A Core of Practical Macroeconomics

by John B. Taylor

Macroeconomics—the part of economics that focuses on economic growth and economic fluctuations—has always been an area of great controversy and debate. Over 150 years ago David Ricardo argued with Thomas Malthus over the importance of supply versus demand in growth and fluctuations, much as real-business-cycle economists have argued with monetarists and Keynesians in recent years. The Keynesian revolution of the 1930s and the rational-expectations revolution of the 1970s, both questioning macroeconomic ideas of the time, were two of the most contentious episodes in the history of economic thought. Some view recent macroeconomic debates as so intense that they see macroeconomics as nothing more than competing camps of economists with no common set of core principles.

In my view, there is a set of key principles—a core—of macroeconomics about which there is wide agreement. This core is the outgrowth of the many recent debates about Keynesianism, monetarism, neoclassical growth theory, real-business-cycle theory, and rational expectations. The core is practical in the sense that it is having a beneficial effect on macroeconomic policy, especially monetary policy, and has resulted in improvements in policy in the last fifteen years. In fact, new econometric models recently put in operation at the Fed largely reflect this core. This core is increasingly evident in undergraduate economics texts, and it also appears in graduate training, though in most PhD programs there is much more emphasis on the newer and more controversial parts.

Although there are different ways to characterize this core, I would list five key principles. I would start with the most basic and least controversial principle, focusing on long-term economic growth and the supply side of the economy. Over the long term, labor productivity growth depends on the growth of capital per hour of work and on the growth of technology or, more precisely, on movements along as well as shifts of a production function, as Robert Solow pointed out many years ago. If one adds to this labor productivity growth an estimate of labor-force growth, one gets an estimate of the long-run growth rate of real GDP, or what is typically referred to as potential GDP growth. This principle, the essence of neoclassical growth theory, provides a way to estimate and discuss the sources of long-term economic growth within the organizing structure of the growth accounting formula. Key policy questions to address within this framework, of course, are why po-

tential GDP growth has declined and what can be done to raise it again.

Is this first principle practical? Yes. Public policy economists at the Fed and the Congressional Budget Office and private industry economists regularly use this approach to get estimates of potential GDP growth. Most now estimate this growth to be about 2–2.5 percent per year. Of course there are debates about how to apply this principle: Are there diminishing returns to information capital? How much would fundamental tax reform raise the capital-labor ratio? How much does a reduction in marginal tax rates increase labor supply? But these are more quantitative issues, concerning the size of elasticities, rather than matters of principle.

A second key macroeconomic principle is that there is no long-term trade-off between the rate of inflation and the rate of unemployment; a corollary is that a shift by the central bank to a higher rate of money growth will simply result in more inflation in the long run, with the unemployment rate remaining unchanged. Although controversial at one time, this does not appear to be controversial anymore; empirical and theoretical research provides strong support. In the 1960s inflation was low, and unemployment was between 5 percent and 6 percent; in the 1970s inflation was high, and unemployment was no lower; and in the 1990s inflation is low again, and unemployment has not increased. There are two qualifications to this principle: *(i)* international evidence from different countries indicates that high rates of inflation appear to reduce the growth of potential GDP, and *(ii)* very low rates of inflation, in particular deflation, may be an impediment to the smooth operation of markets, both because of a lower bound on the nominal interest rate and because of the stickiness of prices and wages.

This second principle already has had a major practical impact on policy. It implies that central banks should pick a long-run target range for inflation and stick with it. Many central banks around the world are doing just that, either explicitly, as with New Zealand and the United Kingdom, or implicitly, as with the United States and Germany.

A third principle is that there is a short-run trade-off between inflation and unemployment. In my view this trade-off is best described as one between the variability of inflation and the variability of unemployment. There is still debate about the reason for this trade-off. One rationale is the sticky-price/staggered-wage theory, which I favor; but there is also the information-based theory put forth by Robert Lucas. There is also an ongoing debate about the monetary transmission mechanism: Does monetary policy work through a money channel, a credit channel, or through a financial price channel (interest rates and exchange rates)?

Despite these debatable underpinnings, the existence of a short-run trade-off has practical implications for policy: monetary policy should keep the growth of aggregate demand stable in order to prevent fluctuations in real output and inflation. In fact, the improvements of monetary policy during the last fifteen years have led to much more stable macroeconomic conditions. The United States is now experiencing, back to back, the two longest peacetime expansions (1982–90 and 1991–97) in U.S. history, separated by one of the mildest recessions in U.S. history (1990–91). A greater stability of monetary policy, including explicit discussions and actions consistent with the goal of keeping inflation low, is largely responsible for this record-breaking macroeconomic stability. Every recession since the 1950s has been preceded by a run-up of inflation; by keeping inflation from rising in the first place, the chances of such recessions are diminished.

A fourth macroeconomic principle is that people's expectations are highly responsive to policy, and, thus, expectations matter for assessing the impact of monetary and fiscal policy. The most feasible empirical way to model this response or endogeneity of expectations is the rational-expectations approach, though modifications to take account of differing degrees of credibility are necessary. By introducing rational expectations into fully estimated econometric models and then simulating the models for different policies, the response of expectations to changes in policy can be reasonably approximated (see Taylor).

Is this fourth principle having an impact on practice? Yes. For example, macroeconomic models with rational expectations now in use at the Fed are able to estimate the effects on interest rates of a multiyear plan to reduce the future budget deficit (see Brayton et al.). These models can help guide monetary decisions about interest rates when a plan for budget deficit reduction (like that in 1990 or 1993 in the United States) is being considered. Additional evidence for the practical relevance of this principle is the great emphasis placed on credibility by central banks today. According to rational-expectations models, there are advantages to credibility in both monetary policy and fiscal policy. For example, a disinflation will have lower short-run costs if policy is credible. Similarly, a plan to reduce the budget deficit will have a smaller short-run contractionary effect if it is credible.

A fifth principle is that when evaluating monetary and fiscal policy one should think not in terms of a one-time isolated change in the instruments of policy but rather as a series of changes linked by a systematic process or a policy rule. This fifth prin-

ciple follows from many of the other principles. It is quite evident in academic policy-evaluation research during the past fifteen years, where virtually all formal policy evaluation has been done in terms of policy rules. To be sure, there is debate about the form of the policy rules: Should the interest rate or the money supply be the instruments in the rule? Should the instrument react to the exchange rate or solely to inflation and real output? How large should the reaction of policy be to inflation? Is the rule a guideline or should it be legislated and used to add accountability to policy making?

Recently there has been increased practical interest in policy rules. For example, in recent speeches, Federal Reserve Board Governors Laurence Meyer (1996) and Janet Yellen (1996) have described in detail how policy rules can be helpful in the formulation of monetary policy. Speaking about her practical experience on the Federal Reserve Board, Yellen states that "...rules proved a simple useful benchmark to assess the setting of monetary policy in a very complex and uncertain economic environment."

The Federal Reserve Board staff now uses stochastic simulation of alternative policy rules on a regular basis. And many private-sector business economists have noted the similarity between the actions of the Fed and many other central banks to the outcomes implied by certain policy rules.

In conclusion, let me emphasize that this characterization of a core of practical macroeconomics is not meant to imply that everything is settled in macroeconomics. On the contrary, there are still great debates going on over the size of elasticities, the role of credit in the monetary transmission mechanism, the empirical relevance of "endogenous" growth models, whether staggered price-setting models with rational expectations fit satisfactorily the dynamic correlations that characterize the process of inflation in the United States, and many other issues.

One question that will continue to be debated for many years is how much formal optimization is appropriate in order to provide a solid underpinning to macroeconomics. Many of the macroeconomic models I referred to in this discussion are economywide, general-equilibrium models which have sticky-price equations as part of their structure; but there is still much more work to be done to fully establish the optimization basis for many of these sticky-price structures. The current effort to incorporate money and sticky prices into real-business-cycle models will hasten the day when models with a more fully articulated optimization structure are used in practice for policy making. I believe that this work will add much to economists' understanding of the macroeconomic principles summarized in this discussion, but in the meantime, there is a solid core of macroeconomic principles which is useful in practical policy work and which has already improved macroeconomic policy making in the United States and other countries. ◘

John B. Taylor is director of the Center for Economic Policy Research and is Raymond Professor of Economics at Stanford University.

■ For more information

Brayton, F., A. Levin, R. Tryon, and J. Williams. "The Evolution of Macro Models at the Federal Reserve Board." *Carnegie Rochester Series on Public Policy*, forthcoming 1997.

Meyer, L.H. "Monetary Policy Objectives and Strategy." Remarks before the National Association of Business Economists, 38th annual meeting, Board of Governors of the Federal Reserve System, Washington DC, 8 September 1996.

Taylor, J.B. *Macroeconomic Policy in a World Economy.* New York: Norton, 1993.

Yellen, J. "Monetary Policy: Goals and Strategy." Remarks before the National Association of Business Economists, Board of Governors of the Federal Reserve System, Washington DC, 13 March 1996.

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