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Price Inertia and Policy Ineffectiveness

In *NBER Working Paper No. 744, Price Inertia and Policy Ineffectiveness in the United States, 1890-1980*, Research Associate **Robert J. Gordon** develops new evidence that casts doubt on the proposition that monetary policy is not an effective tool for stabilizing economic activity. The "policy-inefficiency" proposition, also known as the Lucas-Sargent-Wallace or LSW hypothesis (after Robert E. Lucas, Jr., Thomas Sargent, and Neil Wallace), holds that fully anticipated changes in the money supply affect only the inflation rate; only unanticipated monetary "surprises" can affect real activity and output. A clear determination of whether the hypothesis is correct might help resolve a number of policy issues, such as the costs of anti-inflation strategies, the effectiveness of monetary policy rules, and to what extent the monetary authorities should accommodate such supply shocks, as OPEC price increases.

Gordon takes a new approach to testing the LSW proposition. He uses a single empirical equation to compare LSW against the alternative hypothesis that prices respond slowly to changes in nominal demand (money) regardless of whether the changes are anticipated or unanticipated. The alternative hypothesis is a combination of the proposition that there is a long-run natural rate of output and the theory that prices adjust gradually in the short run.

Like LSW, Gordon's competing hypothesis holds that monetary policy affects only prices in the long run. But it holds that monetary policy will also affect output in the short run because inertia in the price-setting process—resulting from things such as price and wage contracts—causes the price level to adjust gradually to monetary changes.

Gordon's results are squarely at odds with the LSW hypothesis. He tests LSW and the alternative proposition by relating real output and prices to anticipated changes in nominal aggregate demand on a quarterly basis from 1890 through 1980. LSW predicts that the full effect of anticipated changes in nominal GNP will be reflected in prices, while Gordon's view predicts that the effect will be less than fully reflected in prices and partly reflected in real output. That is, LSW predicts that 100 percent of the effect of anticipated changes in nominal GNP will be on prices and nothing on real output. According to the alternative, the price change will be less than 100 percent of the change in nominal GNP and thus some of the change in nominal GNP will be reflected in output.

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The price-change coefficients in Gordon's tests range from 0.09 to 0.12 for various sample periods, and the output coefficients from 0.88 to 0.91. In other words, it appears that anticipated changes in nominal demand have a greater short-run effect on output than they do on prices. In future periods, on the other hand, the output effects become negative and the price-change effects remain positive. That is consistent with the NRH-GAP theory that a change in nominal demand has no lasting effect on real output, and that the full effect ultimately flows through to prices.

Testing the relationships between nominal demand and changes in output and prices involves several problems. One is separating changes in nominal demand into their anticipated and unanticipated components. As in most previous studies of this topic, Gordon deals with that problem by using a two-stage process to estimate anticipated changes in nominal demand. A second issue involves the selection of variables to represent systematic supply shocks. Gordon stresses the role of supply shocks in explaining why price changes at certain times were so variable compared to changes in nominal GNP and the money supply. He adjusts for six such shocks: World War I price controls; the attempt to raise prices under the National Recovery Act from 1933 to 1935; the World War II, Korean War, and Nixon price controls; and the influence of changes in the relative prices of food and energy in the period after 1947.

In addition, Gordon creates a new series of estimates for quarterly real GNP and nominal GNP for the years from 1890 through 1946. He constructs the series using monthly data on the index of industrial production, wholesale prices, and consumer prices to interpolate the existing annual series on real GNP and the GNP deflator into quarterly estimates.

Gordon's results indicate that the main features of price-setting behavior were remarkably similar over the entire ninety-year period, although there were two important shifts. Prices were unusually responsive to changes in anticipated demand in the years from 1915 through 1922, and they became much less responsive after 1953. That is, price inertia seems to have increased during the postwar period. Gordon believes the greater inertia may reflect the advent of staggered three-year wage contracts and a change in attitude toward recognition of a greater role for government policy in economic stabilization.

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From Inflation to Price Stability

With the substantial rise in inflation rates in the United States during the decade of the 1970s, economists have been debating the best route back to price stability. Some have argued that a policy of "gradualism," involving a slow decrease in the rate of growth in the money supply, would cost the least in terms of adjustments in the economy that produce high unemployment, decreased production, and business failures. Others have said the least costly path back to low inflation would be a "shock treatment," a sudden drop in the growth of the money supply to a noninflationary level.

To buttress their arguments, some economists have looked at historical hyperinflations and their cures to search for evidence one way or the other. They also have wanted to see how the economic costs of high, steady inflation compare to the transition costs back to price stability. In *NBER Working Paper No. 728, Transition from Inflation to Price Stability*, Research Economist **Peter M. Garber** examines the aftermath of the German hyperinflation of the early 1920s and concludes that it involved large (real) readjustments in the economy, although with a lag.

Garber finds that phenomena that could be interpreted as large costs for the German economy began some 18 months after the November 1923 currency reform that brought Germany's hyperinflation—more than 500 percent per week—to an end. The adjustment continued, he says, until the German economy was overwhelmed by the Great Depression.

In explanation, Garber notes that the German economy was molded both by the creation of too much money as the government sought to finance its deficits, and by a portfolio of other policies that were tied intimately to the inflation.

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Looking at differences between the wholesale price index and the cost of living index, at employment in capital goods and consumer goods industries, and at movements in real wages, he concludes that the high rate of inflation prompted a shift in production toward investment goods. Real wages declined as production shifted to capital-intensive goods, and profitability increased, especially in the investment goods industries. New investments were concentrated in plants employing labor-intensive techniques since wages were relatively cheap.

Moreover, in this period, German industry formed massive combines of wholly disparate firms, combines that controlled vast sectors of the economy. One purpose of these combines was to avoid using depreciating money by employing internal accounting and payments systems.

At the same time, the government subsidized the capital goods industries directly, through its budget, using the new money it was creating. Also, beginning in 1922, the Reichsbank (the German central bank) began to discount the bills of private business at rates

of interest sufficiently low in that period of hyperinflation that only a negligible percentage of a loan's real value ever was repaid. The big combines, organized around the basic capital goods industries, had special access to such loans, in effect getting large subsidies. Finally, the Reichsbank authorized a number of institutions, including private firms, to print "emergency money" in order to meet their pressing needs for cash.

The 1923 currency reform involved a new bank with powers to issue a new currency, the Rentenmark. The government drastically cut its expenditures and raised taxes. For a time, the Reichsbank continued to discount new private bills, but this was stopped in April 1924 when inflation started to pick up again. That action, Garber indicates, finally persuaded the public that inflation was coming to a halt. The "credibility" of the central bank was restored within eight months, as shown in the narrowing of the interest rate differential between ordinary bonds and gold bonds that were denominated in gold.

This credibility issue is important, because some economists in effect argue that the restoration of a government's anti-inflation credibility can produce a nearly painless transition to price stability. Garber's paper argues that there were other transition problems besides credibility that resulted in serious adjustments after the currency reform. In Germany, industrial output recovered somewhat in early 1924 after the end of the French-Belgian occupation of the Ruhr, Germany's key industrial region. But output declined once the Reichsbank ceased discounting new private bills.

What happened, Garber holds, is that by summer 1924, once the hyperinflation had ended, real wages rose again to their 1913 level. As a result, many labor-intensive plants that had sprung up during the hyperinflation became unprofitable. In the fall of 1924 a foreign government loan of 800 million gold marks (known as the Dawes Loan), an inflow of private foreign loans and direct investment, and the removal of the Reichsbank credit restraints prompted a nine-month recovery that peaked in May 1925. The necessary reorganization of capital and industry to a state consistent with a stable price environment was postponed by the receipt of these credits. But by the summer of 1925, the transition began in earnest. A number of huge combines constructed during the hyperinflation collapsed; recently built labor-intensive plants were scrapped; and many firms born in the hyperinflation were forced into bankruptcy. Industrial production declined by 20 percent in less than a year; unemployment reached 22 percent of union members by 1926 and did not fall below 10 percent until the second quarter of 1927. Output of production did not decline as drastically, Garber notes, because industry was closing its inefficient, labor-intensive plants and increasing productivity in its remaining facilities.

Having found that Germany did not escape its hyperinflation period without large real readjustments that could be interpreted as transition costs, Garber

concludes: "If the costs of both steady-state inflation and the transition to stable prices are high, then detailed study of the nature of each cost is necessary before reliable policy recommendations can be made. This is a discouraging prospect, filled with the potential for endless disputes." DF

How Useful Are the Leading Indicators?

Movements in the index of leading indicators are clearly helpful in predicting changes in cyclical economic variables, according to a recent study by NBER Research Associate **Alan J. Auerbach**. In *Working Paper No. 761, The Index of Leading Indicators: "Measurement without Theory," Twenty-five Years Later*, Auerbach negates some of the criticisms of the index, developed at NBER in the 1930s, by comparing its performance to that of time-series methods of predicting business cycles. He finds that, even after 25 years, the NBER index is still useful.

The index of leading indicators, calculated monthly by the U.S. Department of Commerce's Bureau of Economic Analysis, is a weighted sum of 12 carefully selected economic series: average work week of production workers in manufacturing; layoff rate in manufacturing; new orders of consumer goods and materials; index of net business formation; Standard & Poor's stock price index; contracts and orders of plant and equipment; building permits for private housing; vendor performance; change in inventories; percent change in sensitive prices; percent change in total liquid assets; and money supply. With each new business cycle, the composition and weights of the series are adjusted; in 1977, the weights were close to equal, ranging from .930 to 1.079.

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In his study, Auerbach compares the index of leading indicators with alternative methods of weighting the 12 series based on statistical prediction procedures. He then compares the composite leading indicators with these alternatives as predictors of changes in the Federal Reserve Board's Index of Industrial Production and in the unemployment rate. The new statistical procedures do not improve upon the indi-

cators' performance. He also finds that excluding certain series, which individually do not help to explain the business cycle, worsens the overall performance of the index. Therefore, there is some merit in using a composite index.

The principal reason for weighting the various series in the index is that they fluctuate in their efficacy as predictors of the business cycle. However, Auerbach finds that "the extensive effort devoted to assigning

and updating weights for the series has essentially no effect on the resulting index; it is indistinguishable from one with equal weights." In sum, Auerbach finds that alternative methods of weighting suggested by modern statistical theory do not yield an index that outperforms the index of leading indicators. Despite its critics and its imperfections, the composite index of leading indicators is "strongly significant" in predicting cyclical variables.

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