt) to normal income. The deficit is defined as the change in the real (inflation-adjusted) increase in interest-bearing public debt.

"Out of line with the previous experience are the projections of longer-term deficits on the order of \$300 billion in the presence of relatively low employment..."

The real debt rises (the government runs a deficit) when output and taxable incomes are below their normal trendline. With no action on the part of the government, revenues would fall along with the decline in output. If the government takes countercyclical stimulative action and cuts tax rates, then the revenue shortfall and the increase in public debt (the deficit) are greater. Barro assumes in his analysis that a combination of legislative changes and the automatic response of revenues within the tax system achieves the postulated behavior of deficits during recessions. Public debt also rises when the government engages in unusually high spending, as in wartime. Governments raise taxes in wartime, but not enough to cover the extra expenditures. As a result, the public debt rises sharply.

An important property of Barro's analysis is that it prescribes no target value for public debt or for the ratio of public debt to national income. A higher initial level of debt is undesirable in the sense that it requires a higher tax rate to cover interest costs. But with the possibility of default ruled out, it is not worthwhile, in Barro's analysis, for the government systematically to run surpluses in order to reduce the debt. Such a policy would require temporarily high tax rates and would violate the tax-smoothing criterion. In fact, the real level of public debt should tend to rise at the same rate as national income. This behavior is consistent with the tendency of public debt to fall relative to national income during peacetime nonrecession years, and to rise in wartime and recessions.

Finally, fiscal policy is concerned with the real level of public debt, not the nominal level. As a result, the nominal level of the debt rises one-for-one with expected inflation, so that the real level remains constant. The government finances an inflation-related increase in nominal interest payments by issuing new nominal debt rather than by levying taxes. But it finances a permanent increase in real interest rates with a once-and-for-all adjustment in the tax rate.

Barro applies his model to annual U.S. data for the period from 1920 through 1982. The behavior of inflation in the post-World War II years differs markedly from that in the prewar era. There is a persistence in inflation from year to year, which was not true earlier; lagged money growth is a positive predictor of inflation, which was not true earlier; and the variance of inflation—conditioned on information from the previous year—is much smaller than before. The main break in the behavior of inflation occurred around the time of the Korean War, so Barro estimates separate coefficients of inflation for the period up to 1953 and for 1954 through 1982.

As a measure of temporary shortfalls in output (recessions), Barro uses the departure of unemployment from a fixed natural rate. The natural rate used in the study is 5.4 percent, the median rate in the period from 1890 to 1982. As it turns out, this value is also close to the median for the post-World War II period. The measure of normal federal spending rises over time with the growth in the size of government. One result of the growth of government is that a given percentage shortfall in output has a much greater impact on the size of the deficit. In fact, a one percentage point shortfall in output now has five times as much effect on the growth of public debt as it would have had in 1933.

Most of the estimated coefficients for the variables in Barro's equation are consistent with the values suggested by the tax-smoothing model. The standard error of estimate for the debt equation is plus or minus 2.3 percentage points per year. The equation also is stable over various subperiods. In all cases, the hypothesis of stable coefficients before and after World War II is accepted at conventional significance levels. These findings indicate that the process for generating deficits in the interwar period from 1920 to 1940 is broadly similar to that in the postwar period from 1948 to 1982. The statistical evidence does not support the idea that

there has been a shift in policy toward larger deficits on average or more deficit spending in response to recessions.

The debt equation underpredicts the deficits during the 1975-76 recession but is basically on track for the 1980-82 recession. For calendar 1982, the actual growth rate of nominal debt was 20 percent, corresponding to an increase by \$155 billion in privately held, interest-bearing debt. (To get closer to conventional measures of the deficit, one should add about \$15 billion for creation of high-powered money.) The estimated value for debt growth is 19 percent. This figure breaks down into six percentage points resulting from anticipated inflation and 13 percentage points caused by the recession. The equation predicts an increase in public debt of 16.6 percent, or \$153 billion, for calendar 1983. The actual deficit in calendar 1983 was about \$170 billion, or an increase of 18.3 percent. The gap of 1.7 percentage points between actual and estimated increases in nominal debt is within the standard error of estimate of 2.3 percentage points. Barro's model predicts a calendar 1984 deficit of \$145 billion, which corresponds to a growth rate of 13.3 percent for the nominal public debt. (Again, about \$15 billion should be added for money creation.) The estimated value of debt growth breaks down into 6.6 percentage points for inflation and 6.7 percentage points for unemployment.

Barro concludes that the actual behavior of public debt through 1983 and popular forecasts for 1984 are reasonably in line with the policy process since the end of World War I. Out of line with the previous experience are the projections of longer-term deficits on the order of \$300 billion in the presence of relatively low unemployment and inflation. Since he finds nothing in the data to suggest that such a structural break has occurred, Barro interprets the long-term deficit forecasts as either predictions that taxes will be increased or that spending will be decreased.

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