
Macroeconomic Lessons from the Great Deviation

John B. Taylor, *Stanford University and NBER*

Congratulations to the National Bureau of Economic Research on the twenty-fifth anniversary of the Macroeconomics Annual conference series, and thanks to all the editors over the years—Stanley Fischer, Olivier Blanchard, Julio Rotemberg, Ben Bernanke, Daron Acemoglu, Kenneth Rogoff, and Michael Woodford—who have consistently encouraged research with a strong empirical content and policy relevance.

My remarks tonight focus on the macroeconomic aspects of the financial crisis. Most of my research over the past few years has been on the financial crisis. My approach has been empirical, examining data on interest rate spreads, money supply, consumption, and investment and simulating empirical models using the discipline of counterfactuals—basically the same approach used in the papers presented at the NBER Macroeconomics Annual conferences over the years. In these remarks I want to summarize the key findings in a few words, without the charts or tables, and then draw the implications both for macroeconomics as a field and for macroeconomics as a guide for policy. Since this is a Macroeconomics Annual meeting, I will focus on macroeconomic issues and not delve into regulatory issues.

Let me begin with an explanation of the title of my talk. I know economists use the word “great” too much, but I think it is quite fitting here. We all know what the Great Moderation was, and we have debated what caused it. Many have argued that good policy, especially good monetary policy, played a big role. And we all know what the Great Recession was and that it marked the end of the Great Moderation. You may not have heard much about the Great Deviation. I define it as the recent period during which macroeconomic policy became *more interventionist, less rules based, and less predictable*. It is a period during which policy deviated from the practice of at least the previous 2 decades and from the recommendations of most macroeconomic theory

and models. My general theme is that the Great Deviation killed the Great Moderation, gave birth to the Great Recession, and left a troublesome legacy for the future.

I. Great Deviation List

The policy actions and interventions that I would put under the rubric of the Great Deviation include the following:

- Deviation from the monetary policy of the Great Moderation, 2003–5
- TAF, created by the Federal Reserve, 2007
- U.S. discretionary fiscal stimulus, 2008
- On-again/off-again interventions of financial firms by the Fed, 2008
- Money market mutual fund liquidity facility, 2008
- Commercial paper funding facility, 2008
- U.S. discretionary fiscal stimulus, 2009
- G-20 fiscal stimulus agreement, 2009
- MBS purchase program of the Fed, 2009–10
- Trillion dollar European rescue package, 2010
- The ECB joining the rescue package by buying distressed debt, 2010
- The Fed joining the rescue package by making swap loans, 2010

That is a dozen already, and one could add more, including interventions by the federal government to encourage Fannie Mae and Freddie Mac to purchase high-risk mortgages, and decisions by U.S. financial regulatory agencies to let banks deviate from rules-based regulations by allowing risky off-balance sheet activity or by not monitoring the risk of complex asset-backed securities on the balance sheets. And there are also the many deviations from the rules-based Stability and Growth Pact in Europe, which are the cause of the crisis Europe is facing now. But let me focus on these dozen.

First on the list is the decision by the Federal Reserve during 2003–5 to hold its target interest rate below the level implied by monetary principles that had been followed for the previous 20 years. One can characterize this decision as a deviation from a policy rule, such as the Taylor rule, and in that sense it is a deviation from a more rules-based policy. Without this deviation, interest rates would not have reached such a low level, and they would have returned much sooner to the neutral level that they eventually reached. The deviation was larger than any other

during the Great Moderation—on the order of magnitude seen in the unstable decade before the Great Moderation. One does not need to rely on the Taylor rule to conclude that from the perspective of many of the standard objective functions that monetary policy might seek to optimize, rates were held too low for too long. The real interest rate was negative for a very long period, similarly to what happened in the 1970s. The intervention was an intentional departure from a policy approach that was followed in the decades before. The Fed’s statements that interest rates would be low for a “prolonged period” and that interest rates would rise at a “measured pace” are evidence of these intentions.

The low interest rates added fuel to the housing boom, which in turn led to risk taking in housing finance and eventually a sharp increase in delinquencies, foreclosures, and the deterioration of the balance sheets of many financial institutions as toxic assets grew rapidly. To test the connection between the low interest rates and the housing boom, I built a simple model relating the federal funds rate to housing construction. My research showed that a higher federal funds rate would have avoided much of the boom and bust.

The next intervention on the list is the Fed’s term auction facility (TAF) created in December 2007. The purpose of the TAF was to reduce tensions in the interbank market that had risen sharply in August 2007. The TAF provided a way for banks to get loans from the Fed without using the discount window. After this facility was created, tensions in the interbank market—as measured by the spreads between the London Interbank Offered Rate (LIBOR) at various maturities and the overnight index swap (OIS)—abated for a while but soon shot up again. My view, based on research with John C. Williams (Taylor and Williams 2009), is that this new facility had little or no effect on these interest rate spreads. Measures of counterparty risk in the banking sector, such as the spread between secured and unsecured interbank loans, explain money market spreads very well. In my view, this policy intervention prolonged the crisis because it did not address the deterioration of the balance sheets at banks and other financial institutions. We now know that the banks were holding many toxic assets, but the problem was diagnosed as a liquidity problem.

The 2008 discretionary countercyclical fiscal policy action—the Economic Stimulus Act of 2008—is next on the list. This action was also a deviation from the type of policy that was used in the Great Moderation, a period in which there was a near consensus among economists that such discretionary policies were not effective and could be counterproductive. As part of this stimulus, which was passed in February 2008, checks were

sent to people on a one-time basis, and aggregate disposable personal income jumped dramatically though temporarily. The objective was to jump-start consumption demand and thereby jump-start the economy. However, aggregate personal consumption expenditure did not increase by much at all around the time of the stimulus payments. This is what the permanent income theory, the life cycle theory, or modern new Keynesian models predict from such a temporary lump-sum payment.

The most unusual and significant set of interventions were the on-again/off-again rescues of financial firms and their creditors. The interventions started when the Fed opened its balance sheet to rescue the creditors of Bear Stearns in March 2008 and then made loans available to Fannie Mae and Freddie Mac. The Fed's interventions were then turned off for Lehman, turned on again for AIG, and then turned off again when the Troubled Asset Relief Program (TARP) was proposed. These interventions clearly did not prevent the panic that began in September 2008 and in my view were a likely cause of the panic, or at least made the panic worse. Could the unpredictable nature of these interventions have been avoided? If the Federal Reserve and the Treasury had clearly laid out the reasons behind the Bear Stearns intervention as well as the intentions of policy going forward, then people would have had some sense of what was to come. But no such description was provided. Uncertainty was heightened and probably reached a peak when the TARP was rolled out. Panic ensued and quickly spread around the world as stock market indices went down in tandem with the 30% drop in the Standard & Poors 500.

The panic halted when uncertainty about the TARP was removed on October 13, 2008. The original purpose of the TARP was to buy up toxic assets on banks' balance sheets, but there was criticism and confusion about how that would work. After the TARP was changed to inject equity into the banks rather than to buy toxic assets, uncertainty was reduced, and conditions began to improve, as measured by the LIBOR-OIS spread and other indicators such as the S&P 500. Market conditions then improved in other countries.

Other policy interventions were taken during the panic in late September and October 2008. The Fed's programs to assist money market mutual funds and the commercial paper market were helpful in rebuilding confidence. To be sure, the panic period is complex to analyze empirically because so much was going on at the same time. In addition to the Fed's actions, we had the Federal Deposit Insurance Corporation guarantee of bank debt and the clarification that the TARP would be used for equity injections.

After the worst of the panic was over there were more interventions. Another discretionary fiscal stimulus—the American Recovery and Reinvestment Act of 2009—was passed in February 2009. The amount paid in checks was smaller and more drawn out than the 2008 stimulus, but the impact was about the same: no noticeable effect on consumption. In addition, my analysis of the government spending part of the stimulus suggests that it had little to do with the turnaround in economic activity.

At the Group of 20 leaders summit in the spring of 2009, other countries agreed with the U.S. approach and passed their own discretionary fiscal stimulus packages—a contagion of deviations from rules-based predictable policies around the world. This is number 8 on my list, but it could be numbers 8–26. We are still learning about the impact of these packages, and a huge amount of empirical work is needed to determine their impact.

Other interventions were introduced by the Fed in the period following the panic, most significantly the Mortgage Backed Securities purchase program, which turned out to be \$1.25 trillion in size. My view, based on empirical research with Johannes Stroebe (Stroebe and Taylor 2009), is that this program had only a small effect on mortgage rates once prepayment risk and default risk are controlled for.

Many of these policies have helped to create legacies of debt and monetary overhang. Moreover, the central bank interventions raise questions about central bank independence; the interventions are not monetary policy as conventionally defined, but rather fiscal policy or credit allocation policy. Unwinding the programs creates uncertainty, and there is a risk of inflation if they are not unwound. The fiscal interventions have resulted in higher debt levels, and they have redirected policy attention away from issues of long-term fiscal consolidation.

Nowhere is there more evidence of this legacy of debt as there is in Europe, where the debt problems of Greece, Portugal, and Spain worsened significantly since the crisis. Indeed the earlier interventions have led to more interventions: the 750 billion euro rescue package by European governments and the International Monetary Fund, the agreement by the European Central Bank (ECB) to buy distressed government debt, and the agreement by the Fed to provide dollar swap loans to the ECB to relieve pressure in the interbank market. I have added these echo interventions to the list. It is still too early to determine their impact, but the early movements in the interbank and exchange markets were not favorable.

II. Other Views

Of course others have different views of the Great Deviation. Ben Bernanke (2010), for example, argues that I use the wrong Taylor rule to measure the deviation from rules-based policies. He shows that the low interest rates in 2003–5 were not a deviation if you use a modified policy rule with *forecasts* of inflation rather than actual inflation. But the Fed's forecasts of inflation were too low in this period, which suggests that such a modified rule is not such a good one.

Some would say that the Great Deviation was needed. For example, the financial panic in the fall of 2008 and the Great Recession were so severe that policy makers had to take large unprecedented discretionary actions. But the first four action items on my list were taken before the panic of fall 2008 and before the recession that started in late 2007 turned into the global Great Recession.

Others might say that my research ignores mistakes in the private sector. Of course there were market problems of various sorts. Mortgages were originated without sufficient documentation or with overly optimistic underwriting assumptions and then sold off in complex derivative securities that credit rating agencies rated too highly. Individuals and institutions took highly risky positions through either a lack of diversification or excessive leverage ratios. But such mistakes do not normally become systemic, and in my view, the government actions tended to convert nonsystemic mistakes into systemic risks. The low interest rates led to rapidly rising housing prices with very low delinquency and foreclosure rates, which confused both underwriters and the rating agencies or made it easier for them to hide the mistakes. The failure to regulate adequately entities that were supposed to be, and thought to be, regulated certainly encouraged the excesses. As I mentioned, risky activities at regulated banks were allowed by regulators. Regulatory gaps and overlapping responsibilities added to the problem; these issues seem likely to be addressed in regulatory reform.

Still others might say that things would have been worse without the Great Deviation, that we would have had Great Depression 2.0 without the Great Deviation. I do not see hard evidence for this claim. If I could pick and choose from policies on the list, I would select the Fed's actions for the commercial paper market and money market funds, but those actions would not have been needed were it not for the preceding items on the list.

III. Macroeconomic Lessons

What are the implications of the Great Deviation and the subsequent events in the global macroeconomy for the field of macroeconomics? The recent crisis gives no reason to abandon the core empirical “rational expectations/sticky price” model developed over the past 30 years. Whether you call this type of model “dynamic stochastic general equilibrium,” “new Keynesian,” or “new neoclassical macroeconomics,” it is the type of model from which modern monetary policy rules and recommendations were derived. Along with rational expectations came reasons for predictable, rulelike policies: time inconsistency, credibility, and the Lucas critique, or simply the practical need to evaluate macro policy as a rule. Along with the sticky prices came specific monetary rules that dealt with the dynamics implied by those rigidities as fit to actual macro data. This is the type of model in which robustness of policy rules could be checked as it was in the NBER *Monetary Policy Rules* volume (Taylor 1999). These models did not fail in their recommendations for rules-based monetary and fiscal policies. I have to disagree with Narayana Kocherlakota (2010) when he says that “macroeconomists let policymakers down ... because they did not provide policymakers with rules to avoid the circumstances that led to the global financial meltdown” (5). The rules were provided. Policy makers took a different, more discretionary approach.

It is easy to criticize the rational expectations/sticky price models by saying that they do not admit enough rigidities, have only one interest rate, or do not have money in them. But we should not confuse useful simplified versions of models, which frequently boil down to only three equations, with more detailed models used for policy. By focusing on such smaller simplified models, Woodford (2003), for example, is able to derive many useful theorems. For practical policy work those simplifying assumptions are relaxed. Many of the rational expectations/sticky price models examined in the study by Taylor (1999) or by Wieland et al. (2009) are more complex models that have time-varying risk premia in the term structure of interest rates, an exchange rate channel, and more than one country.

Of course, macroeconomists should try to improve their models in whatever ways they think can make them more useful for policy makers. Many have been working on improving our understanding of the credit channel, a worthy task that goes back to the research of Brunner, Meltzer, Tobin, Bernanke, and Gertler. An implication of my research

findings is that we need to do more work on “political macroeconomics.” In particular, we need to explain and understand why policy makers moved in such an interventionist direction despite the research that stressed predictable rulelike monetary and fiscal policy. Once we understand that, practical solutions should follow.

One possible explanation is that policy makers had genuine doubts about the practical relevance of the research on policy rules. In this regard I am reminded of the 1992 Macroeconomics Annual conference. It was the same year that I presented the paper that contained what would come to be called the Taylor rule. At that conference I commented on a paper by Ben Bernanke and Rick Mishkin (1992). They were raising doubts about the use of rules for the policy instruments and making the case for a considerable amount of discretion in monetary policy making. They said that “monetary policy rules do not allow the monetary authorities to respond to unforeseen circumstances” (184). I dissented from that view in my comments, referring to research on policy rules in which the instruments of policy adjust to contingencies (Taylor 1992).

Another explanation is that in a practical policy setting, policy makers sometimes try to do more than the underlying economics suggests is possible. In this regard let me close with a statement that Milton Friedman made in congressional testimony over 50 years ago. I drew this quote from the famous debate between Friedman and Walter Heller (1969, 48) in which Friedman refers to his 1958 testimony at the Joint Economic Committee. According to Friedman,

The available evidence ... casts grave doubt on the possibility of producing any fine adjustments in economic activity by fine adjustments in monetary policy—at least in the present state of knowledge. ... There are thus serious limitations to the possibility of a discretionary monetary policy and much danger that such a policy may make matters worse rather than better. ... The basic difficulties and limitations of monetary policy apply with equal force to fiscal policy. ... Political pressures to “do something” ... are clearly very strong indeed in the existing state of public attitudes. The main moral to be had from these two preceding points is that yielding to these pressures may frequently do more harm than good. There is a saying that the best is often the enemy of the good, which seems highly relevant. The attempt to do more than we can will itself be a disturbance that may increase rather than reduce instability.

Endnote

Written and updated version of after-dinner remarks at the twenty-fifth Macroeconomics Annual conference, National Bureau of Economic Research, April 19, 2010.

References

- Bernanke, Ben. 2010. "Monetary Policy and the Housing Bubble." Speech at the annual meeting of the American Economic Association, Atlanta, January 3.
- Bernanke, Ben, and Frederic Mishkin. 1992. "Central Bank Behavior and the Strategy of Monetary Policy: Observations from Six Industrialized Countries." *NBER Macroeconomics Annual* 7:183–227.
- Friedman, Milton, and Walter Heller. 1969. *Monetary vs. Fiscal Policy: A Dialogue*. New York: Norton.
- Kocherlakota, Narayana. 2010. "Modern Macroeconomic Models as Tools for Economic Policy: Annual Report Essay." Federal Reserve Bank of Minneapolis *Region* (May), 5–21.
- Stroebel, Johannes, and John B. Taylor. 2009. "Estimated Impact of the Fed's Mortgage-Backed Securities Purchase Program." Working Paper no. 15626 (December), NBER, Cambridge, MA.
- Taylor, John B. 1992. Comment on "Central Bank Behavior and the Strategy of Monetary Policy: Observations from Six Industrialized Countries" by Ben Bernanke and Frederic Mishkin. *NBER Macroeconomics Annual* 7:234–37.
- , ed. 1999. *Monetary Policy Rules*. Chicago: University of Chicago Press (for NBER).
- Taylor, John B., and John C. Williams. 2009. "A Black Swan in the Money Market." *American Economic Journal: Macroeconomics* 1 (January): 58–83.
- Wieland, V., T. Cwik, G. Mueller, S. Schmidt, and M. Wolters. 2009. "A New Comparative Approach to Macroeconomic Modelling and Policy Analysis." Unpublished manuscript, Center for Financial Studies, Frankfurt.
- Woodford, Michael. 2003. *Interest and Prices*. Princeton, NJ: Princeton University Press.