Journal of Macroeconomics 34 (2012) 11–22

Contents lists available at SciVerse ScienceDirect

Journal of Macroeconomics

journal homepage: www.elsevier.com/locate/jmacro

What have central bankers learned from modern macroeconomic theory?

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ARTICLE INFO

Article history:
Available online 25 September 2011

JEL classification:
B22
B40
E00
E50

Keywords:
Macro theory
DSGE
Inflation targeting
Financial stability
Agent-based computational economics

ABSTRACT

In this essay I argue that modern macroeconomic theory has fallen behind the practice of central banking. After briefly summarizing the current state of macro theory, I focus on what strikes me as the two most important developments in monetary policy in the last two decades – inflation targeting and dealing with financial crises. My analysis rejects the claims made by several authors to the effect that the proliferation of inflation-targeting regimes around the globe represents an application of well-established principles of macroeconomic theory. As for how monetary policy can promote financial stability, a subject on which most economists agree modern theory has been of little help, I argue that macroeconomics has lost touch with the fundamental raison d'être of central banking. My diagnosis is that macroeconomic theory has become distracted by its preoccupation with states of equilibrium, a preoccupation that inhibits analysis of a market economy's coordination mechanisms. I conclude with a plea for a more diverse ecology of approaches to macroeconomic theory, one that finds room for agent-based computational economics as well as for more conventional equilibrium theories.

1. Introduction

Technological innovation in today's world draw heavily on fundamental science. But the connection between science and technology was not always like this. Economic historians have long argued that the key technologies of the first Industrial Revolution owed nothing to scientific theory; that many of the inventions were made by "tinkerers" with no formal scientific education.[1] Indeed Rosenberg (1982) makes the case that, even well into the 20th Century, the causal link between science and technology was often the reverse of what we now take for granted; that scientific knowledge was the *result*, as much as or even more than it was the *cause*, of technological breakthroughs. For example, the science of aerodynamics was not sufficiently advanced to explain why birds can fly until the Wright brothers found out how to make humans fly; Vane discovered the principles underlying aspirin's anti-thrombotic effect only after practicing physicians had already discovered that the effect exists and had even begun prescribing aspirin for the prevention of heart attacks and strokes. Indeed, entire fields of scientific inquiry arose from discoveries made in the course of solving practical technological problems, such when Pasteur's attempts to deal with putrefaction in his family wine business opened up the field of microbiology, or when the knowledge generated by German dye-makers provided the clues that formed the basis of organic chemistry. In these and many more cases described by Rosenberg, practitioners had a lot more to teach theorists than the other way around; the practitioners discovered *what* works, and the theorists scrambled to keep up, looking for general covering laws that might explain *why* it works.

My purpose in this essay is to investigate the relationship between practitioners and theorists of monetary policy. Have central bankers, the practitioners, been applying developments of modern macroeconomic theory, as the developers of

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[1] For example Mantoux (1927). More recent authors, such as Jacob (1997) and Mokyr (2010), make a strong case that the prominence of science and the scientific method in British culture in the 18th and 19th Centuries helped create the human capital needed for the innovations that produced the Industrial Revolution. But this does not imply that any such innovation can be construed as an application of known scientific principles.

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doi:10.1016/j.jmacro.2011.08.005

modern computer technology have been applying solid state physics and other branches of scientific theory, or has macroeconomic theory been lagging behind practice, as scientific theory did in the first Industrial Revolution? I will argue that, despite the impressive technical progress that macroeconomics has made, and despite the fact that the profession seems to have reached a consensus on methodology that allows it to move beyond the polemics that once characterized the subject, nevertheless macroeconomic theory has fallen behind the practice of central banking. After briefly summarizing the current state of macro theory, I will focus on what strike me as the two most important developments in monetary policy in the last two decades – inflation targeting and dealing with financial crises. My analysis rejects the claims made by several authors to the effect that the proliferation of inflation-targeting regimes around the globe represents an application of well-established principles of macroeconomic theory. As for how monetary policy can promote financial stability, a subject on which most economists agree modern theory has been of little help, I argue that macroeconomics has lost touch with the fundamental raison d'être of central banks. My diagnosis is that macroeconomic theory has become distracted by its preoccupation with states of equilibrium, a preoccupation that inhibits analysis of a market economy's coordination mechanisms. I conclude with a plea for a more diverse ecology of approaches to macroeconomic theory, one that finds room for agent-based computational economics as well as for more conventional equilibrium theories.

2. Modern macroeconomic theory

Many commentators[2] have remarked on the striking degree of fundamental agreement that has been forged in macroeconomics over the past four decades. Forty years ago the leading journals were filled with controversy over fundamental issues of theory, policy and methodology, to an extent that seems rather wild and unprofessional by 21st Century standards. Consider for example Friedman's (1968) AEA Presidential Address, in which he introduced the term "natural rate of unemployment." This article is now widely considered to be one of the landmark contributions to 20th Century macroeconomics, and its main message has been embraced by both fresh and salt water economists. But at the time when Friedman delivered the address it was seen as an aggressive attack on the foundations of mainstream Keynesian economics, and was vigorously rebutted by leading Keynesians such as Tobin (1972). The rational expectations revolution that began a few years after Friedman's address gave rise to further controversies over the right way to do macroeconomics, as did the real business cycle movement.

Today, in contrast, controversy over methodology has all but vanished from the literature. The articles on macroeconomics published in leading journals almost all use the same common methodology, that of dynamic stochastic general equilibrium (DSGE) theory, according to which the economy should be represented by a model with explicit micro foundations – endowments, technology (of production and of transaction), preferences and demography – as well as explicit stochastic processes governing shocks to these constituent components, and the economy should be assumed always to be in a state of rational-expectations equilibrium. Even modern Keynesians, the intellectual descendents of those who fought so hard to resist the rational expectations revolution, have adopted this common methodology, largely because the definition of DSGE is broad enough to include transaction technologies that give rise to the wage/price stickiness that has always been the hallmark of Keynesian economics.[3] Although there are still notable economists who dissent from modern DSGE theory[4] it is rare indeed to find their works published in the leading academic journals.

The consensus in the modern macro literature extends beyond methodology and into substantive issues. In particular, even real business cycle theorists, who initially resisted any nominal frictions, now commonly recognize the need for such frictions in any model that might be used to guide short-run monetary policy.

This "consensus view:" DSGE with nominal frictions, which has come to dominate the leading journals, is what I take as the definition of modern macroeconomic theory.[5] While there are some important strands of the literature that are excluded by this definition because they depart from the DSGE methodology in one way or another, most notably the strand that specifies some form of adaptive learning instead of rational expectations, these other strands are still viewed with suspicion in many quarters, and in any event I do not believe that anyone would claim that the learning literature has exerted a major salutary influence on the conduct of monetary policy.[6]

By sticking to this narrow definition I am thus excluding from "modern macroeconomics" the IS–LM analysis that still constitutes the core of most undergraduate teaching of macroeconomics, at least up to the intermediate level, and which has long been recognized as being in need of a stronger micro foundation. I am also excluding the contributions of Milton Friedman and his immediate followers, who also were rarely explicit about micro foundations and did not typically invoke rational expectations. So my paper could well have been entitled "what have central bankers learned from mainstream macroeconomic theory since the rational expectations revolution."

[2] For example, Blanchard (2009), Chari and Kehoe (2006), Kocherlakota (2010) or Woodford (2009).

[3] As opposed to what Leijonhufvud (1968) called the economics of Keynes.

[4] For example, Leijonhufvud (1993), Borio and White (2003) and Laidler (2007).

[5] Other writers have chosen to define modern macroeconomic theory or DSGE more broadly than I have, so as to include even models that depart from rational expectations equilibrium. See for example Kocherlakota (2010) or Chari (2010). The latter implicitly defines DSGE as including any logically coherent and completely specified model that explicitly represents behavior at the individual level.

[6] One possible exception is the "Taylor Principle" to the effect that the central bank's policy interest rate must respond more than point for point to increases in inflation for the economy's rational expectations equilibrium to be expectationaly stable. As I argued in Howitt (1992), however, the idea was already contained, at least implicitly, in Friedman's (1968) rendition of Wicksell's cumulative process.