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## *Editorial, NBER Macroeconomics Annual 1995*

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As in all the previous editions, this tenth edition of the *NBER Macroeconomics Annual* presents papers devoted to frontier research in macroeconomics as well as papers that apply economic analysis to current policy problems.

The first paper of the conference, by Guiseppe Bertola and Andrea Ichino, addresses differences in labor-market performance between the United States and Europe. As has been frequently noted, the American labor market has in recent years exhibited relatively low unemployment rates but rising wage inequality, while Europe has seen the opposite—high unemployment but no tendency to greater inequality (except in the U.K.). Bertola and Ichino argue that this contrasting performance may be the result of differences in how national labor markets respond to an increase in the uncertainty associated with the productivity of a given job. The reason this increased uncertainty has different effects in the U.S. and in Europe is that wages clear the labor market in the former (so that the labor market is “flexible”) while the wage is fixed and firing is prohibited in Europe (so that its labor market is “rigid”).

Based on this stylized characterization of U.S. and European labor markets, Bertola and Ichino develop a theory which shows how institutional differences on the two sides of the Atlantic lead to different outcomes in response to similar shocks. What is particularly novel about their approach is that, unlike previous attempts at such a common explanation of labor-market outcomes in the two areas, it does not emphasize changes in the productivity of people with different skills. Rather, it emphasizes increased volatility over time in individuals’ productivities. In the flexible U.S. labor market, according to Bertola and Ichino, this increased volatility translates into an increase in the volatility of individuals’ wages so that the cross-sectional dispersion of wages increases. In

Europe, wages cannot adjust, so that the increased volatility in individuals' productivities simply makes firms more reluctant to hire workers, increasing aggregate unemployment.

The authors support their theoretical arguments with evidence on individual wages, as well as on regional wages and unemployment rates. Consistent with the view that the U.S. market responds more flexibly to regional changes in productivity, they cite the fact that U.S. regional unemployment rates are less persistent than the corresponding European rates. This suggests that in the U.S., wages fall in regions where productivity has fallen, which leads workers to emigrate to more successful regions. An increase in the volatility of regional productivity should therefore lead to an increase in the regional dispersion of wages. The authors find that, indeed, the cross-sectional variance of regional wages has increased over time in the United States.

The discussion centered on the degree to which various labor-market facts were or were not consistent with the Bertola–Ichino model. Bertola and Ichino agreed that a number of labor-market outcomes are consistent with the idea that the relative productivity of people with different skills has changed, but they also pointed to some facts that suggest that changes in skill-based productivity are not the whole story either.

A long-simmering debate in macroeconomics concerns the proper interpretation of the fact that labor productivity rises in booms and falls in recessions. There are essentially three leading explanations for this fact. The first is that booms and recessions are themselves due to changes in technical progress, as in the real-business-cycle model. The second is that there are increasing returns, so that even increases in output that are caused by increases in demand raise productivity. The third is that increases in output are associated with a more intense use of capital, labor, and other inputs.

Following the influential work of Robert Hall, the paper by Craig Burnside, Martin Eichenbaum, and Sergio Rebelo dismisses the view that all productivity movements are due to technical progress, on the basis of the fact that productivity remains procyclical even if one focuses only on output movements that are correlated with changes in demand. For example, productivity remains procyclical even if one considers only output movements correlated with nontechnological factors such as the party of the President, changes in military purchases, and the price of oil. A novelty of Burnside, Eichenbaum, and Rebelo's analysis is that they pay particular attention to changes in output associated with various measures of monetary policy, such as changes in the federal funds rate and nonborrowed reserves.

Burnside, Eichenbaum, and Rebelo then go on to argue forcefully for

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the view that the bulk of cyclical changes in productivity (in particular, those associated with demand fluctuations) are due to cyclical changes in factor inputs and not to increasing returns. In particular, they argue that the procyclical movements in labor productivity are almost entirely due to procyclical movements in the utilization of capital. Their conclusion is based on their demonstration that electricity use is strongly positively correlated with the productivity movements associated with changes in demand. They show that, as long as one interprets a one-percent increase in electricity use as corresponding to a one-percent increase in the use of capital, the increase in electricity use when output rises is entirely sufficient to explain the increased productivity of labor, even in the presence of constant returns to scale.

The discussion at the conference focused to a large extent on the robustness of the findings. In the published version, Burnside, Eichenbaum, and Rebelo show that, indeed, their findings are not sensitive to changes in sectoral coverage and in data frequency, and to certain changes in the production-function specification. The conference discussion suggested that the most controversial aspect of the analysis may be the authors' assumption that a one-percent change in electricity use is associated with a one-percent increase in capital use. If there is overhead capital, a one-percent increase in energy use may be associated with a smaller percentage increase in capital utilization. In this case, their findings regarding electricity use would be consistent with the presence of increasing returns to scale.

The next three sessions were concerned with inflation and monetary issues. In recent years several countries with chronically high inflation rates have adopted stabilization programs that were successful in reducing inflation. These programs are notable for two reasons. First, a central component of these programs has been the fixing of the exchange rate of the domestic currency vis-à-vis a more stable currency. Second, the success of these programs is all the more stunning in that output generally expanded in the immediate aftermath of inflation stabilization. At the same time, these stabilizations have generally been associated with appreciations of the real exchange rate and subsequent declines in economic activity.

Sergio Rebelo and Carlos Végh display these and other stylized facts associated with these stabilizations and evaluate various explanations of these facts. To carry out this evaluation, they consider a calibrated general equilibrium model in which several of the channels considered in the earlier literature are present. In particular, they suppose that a permanent reduction in inflation reduces the cost of transacting; this reduces what amounts to a tax on market activity and, as a result, raises output

and employment. A second mechanism arises when the reduction in inflation is perceived as temporary; in this case, economic activity rises because people take advantage of what they perceive to be a particularly good time to increase both consumption and work effort. Other channels they consider include the effects of the fiscal adjustment that typically accompanies these stabilizations as well as the effects of wage rigidity and inflation inertia.

They show that various combinations of these features can explain the qualitative features of the actual responses to stabilization programs. However, they also show that both the consumption boom and the real appreciation that accompanies these stabilizations are quantitatively larger than those implied by the model. In the discussion, several extensions that might improve the models' performance were proposed. In particular, Marianne Baxter suggested that it might be useful to distinguish between nondurable and durable consumer purchases because the boom in consumer purchases involves mainly durables. In a similar vein, Jeff Sachs suggested that the consumption boom might be due in part to the reemergence of functioning credit markets which had been shut down by inflation.

The second monetary paper is by Stephen Cecchetti, whose topic is the predictability and controllability of inflation. His work is motivated in part by the Fed's recent policy of trying to "stop inflation before it starts," as opposed to a policy of waiting for clear signs of emerging inflation before taking action. A successful strategy of "preemptive strikes" against inflation requires both that the Fed be able to forecast inflation and that it know the relationship between its policy instruments and future inflation. Cecchetti's paper investigates both issues.

On the issue of inflation's forecastability, Cecchetti examines the accuracy of both private inflation forecasts and reduced-form prediction equations using popular inflation indicators. The results here were generally discouraging: Inflation forecasts by either method do not substantially improve on naive, random-walk forecasts. Further, reduced-form prediction equations for inflation show considerable evidence of structural instability, with structural breaks particularly likely to occur during periods of change in the monetary policy regime. Similar problems plague the relationship between monetary policy instruments, such as the federal funds rate, and inflation: In particular, although an estimated vector autoregression (VAR) system indicates that, as expected, an increase in the funds rate leads ultimately to a lower price level, the relationship is not stable over time, nor is it consistently statistically significant.

Despite these problems, in the latter part of his paper Cecchetti uses his VAR framework to study optimal policy rules. In general, he defines

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a policy rule as a rule by which the Fed adjusts the federal funds rate, as a function of current and past shocks hitting the system. Two interesting results emerge: First, optimal policies that attempt to stabilize either inflation or nominal income typically involve rapidly raising (lowering) the funds rate, then bringing it back down (up) slowly; this pattern contrasts with the Fed's usual practice of making a lengthy series of interest-rate moves in the same direction. Second, rules that stabilize nominal income seem more robust than rules that stabilize the price level, in the sense that the former also produces a fairly stable price level, while the latter does not produce a stable path for nominal income.

Cecchetti's optimal policy rules evoked much interest among the discussants and other participants. Several people raised the issue of whether Cecchetti's results on inflation forecasting are too pessimistic; barring unexpected events like oil shocks, it was suggested that more structural modeling and the use of extramodel information and judgment by forecasters can produce forecasts of inflation that are acceptably good—better, in any case, than forecasts of some other major macro variables.

The next set of papers on monetary economics addresses, in symposium format, the issue of the optimal institutional design for a central bank. In particular, does making the central bank more independent of the rest of the government reduce inflation and improve economic performance? Papers on this topic were presented by Carl Walsh, Adam Posen, and Stanley Fischer.

Walsh analyzes the issue of central bank independence from the "optimal contracting" perspective. In his view, politicians should take the lead in establishing the goals of the central bank, but the bank should be given autonomy in deciding how to achieve those goals (i.e., the bank should have instrument independence but not goal independence, in Fischer's terminology). The central bank should then be rewarded or punished (for example, the Governor could be given a raise or fired), according to how close it comes to meeting the goals. If the underlying cause of inflation is time inconsistency (à la Kydland and Prescott or Barro and Gordon), and if the central bank shares society's objectives with regard to output and inflation, then it turns out that the central bank's goals can be set solely in terms of an inflation target; penalizing the central bank for a high inflation rate has the effect of eliminating the inflation "bias" while retaining incentives for the central bank to optimally trade off inflation and output in the short run. If the central bank does not share society's objectives, then a more complicated contract may be necessary.

Walsh suggests that the optimal-contracting model has been most

faithfully followed in New Zealand. The 1990 Reserve Bank Act set up procedures for determining price-level targets, defined contingencies under which the targets can be changed, and established procedures for disciplining the central bank if targets are not met. Although the new regime is still largely untested, the early inflation performance has been good. In contrast, according to Walsh, recent European reforms have emphasized increased goal independence for central banks, rather than the combination of instrument independence and greater accountability implied by the optimal contracting approach.

Posen's paper takes issue with the premise that institutional changes could have a first-order effect on inflation performance. He argues that the most important determinant of a country's inflation rate is the strength of organized political opposition to inflation.

In practice, this opposition is most likely to come from the financial sector. Posen discusses the factors that are likely to increase effective financial sector opposition to inflation, among them the presence of universal banking, a federal political structure, and a fractionalized legislature. Based on his analysis, he constructs an indicator of financial opposition to inflation (FOI) for a sample of 32 low-to-moderate-inflation countries. He shows that the much-remarked-upon negative correlation between central bank independence (CBI) and average inflation might be spurious, the result of the fact that countries with a high FOI tend to have both high CBI and low inflation. Indeed, cross-sectional regressions of inflation against both FOI and the portion of CBI unrelated to FOI place virtually all of the explanatory power with the former, while the latter has little effect (even entering with the "wrong" sign). Posen concludes that, if effective political opposition to inflation is absent, increasing the independence of the central bank will do little to improve a country's inflation performance.

In his paper, Fischer acknowledges the relevance of politics to economic outcomes, but disagrees with Posen's conclusion that institutional design is therefore unimportant. In general, Fischer takes a position closer to Walsh's, suggesting that the best arrangement involves setting clear objectives for the central bank, giving it autonomy to pursue those goals, and then holding it accountable for the outcome. One means of establishing objectives for the central bank is the currently popular strategy of setting explicit inflation targets. Fischer finds this approach attractive for its simplicity and clarity; he argued that inflation targeting is not necessarily inconsistent with a degree of output stabilization, if provision is made for adjusting the target inflation rate when there are supply shocks. He also discusses the uses of fixed exchange rates as a means of

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stabilizing inflationary expectations, and perhaps as a step toward explicit inflation targeting.

A lively discussion followed the presentations. The topics receiving the most attention were the relative importance of political and institutional factors and the desirability of inflation targeting. With regard to the latter topic, issues raised included: whether it is better to target inflation or nominal income; whether it is preferable to target inflation or the price level; and whether inflation targeting is useful for high-inflation or hyperinflationary countries.

In our last paper, Gary Gorton and Richard Rosen concern themselves with the use of derivative securities by commercial banks. In recent years there has been a substantial increase in the use of derivative securities, ranging from simple swaps and options to highly complex and specialized instruments. Although the putative purpose of the trade in derivatives is to facilitate risk-sharing and increase market liquidity, the existence of these instruments also creates a potential principal-agent problem, in that they provide traders with a means for taking large gambles which are difficult for outsiders to monitor. The Orange County and Baring episodes are two dramatic examples of individual decision makers losing literally billions of dollars of other people's money while speculating in derivatives markets.

The principal-agent problem associated with derivatives is of particular concern in the context of commercial banking, because of the central role played by banks in the financial system, and because of the possible incentives to risktaking created by deposit insurance and the too-big-to-fail doctrine. Indeed, a significant fraction of the huge trade in derivatives (the notional value of interest-rate swaps outstanding at the end of 1992 was \$6.0 trillion) passes through a small number of large dealer banks. In their paper, Gorton and Rosen attempt to estimate the market value and interest-rate sensitivity of the aggregate swap positions of U.S. commercial banks (swaps are both the simplest and most-traded type of derivative). Since unbalanced swaps positions can be hedged by other assets, Gorton and Rosen also attempt to determine the net interest-rate risk faced by the banking system.

In trying to measure banks' exposure to swap-related risk, Gorton and Rosen face the problem that has plagued all researchers in this area, which is a lack of publicly available data. The quarterly Call Reports contain several summary measures of banks' swaps positions, but without additional assumptions these are inadequate for estimating the relevant quantities. Gorton and Rosen show that the data can be used to estimate market values and interest-rate sensitivities if one is willing to

assume that (1) the maturity structure of swaps contracts written is constant, and (2) the direction (long or short) of new contracts is also constant. Under these assumptions Gorton and Rosen find that, in recent years, banks' swap books have not been balanced: In one intermediate scenario, for example, the authors estimate that a 100-basis-point increase in interest rates would induce bank losses on swaps equal to about 5% of bank equity. However, the fact that swap books are not balanced does not mean that bank portfolios as a whole are excessively risky. The authors perform a regression analysis which shows that, overall, bank net income is not particularly sensitive to interest-rate changes, implying that banks' swap positions are largely hedged (this is particularly the case for dealer banks).

Much of the discussion focused on the sensitivity of the authors' conclusions to alternative assumptions. While it was agreed that Gorton and Rosen had done a nice job with the data available, some participants felt that the data were simply not informative enough to support strong conclusions. Several people took the view that the opacity of derivatives transactions made these instruments particularly vulnerable to moral hazard problems and urged improvements in monitoring and reporting.

The conference at which these papers were presented was, once again, remarkably well organized by Kirsten Foss Davis and Rob Shannon. Ilian Mihov acted as editor for the papers and comments and also as rapporteur for the general discussion. He has done a fantastic job. To these individuals, and to Martin Feldstein and the NBER for continued support of the Macro Annual conference, we owe our thanks.

Ben S. Bernanke and Julio J. Rotemberg