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# *Editorial, NBER Macroeconomics Annual 2001*

In recent decades there has been an extensive rethinking of many major issues in macroeconomics, including the sources of long-term economic growth, the nature of the monetary policy transmission mechanism, the effect of supply shocks on the economy, and the relationship between consumption spending and asset prices, among others. So it is remarkable that so many of the papers in this year's *NBER Macroeconomics Annual* are able to offer fresh perspectives on often-studied topics.

In their paper, Ben Bernanke and Refet Gürkaynak revisit the conclusions of a well-known 1992 article by N. Gregory Mankiw, David Romer, and David Weil (MRW), who argued that the cross-country data on economic growth are well explained by Robert Solow's neoclassical growth model, augmented to take account of human-capital formation. Bernanke and Gürkaynak show first that, in principle, the MRW framework can be used to evaluate *any* growth model that admits a balanced growth path, not just the Solow model. Using their generalized version of the MRW framework, they then investigate how well both the Solow model and some alternative models of endogenous growth fit the cross-country data, drawn from the Penn World Tables. Their tests strongly reject the hypothesis that the data can be well described by a steady-state version of the Solow neoclassical growth model, since (contrary to a central implication of that model) they find that behavioral variables such as a country's aggregate saving rate are strong predictors of long-run rates of output growth.

As noted, Bernanke and Gürkaynak's rejection of the Solow model requires the auxiliary hypothesis that the economies in the sample are in steady state. To develop a test that does not require the steady-state assumption, these authors also look directly at estimates of total factor productivity (TFP) growth by country, constructed using new estimates

of labor's share of national income. They find that, like rates of output growth, rates of TFP growth are also strongly correlated with savings rates and other behavioral variables, a result that once again tends to favor models that exhibit endogenous growth. In his discussion, David Romer praised the paper for raising anew the possible importance of capital-stock externalities in the growth process. He noted, though, that, once the dubious steady-state assumption is dropped, the only tests in the paper that potentially discriminate among alternative growth models are those based on TFP growth rates, which are exceptionally difficult to measure accurately. He therefore cautioned against drawing strong conclusions about alternative models from the evidence of this paper.

While the oil price fluctuations of the past four decades may have wrought serious damage to the world economy, empirical macroeconomists have always considered sharp swings in oil prices to be a blessing for their research, as such price movements are one of the few important influences on the macroeconomy that economists have been willing to treat as exogenous. Indeed, the exogeneity of oil price shocks has been largely unquestioned in conventional macroeconomic analyses, ranging from standard textbook treatments to sophisticated econometric models. The central claim of the paper by Robert Barsky and Lutz Kilian is that oil price shocks are *not* reasonably taken as exogenous, but are in fact usually endogenous to the state of aggregate demand in the major oil-consuming countries. They focus in particular on the infamous OPEC price increases of the 1970s, writing, "Our analysis suggests that—although political factors were not entirely absent from the decision-making process of OPEC—the two major OPEC oil price increases in the 1970s would have been far less likely in the absence of conducive macroeconomic conditions resulting in excess demand in the oil market." Contrary to the conventional wisdom, they argue that the great stagflation of the 1970s was not a result of political events in the Middle East, but instead was set off by excessively expansionary monetary policy in the late 1960s and early 1970s. This monetary ease set off a boom in commodity prices, including the price of oil; the stagflationary impact of commodity price increases in turn promoted accommodative monetary policy. Barsky and Kilian offered a variety of evidence, both direct and indirect, to support their thesis. The discussants, Alan Blinder and Olivier Blanchard, argued for a more nuanced interpretation that treats at least some part of major price increases as exogenous. Nevertheless, Barsky and Kilian's analysis poses an important challenge for traditional views on the role of oil prices in the macroeconomy.

Empirical analyses of the patterns of monetary policy transmission by structural vector autoregression (SVAR) methods have typically been

characterized by the so-called *price puzzle.* The price puzzle in the finding that unexpected increases in the short-term interest rate (a tightening of monetary policy) tend to be followed by moderate *increases* in inflation, rather than decreases as predicted by conventional macro models. Some economists have taken the price puzzle as evidence that the SVAR analyses are in fact poorly identified and unreliable; others have suggested various "fixes" to try to eliminate this apparently anomalous result. The paper by Marvin Barth and Valerie Ramey is among the first to explore the possibility that the price puzzle is not a puzzle or statistical quirk after all, but reflects a genuine inflationary impact of increases in the short-term interest rate. They argue that, by increasing the cost of credit and hence firms' overall costs of production, increases in interest rates can in principle lead to price increases rather than decreases (and thus to decreased output for supply-side reasons), a mechanism they refer to as the "cost channel" of monetary policy. The authors present a variety of aggregate and industry-level evidence to support their view that the cost-side theories of monetary policy transmission deserve serious consideration. Though their approach still requires a methodology for identifying aggregate demand and aggregate supply shocks, the disaggregated data in particular allow them to extract more information than is usually possible. Using two-digit industry-level data, for example, they find evidence that monetary policy directly affects prices through interest costs. Indeed, a rise in interest rates appears to predict both falling output and rising price–wage ratios in many industries. It is interesting that this "cost channel" effect appears to be most pronounced prior to 1980, during an era when monetary policy was particularly volatile.

Many of the most troubling empirical puzzles in macroeconomics and finance can be traced to inconsistencies between the data and economists' canonical models of intertemporal consumption choice. The equity premium puzzle (if there still is one) fundamentally derives from the fact that aggregate consumption seems too smooth and predictable for consumption risk to explain the large observed excess returns to equity, relative to bonds. Researchers have experimented with a wide variety of models that potentially magnify the effects of consumption volatility on asset prices, through mechanisms such as habit persistence in consumption. One channel that has been explored by Anthony Lynch and others is based on the view that individuals do not continuously adjust their consumption rates, but (because of cognitive and other costs) do so only periodically. In their paper, Xavier Gabaix and David Laibson show that, in such a model, consumption volatility can have a large effect on asset price returns, even if consumers have "reasonable" rates of risk aver-

sion. Using a continuous-time version of Lynch's period-adjustment model, Gabaix and Laibson are able to get remarkably simple and elegant analytic results. With the further assumption of limited participation (that is, that only a portion of the population holds equities), the authors argue that the model is able to match the key statistical properties of aggregate consumption and equity returns.

One important empirical prediction of the model is that aggregate consumption should respond to lagged changes in equity returns, as individual consumers are not able to respond immediately to new information. This prediction seems to fly in the face of the conventional wisdom that aggregate consumption changes are largely unpredictable. However, Gabaix and Laibson revisit this literature and argue that in fact this prediction of their model is broadly consistent with the data.

Data on international capital flows are notoriously poor; for example, the sum of world current accounts typically equals a large negative number, rather than zero as it should. Data on countries' net holdings of foreign assets are even worse, largely because it is extremely difficult for statistical authorities to take account of capital gains and losses on existing foreign assets. Thus simply cumulating current-account surpluses (already badly measured for many countries) does not give nearly an accurate picture of individual countries' true net indebtedness vis-à-vis the rest of the world. Famously, the cumulative U.S. current account went negative in the mid-eighties, many years before net interest payments from abroad became negative—most likely because U.S. citizens experienced particularly large capital gains on foreign investments made during the first two decades after World War II. Efforts have been made in recent years, particularly in OECD countries, to improve the net-foreign-assets data by using information from equity markets and other financial markets to adjust valuations of external holdings. In their paper, Philip Lane and Gian Maria Milesi-Ferreti discuss and apply a new dataset that they have developed that similarly upgrades the data for net foreign assets of developing countries. Construction of this dataset is an important achievement, since it is precisely for developing countries that foreign-asset accumulation of indebtedness is often of greatest macroeconomic significance.

Lane and Milesi-Ferreti use their new dataset to explore a number of central theories in international finance, some of which heretofore have not been directly testable. For example, previous authors have tested for portfolio balance effects using cumulated current accounts, finding little evidence of any effect of external asset holdings on interest rates. The results here, while in need of further refinement, instead tend to confirm the prediction of the portfolio balance theory that real interest differen-

tials should be inversely related to net foreign-asset positions. The authors also explore modern theories of the trade balance and real exchange rates that assign a central role to net foreign-asset positions. This paper, and especially the new dataset it introduces, will undoubtedly spark considerable further empirical exploration of these issues.

Timothy Cogley and Thomas Sargent ask whether there is a danger of "recidivism" in monetary policy as inflation rates remain low and stable. In particular, given the observed behavior of inflation, unemployment, and interest rates, might the monetary authorities begin to believe (as they purportedly did in the 1960s) that the economy exhibits an exploitable Phillips-curve relation in the long run? The authors explore this question using a computer-intensive, nonlinear Bayesian modeling approach which is designed to allow for the effects of shifting beliefs and preferences of the monetary authorities on the joint dynamics of inflation, unemployment, and interest rates. (Formally, their model is a vector autoregression with parameter drift.) They use their methods to develop some interesting stylized facts, such as the observation that the mean and persistence of inflation are positively correlated.

Cogley and Sargent interpret their results through the lens of the traditional Solow–Tobin test of the natural-rate hypothesis, a test that Sargent has argued is valid only if the inflation process is highly persistent. During the 1960s inflation was low and not persistent, and thus the Solow–Tobin test (erroneously) rejected the natural-rate hypothesis. According to the authors, this rejection led the monetary authorities to believe in the existence of an exploitable Phillips curve and thus to engage in policies that created high and persistent inflation during the 1970s. The persistence of inflation during the 1970s in turn led the Fed to "discover" the natural-rate hypothesis (as the Solow–Tobin test became valid), which led to a change in Fed behavior and the low-inflation regime that has existed since about 1983. The danger, for which Cogley and Sargent's methods provide some evidence, is that the long period of low and nonpersistent inflation may lead the Fed once again to conclude that an exploitable trade-off exists. Discussant Christopher Sims took issue with the authors' assumption that the data are characterized by parameter drift rather than stochastic volatility. The authors conceded the possibility that the data might be better described by constant parameters and changing volatility rather than the reverse; but they justified their modeling choice by noting that their interest was in the implication of the classic Lucas critique that changes in policy regimes will lead to changes in reduced-form parameters. While further generalization may prove useful, Cogley and Sargent have both made a useful contribution to econometric modeling and drawn an important lesson for policy.

The editors would like to take this opportunity to thank Martin Feldstein and the National Bureau of Economic Research for their continued support of this conference and publication; the NBER's conference staff for excellent logistical support; and the National Science Foundation for financial assistance. Doireann Fitzgerald did an excellent job as conference rapporteur and editorial assistant for this volume.

This volume is Ben Bernanke's last as coeditor. He would like to express his personal thanks to the NBER, to his coeditors Julio Rotemberg and Kenneth Rogoff, and to the authors, discussants, and conference participants who have made his stint at the Macro Annual an enjoyable one. Mark Gertler will replace Bernanke as coeditor for Volume 17.

Ben S. Bernanke and Kenneth Rogoff