

## **Ben S Bernanke: John Taylor's contribution to monetary theory and policy**

Opening remarks by Mr Ben S Bernanke, Chairman of the Board of Governors of the US Federal Reserve System, to the Conference on John Taylor's Contribution to Monetary Theory and Policy, Federal Reserve Bank of Dallas, Dallas, Texas (via videoconference), 12 October 2007.

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It is a privilege for me to open this conference dedicated to our colleague and friend, John Taylor. John's influence on monetary theory and policy has been profound indeed. That influence has been manifest in undergraduate lecture halls and graduate seminar rooms, in the best research journals, and in the highest ranks of government. His ability to crystallize important analytical insights and apply them to policy issues is unsurpassed. Indeed, in a speech a few years ago, I noted three concepts named after John that are central to understanding our macroeconomic experience of the past three decades--the Taylor curve, the Taylor rule, and the Taylor principle (Bernanke, 2004). I'd like to take a few minutes to review John's career and impressive body of work.

After receiving his Ph.D. from Stanford nearly thirty-five years ago, John began his career as an assistant professor at Columbia University. Even in those early years, John revealed his interest in applying the analytical tools of economics to practical policy issues. He took a leave of absence from academia in 1976-77 to serve on the staff of the Council of Economic Advisers. I suspect that the circumstances of the mid-1970s intensified John's motivation to help improve economic performance through sound policymaking.

During the late 1970s and early 1980s, John published a number of highly influential papers, including: "Conditions for Unique Solutions in Stochastic Macroeconomic Models with Rational Expectations," "Estimation and Control of a Macroeconomic Model with Rational Expectations," "Aggregate Dynamics and Staggered Contracts," and "Solution and Maximum Likelihood Estimation of Dynamic Nonlinear Rational Expectations Models." (As you can tell, John has always had a penchant for catchy titles.) Beyond its important technical contributions, this work showed that the insights and methods of the rational expectations revolution could be applied to models with sticky wages and prices. That observation has proved enormously influential in subsequent policy research.

The rational expectations revolution helped to kill the idea of a long-run tradeoff between the *levels* of inflation and unemployment. However, John's analysis showed that, in the presence of aggregate supply shocks, attempts by monetary policymakers to reduce the *volatility* of inflation over time could be associated with higher volatility in unemployment, and vice versa. John's visual depiction of this policy tradeoff has come to be known as the Taylor curve. Interestingly, John's work anticipated the possibility that improvements in the conduct of monetary policy or changes in the structure of the economy could result in a shift of the Taylor curve--that is, a change in the ability of policy to smooth both inflation and employment. And indeed, what economists have dubbed the Great Moderation--a simultaneous reduction in the volatility of inflation *and* the volatility of real economic activity--has occurred in the United States and in many other economies over the past quarter-century.

Over the course of the 1980s, John continued his work on rational expectations issues and monetary policy and macroeconomics more generally. He also began to broaden his focus to matters of international economics. He developed a multi-country rational expectations econometric model--a truly ambitious undertaking, especially in light of the limited computing capabilities of the era. By this point in his career, John had firmly established his reputation as a leader in the profession.

In 1989, John became a member of the first President Bush's Council of Economic Advisers. During the next four years, he played a key role in shaping the Administration's positions on macroeconomic, fiscal, international finance, and trade issues. The U.S. economy was entering a difficult period at that point. Among other problems, significant pressures on bank balance sheets were beginning to emerge that would damp economic growth for the next several years. While dealing with the serious economic issues of the time, John and the other members of the Council simultaneously produced an impressive manifesto for policymaking. They developed a rules-based approach to the conduct of monetary and fiscal policy and published it in 1990 in the *Economic Report of the President*.

That essay laid the foundation for what is perhaps John's most well-known contribution to economics--the simple description of the determinants of monetary policy that eventually became known as the Taylor rule.<sup>1</sup> John's analysis triggered an avalanche of studies examining the stabilization properties of Taylor rules in the context of macroeconomic models. Other work investigated the ability of variants of the Taylor rule to describe empirically the actual course of monetary policy in the United States and in other economies.

The Taylor rule also embeds a basic principle of sound monetary policy that has subsequently been referred to as the Taylor principle.<sup>2</sup> According to this principle, when a shock causes a shift in the inflation rate, the central bank must adjust the nominal interest rate by more than one-for-one. This ensures that the real interest rate moves in the right direction to restore price stability. The Taylor principle provides essential guidance for central banks on how to anchor long-run inflation expectations and foster stable growth and low inflation.

Ever since its inception, John has emphasized that the Taylor rule should not be applied mechanistically. The world is far too complicated for that. But he has argued that such rules can serve as useful benchmarks for the practical conduct of monetary policy. In fact, policymakers at the Federal Reserve and many other central banks do routinely consult various policy rules as they make judgments on the appropriate stance of monetary policy.

After a decade back at Stanford, John was called again to Washington by President Bush--this time the current President Bush. He served as Under Secretary for International Affairs at the U.S. Treasury from 2001 through 2005. Our economy faced severe challenges during that period--the terrorist attacks of September 11, a recession and the threat of deflation, corporate governance scandals, and economic issues posed by the conflicts in Afghanistan and Iraq. Suffice it to say, John earned his stripes as the leader of the "Global Financial Warriors." As detailed in his book of the same title, John worked extensively on the financial reconstruction of Iraq and on the development of financial tools for fighting terrorism. The Treasury Department recognized his efforts in 2004 with its Distinguished Service Award and in 2005 with the Alexander Hamilton Award for leadership in international finance.

After his stint at Treasury, John returned once again to the less tumultuous life of a professor, ensconced in his offices at Stanford University and the Hoover Institution. I'm sure that, in between teaching and guiding the work of graduate students, he will continue to offer insightful commentary on monetary policy and other economic issues. And doubtless he will also continue to do pathbreaking research. Indeed, with our appetites whetted by the Taylor

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<sup>1</sup> The number "two" and its inverse, one-half, played a key role in this rule: The benchmark setting for the federal funds rate would be 2 percent, plus the current rate of inflation, plus one-half times the gap between current inflation and 2 percent, plus one-half times the output gap.

<sup>2</sup> This principle originally became apparent through numerical simulations of macroeconomic models with rational expectations (including Taylor's multicountry model); refer also to Bryant, Hooper, and Mann (1993). The phrase "Taylor principle" was introduced by Woodford (1999), who demonstrated this principle analytically in a stylized New Keynesian model.

rule, principle, and curve, we now look forward to the Taylor dictum, the Taylor hyperbola, and maybe even the Taylor conundrum.

Before closing my remarks, I would like to express my appreciation to President Fisher and the Federal Reserve Bank of Dallas for hosting this conference. It is a terrific opportunity for celebrating John's contributions to monetary theory and policy. The papers on the program testify to the breadth and depth of John's work. I wish I could be there with you today to listen to the presentations and participate in the discussions. However, I know that you will have a productive and collegial gathering over the next two days. And I wish all of you--but especially my friend and colleague John Taylor--all the best in your endeavors.

## References

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