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The Conduct of Domestic Monetary Policy

In *NBER Working Paper No. 1221, The Conduct of Domestic Monetary Policy*, Research Associate **Robert J. Gordon** develops the proposition that a set of basic constraints—including supply conditions in the economy and shifts in the velocity of money—limits the set of outcomes that monetary policy can achieve. Gordon concludes that these constraints make monetary targets, such as the monetary base or M1, an inaccurate guide for Federal Reserve policy. The Federal Reserve could, alternatively, try to achieve the level of growth in nominal GNP that is consistent with the natural rate of unemployment (that is, the minimum unemployment rate that, in the absence of supply shocks, is consistent with steady, nonaccelerating inflation).

The well-established view held by most monetarists is that changes in monetary policy affect real activity only in the short run; over the long run, the only effects of monetary policy are on such nominal variables as the price level and nominal interest rates. This interpretation has led many monetarists to prescribe a tight control over the growth of the monetary aggregates or the monetary base along a steadily decelerating path to price stability.

Gordon, on the other hand, presents evidence that the effects of monetary policy on real variables such as unemployment and income persist for a long time, and that alternative scenarios for the nominal money supply can make the difference between smooth or oscillating paths for real variables over periods of a decade or more.

As Gordon argues, constraints on the behavior of aggregate supply determine how a given path of nominal income growth will be divided between inflation and real output. At the same time, changes in velocity alter the path of nominal income that will result from any given monetary policy. Gordon treats the aggregate supply and velocity factors as constraints because they limit the ability of the central

bank to achieve its ultimate goals of price stability, full employment, and maximum real income growth. He concludes that the interaction of monetary policy with shifts in the constraints helps to explain the deteriorating macroeconomic performance of the last decade.

Gordon identifies three reasons why inflation does not always vary in proportion to movements in monetary growth: (1) Real GNP can exceed its "natural" level in the short run, causing inflation to rise above the rate associated with a given rate of monetary growth. (2) Inflation can accelerate when nominal GNP is growing at a constant rate if the natural rate of growth of real GNP declines (for example, because of the worldwide drop in productivity growth after 1973). (3) Nominal GNP growth is, by definition, equal to money growth plus velocity growth. There is no reason for velocity growth to be constant under all monetary regimes.

In the typical model, inflation tends to accelerate when the output ratio (the ratio of actual to natural GNP) is above 1.0 and to decelerate when the ratio is below 1.0. Gordon begins his analysis by interpreting the behavior of inflation and the output ratio in postwar business cycles. Growth of nominal GNP has been highly volatile in the postwar period, with a difference of 7.6 percentage points in the average growth rates between recessions and expansions. M1, on the other hand, has been much less volatile, with growth during expansions averaging only 1.1 percentage points higher than during recessions. As a result, fluctuations in the growth of M1 account for only 14 percent of the fluctuations in the growth of nominal GNP. The rest of the fluctuations are explained by variations in the growth of velocity.

A prominent feature of the postwar period is the steady acceleration in money growth in successive business cycles beginning in 1961. Since velocity exhibited no significant change in its average growth

rate between 1961 and 1980, the behavior of money can be blamed for the long-term increase in inflation in the 1970s. Gordon also observes that, because expectations of inflation were slow to adapt, the economy experienced a period from 1964 through 1969 when the output ratio was above 1.0 and the unemployment rate was below the natural rate.

Gordon maintains that the 1970–75 and 1975–80 business cycles demonstrate the potency of supply shocks as a destabilizing force in the economy. Both cycles ended with large increases in the price of oil, and both were characterized by higher inflation in the recession than during the preceding expansion—a markedly different experience than the sharp drop in inflation during the 1981–82 recession. Gordon views the two episodes as confirming that supply shocks matter and refuting a narrow focus on the growth of the money supply as the sole explanation of inflation.

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The supply shocks had an additional consequence. Partly as a result of cost-of-living clauses in wage contracts, the supply shocks had the effect of permanently raising the rate of inflation at any given output ratio. They forced policymakers to choose between prolonged recession and an acceleration in money growth to ratify the upward ratchet in inflation caused by the shocks. Thus, part of the acceleration of money in 1975–80 was a passive reaction to the supply shocks of 1973–74 that forced the unpleasant choice between higher inflation and lower output.

Gordon derives two lessons for policymakers from the postwar experience. First, because of inflation inertia, dampening cycles in the growth of real GNP require dampening cycles in the growth of nominal GNP. Second, policymakers breed future instability only if they move the economy below the natural level of real GNP in order to stop inflation or above the natural level to generate jobs. By allowing the economy to remain so far above natural real GNP between 1964 and 1969, policymakers of the 1960s indirectly created future business cycles by forcing policymakers of the 1970s and 1980s to implement restrictive anti-inflation policies. By allowing the economy to remain so far below natural real GNP in 1982–83, he says, current policymakers are breeding future instability.

In Gordon's analysis, the choice of a nominal GNP target for Federal Reserve policy has several advan-

tages over traditional money growth and interest rate targets. Like money, nominal GNP targeting is a “nominal anchor” that places a ceiling on inflation and avoids the pitfalls of nominal interest rate targets. But in a world of velocity shifts, both real output and inflation are more closely tied to nominal GNP than to money. Nominal GNP targeting should therefore allow the monetary authority to achieve its ultimate goals more closely. However, the choice of the optimal growth path for nominal GNP is difficult and fraught with long-term dynamic implications.

If inflation is initially above the optimal rate, the Federal Reserve faces the traditional trade-off between employment and reducing the inflation rate. The social benefit of lower inflation has to be weighed against the social cost of lost output. Gordon contends that another, nontraditional consideration is the future cyclical instability and “overshooting” that results from decisions to push the economy away from the natural output level for the purpose of fighting inflation. “It may be more effective in the long run,” he writes, “for the central bank to ratify an on-going inflation . . . than to engage in a single-handed inflation-fighting restrictive policy.” Gordon adds that the level of difficulty in maintaining a successful policy increases when the economy is exposed to supply shocks.

Gordon observes that even the best forecasters have consistently missed the timing of cyclical peaks and troughs connected with inventory accumulation. To avoid undue attention to changes in nominal GNP caused by the short-term inventory cycle, he concentrates on nominal final sales (nominal GNP less inventory changes) and compares the behavior of final sales with movements in key monetary measures and interest rates over the years from 1953 through 1982. His statistical tests indicate that the growth of the monetary base had no significant causal role in changes in nominal final sales, whereas, on the other hand, changes in short-term interest rates and in the money multiplier (the money supply divided by the base) were important in several periods.

Gordon concludes from this finding that the Federal Reserve might target nominal final sales more effectively than a monetary aggregate. Since quarterly changes in nominal final sales are erratic, a more useful focus would be a longer-term moving average, such as the four-quarter rate of change of nominal final sales. One possible strategy could allow the Federal Reserve to choose the medium-term path for nominal final sales that, given the economy's starting place, would achieve the smoothest possible approach to the long-run target of the natural unemployment rate without overshooting it. To guide the economy along that nominal final sales path, the Fed could adjust short-term interest rates and the exchange rate in response to deviations between actual behavior and the medium-term growth path.

Gasoline Prices and Consumer Tastes

U.S. consumers' tastes in automobiles remained fairly constant in the 1970s despite changes in the price of gasoline, according to *NBER Working Paper No. 1211, Automobile Prices and Quality: Did the Gasoline Price Increase Change Consumer Tastes in the United States?* Authors **Makoto Ohta** and **Zvi Griliches** analyze data on the characteristics and prices of U.S. passenger cars made in 1966–80 and in the used car market from 1970–81 to reach this conclusion.

Their basic question for study is: did U.S. consumers change their views about the relative desirability of different types of automobiles in the face of the 1973 and 1979 rises in gasoline prices? To estimate desirability ("quality") of different automobiles, the authors looked at a number of physical characteristics such as the number of cylinders and doors, car length, width, and weight, and the presence of automatic transmission and power steering or air conditioning.

First using a model that ignores the cost of gasoline (and gasoline efficiency), Ohta and Griliches find that consumers changed their evaluations of the physical characteristics of cars significantly over the 1970s, especially in 1973–74 and 1979–80. "These changes . . . occurred quickly and were over soon after the gasoline price rises had run their course."

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When the authors take gasoline costs or gas efficiency into account they find that "estimated relative qualities [of cars] become much more stable over time and there is no period that shows a significant change." Ohta and Griliches are thus able to confirm the hypothesis of "constancy of tastes," or constant (relative imputed) prices of physical characteristics of cars for half-year periods between 1970 and 1981, in the sense that the changes that did occur were in response to changes in the price of gasoline and the associated changes in the implicit prices of weight and size of cars rather than a change in consumer preferences for them. That is, weight and size became more expensive and thus less desirable for that reason alone. When Ohta and Griliches apply models that adjust only for changes in gas prices (and not other prices or income) to data for 1979–80, they find again that increased gas prices were a major component of the observed changes in the relative prices of different used cars.

Arbitrator Decisionmaking

In *NBER Working Paper No. 1183, Arbitrator Decision-Making: When Are Final Offers Important?* Research Associate **Henry S. Farber** and **Max H. Bazerman** find that arbitrators as a rule do not simply split the difference between the final offer of management and the final demand of the union, as is widely supposed. In fact, they take considerable account of the merits of the cases presented by the two sides.

Nonetheless, arbitrators' awards are affected by the final offers, so "the parties can manipulate the outcome to some extent by manipulating their offers." There are, however, limits to this sort of manipulation, the two authors add. As the offers of management or labor become more extreme (labor proposes an unrealistic wage increase, or management insists on a pay raise that is far too small), the arbitrators take less account of these offers and pay more attention to the facts in the situation.

Critics of the arbitration process worry that a tendency to split the difference could "chill" the bargaining process. Both sides might tend to maintain polar positions in expectation of getting a more favorable award from the arbitrator. This thesis, in its extreme form, is not correct, the authors conclude.

To reach their conclusions, Bazerman and Farber develop a model of arbitrator behavior in conventional management-labor arbitration. In this model, the arbitration award hangs on both the offers of the parties and the facts in the case. Next they develop two special, extreme cases for this model—one in which the arbitrator merely splits the difference of the final offers, and a second in which the arbitrator determines the award strictly on the facts in the case.

The model assumes that if the final offers are close together, the arbitrator has little discretion in making the award. The arbitrator may split the difference but is basically ratifying what the parties have nearly agreed upon. If the parties are far from agreement, the arbitrator has more leeway and the facts in the case could have an important influence on the decision.

Then the two authors test this model using the awards of 59 practicing arbitrators who looked not at real cases but at 25 hypothetical cases precisely designed to find out the degree of influence of final offers and facts on arbitrator decisions. Information provided in the hypothetical cases included the national wage, inflation rate, average arbitrated wage increase in other contracts in the industry, average local wage for similar qualified employees, present wage, financial health of the firm, management's final offer, and the union's final offer. These factors were varied to create 25 distinct cases.

For instance, one situation read: "In a town of

102,000 people, workers with similar skills and backgrounds to the employees of this radio and broadcasting company were paid \$8.31 per hour, while the national wage in this industry was \$8.23 per hour. The financial outlook for this company is fair in light of the 11 percent inflation rate. The present average wage for this company's union is \$8.44 per hour. Contract negotiations have reached an impasse. Both sides, however, have agreed to submit final offers to you, the arbitrator, and to be bound by your decision for a period of one year. Comparable pay increases from collective bargaining agreements in the industry are running about 8 percent this year. Management's final offer is \$8.56 (a 1.4 percent increase) and the union's final offer is \$9.55 (a 13.2 percent increase)."

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The authors find that if the union's final offer is extreme (high) enough, then a further increase in

the union's demand may actually decrease the arbitration award. Similarly, if management's offer is extreme (low) enough, then a further decrease may actually increase the arbitration award.

Another implication is that the arbitrator cannot be considered a judge who is free from influence by the parties. "Arbitration awards do seem to be manipulable within limits by the parties through manipulation of their offers," Bazerman and Farber write.

Finally, the authors suggest three possible reasons why arbitrators take account of final offers. One is to increase the acceptability of the award to the parties. A second is to increase the likelihood of being hired by the parties in future cases. And a third rationale, harder to evaluate, is the arbitrator's feeling that there may be information about the facts of the case in the offers that is not available to the arbitrator directly.

The authors admit that in a real case, the arbitrator would have a wider range of information to examine than in the simulated cases. Nevertheless, they believe they have made progress in analyzing the decision processes of arbitrators in conventional arbitration.

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