

# Teaching Macroeconomics

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I have been teaching macroeconomics to undergraduate and graduate students for more than thirty years and over that time period I have seen numerous changes in delivery, substance and style. Not necessarily in that order. Since our undergraduate lecturers pass on what they themselves learn in graduate school, I will focus my attention in this article on the teaching of graduate economics. I'd like to take this opportunity, not only to say a little bit about pedagogy, but also to put my perceptions of the educational process in the context of the philosophy of science.

## The Core of Economics

Economics differs from most other social sciences. Economists share a common core body of knowledge and we indoctrinate our neophytes early. Every major graduate programme, throughout the world, is structured in the same way. The first year is devoted to an intensive study of three core subjects; microeconomic theory, macroeconomics and econometrics. At the end of the first year the students sit for three comprehensive exams. Failure is not an option. A student who has not passed these exams after two tries is awarded a Master's degree and sent off into the real world.

The second year of the Ph.D. programme is a little more relaxed; but still intense. Students continue to sit in taught lectures and, at this point, they specialize in two or more fields. At UCLA, we offer a breadth option in which the third field is satisfied by choosing a selection of courses from different areas, one of which must be economic history or the history of thought. That requirement has been removed from some programmes, in my view, to the detriment of the schools that have abandoned it.

## The History of Macroeconomic Ideas

Macroeconomics as a separate subject did not exist until after the publication of Keynes' master work, *The General Theory of Employment, Interest and Money* in 1936. For thirty years after WWII, macroeconomics was synonymous with the economics of Keynes and the same body of ideas was taught to graduate and undergraduate students alike. There were differences between alternative interpretations of Keynes; monetarists versus Keynesians was one big debate. But even Milton Friedman, the father of modern monetarism, had a lot more in common with Keynesian economics than with what passes for macroeconomics today.

What happened? First, *The General Theory* is not an easy book to read. It is intellectually incoherent and contradictory in places. For example, the first part of the book assumes that wages are fixed, but later chapters drop that assumption without providing a coherent theory of inflation. It was left to post-war Keynesians, notably Sir John Hicks in the U.K. and Alvin Hansen in the U.S. to interpret the theory. Their explanation of Keynesian economics was popularized by the father of American Keynesianism, Paul Samuelson, and taught to generations of economists who learned economics from Samuelson's textbook.

## The Shift away from Keynesianism in the 1970s

The post-war Keynesians closed Keynes' system by grafting onto it, an empirical equation, the Phillips curve, that had been discovered by the New Zealander, Bill Phillips. Phillips was a researcher at the London School of Economics. Samuelson called the integration of Keynesian ideas with the Phillips curve, "the neo-classical synthesis" and it has served as a practical guide to policy makers for thirty years. The theory predicted that stagflation, the coincidence of high inflation and high unemployment, was a theoretical impossibility. But in the 1970s we saw inflation rates climb above 10% while unemployment was approaching double digits. The post-war Keynesian consensus came crashing down in flames.

At this point, undergraduate and graduate classes in economics began to diverge. Most academic economists abandoned Keynesian ideas as the rational expectations revolution swept major universities. RE was a new research programme that reformulated macroeconomic theory from scratch. It threw out the idea of involuntary unemployment that had been a hallmark of Keynesian economics. Instead, all right-thinking macroeconomists, began to model labour markets with the assumption that the demand and supply of labour are always equal. As James Tobin famously quipped, the Great Depression was modelled as a sudden bout of contagious laziness.

The 1970s about turn in the macroeconomics curriculum was a major paradigm shift that occurred because Keynesian economics failed two important tests; one theoretical and one empirical. On the theoretical front, Keynes failed to explain why unemployed workers would not offer to work for a lower wage, and why profit maximizing firms would fail to hire them. On the empirical front, Keynesian economics failed to explain stagflation. Either of these two failures on its own, might not have been fatal. But together, they led economists to go back to the drawing board and to rethink the foundations of their subject. As a consequence of the theoretical weakness and the empirical failure of Keynesian economics, macroeconomists reverted to the business cycle theory of the 1920s.

## Back to the Future

In 1928, Arthur Pigou published a book, *Industrial Fluctuations*, that summarized the state of business cycle theory at the time. 1920s business cycle theory contained six or more different causes of economic fluctuations. These included productivity shocks, agricultural disturbances, changes in tastes, industrial disputes, monetary shocks, news shocks and shifts in consumer confidence.

Modern researchers, notably Finn Kydland and Ed Prescott, took the main ideas from Pigou and formalized them with mathematics in a programme known as real business cycle theory, or RBC for short. Because this programme was technically challenging, they simplified Pigou's theory to make the mathematics manageable. As my emeritus colleague Axel Leijonhufvud has observed, "... modern macroeconomics has become much like Hollywood movies; the pyrotechnics are spectacular but the plots are sadly lacking".

It is easy to poke fun at the simplicity of early real business cycle theory. But it is hard to see how things might have evolved differently. The rational expectations revolution was the beginning of a movement in which macroeconomists learned to be more rigorous in the statement of their ideas. This is a process that began in microeconomics with the work of Walras, Pareto and Edgeworth in the nineteenth century. For

macroeconomists, who deal with dynamic problems with uncertainty, the formalization could not have occurred earlier since the mathematical tools themselves were unavailable to earlier generations.

The introduction of more complex mathematics to graduate programs in economics was not without consequences. It altered the kinds of students that we admitted and it dramatically increased the level of mathematical skills required to be admitted to a top programme. That had both advantages and disadvantages. On the plus side, Ph.D. students who graduated since 1980 have a much better grasp of how to formalize problems. On the minus side, many of them spend much less time learning about the history of thought or how to choose interesting problems in the first place.

## **What Has Been Happening Since 1970**

The aftermath of the RE revolution was a time of rediscovery in macroeconomics. Researchers schooled in the new mathematics began to discover the beauty of old ideas and, one by one, all of Pigou's six shocks have been formalized into a mathematical system of considerable intellectual elegance.

A group of new-Keynesian economists rediscovered a role for monetary policy by adding frictions to the real business cycle model. In my own work with Jess Behabib of New York University and Jang-Ting Guo of the University of California Riverside, we put consumer confidence back into RBC models. Frank Portier of Toulouse University and Paul Beaudry of the University of British Columbia, brought back news shocks. In 2006, the eve of the Great Recession, macroeconomists had made the not insignificant achievement, of formalizing 1920s business cycle theory using the mathematics of modern functional analysis.

In 2007, on the evening that Northern Rock went into bankruptcy, I was attending a conference dinner at the Bank of England. The conference was called to celebrate the "Great Moderation" a term that was coined to describe the remarkable success of monetary policy in achieving a newfound economic stability using the tools of modern macroeconomic theory. The business cycle was declared to be conquered. We had entered a new era of economic prosperity in which the high priests of central bank research departments would divine the correct interest rate rules to maintain low inflation and high employment.

The reality was very different.

## **The Impact of the Current Crisis**

The collapse of Northern Rock heralded the start of the largest recession since the Great Depression of the 1930s. In 2008, after the bankruptcy of Lehman Brothers, U.S. unemployment doubled from 5% to 10% and it has remained above 9% for 22 of the past 24 months. The U.S. Treasury initiated an \$800b fiscal stimulus and the Federal Reserve Open Market Committee increased the monetary base from \$800b in the fall of 2006 to its current value, close to \$2,200b. But in spite of this remarkable bout of policy activism, things are getting worse; not better. The spectacular failure of the dominant paradigm to make sense of this situation has opened a door for alternative views of macroeconomics to enter the arena.

## Why is Paradigm Change a Rare Event?

Although economics is a science, it is not an experimental science. At any point in time there are competing explanations of the same phenomena and the profession gravitates to what is perceived to be the most plausible. Since conflicts cannot be decided by appeal to experimental evidence, they are instead, resolved by appeal to authority.

In normal times, Influential thinkers at top universities control the progress of schools of thought. They control journals and what is published in those journals and they place their students in other elite institutions. Economists pursue rather narrow sets of ideas. There is considerable inertia in economic thought and new ideas are treated with scepticism.

Although that is frustrating for a creative theorist, it is hard to think of an alternative mechanism for disseminating ideas that would work more effectively. Inertia is important in a non-experimental science. It is simply too time consuming to waste social resources on the pursuit of every new idea that surfaces.

These are not normal times. Large disruptions in the economic environment, like the Great Depression of the 1930s the Stagflation of the 1970s and now the Great Recession of 2008, are difficult or impossible to understand within the existing paradigm. The Great Recession was a game changing event of the same order of magnitude as stagflation and the Great Depression.

## In Defence of Formalism

Although it is possible to find fault with the teaching of modern macroeconomics, much of the reform of our subject that was introduced by the rational expectations school was useful and should be retained. During a 2009 visit to the London School of Economics, Queen Elizabeth asked why economists had failed to predict the crisis. The Queen's remarks spawned a concerted attack on macroeconomics from journalistic luddites who criticized academic macroeconomists for wallowing in mathematical abstraction that has no connection with the real world. Some critics have gone further and argued for a repeal of the use of mathematics as part of an economics education. That is a bridge too far.

The crude RBC models of the last decade were wrong in important dimensions. But if a writer pens a bad novel, nobody argues that all writers should stop using paper and go back to clay tablets. Mathematics is the language of science and it has been essential for an understanding of modern economics since at least the turn of the nineteenth century. The use of mathematics in economics will not disappear; nor should it.

Along with the teaching of mathematics, I would also defend the major principles of the rational expectations revolution. As Tom Sargent said upon being awarded the 2011 Nobel prize; rational expectations captures the notion popularized by Abraham Lincoln. "You can fool some of the people all of the time or all of the people some of the time; but you can't fool all of the people all of the time." That is a good idea and it deserves to remain.

## A Personal Perspective on Reforming Macroeconomics

For every idea there is a season and we have returned to the season of Keynes. Just as Finn Kydland and Ed Prescott introduced formal methods to Pigou, so it is time to do the same for the *General Theory*. There is a branch of modern economics, new-Keynesian economics, that claims to have done that. But as I have long argued, new-Keynesian economics misses the central ideas and insights of *The General Theory*. These are that 1) unemployment can persist as an equilibrium outcome of an unregulated capitalist economy and 2) confidence is an independent driving force of business cycles. These ideas are fundamental to an understanding of depressions and they are ideas that have been absent from macroeconomic thought for at least forty years.

I am not arguing that unemployment has been ignored by the profession. Far from it. The 2010 Nobel prize was awarded to Chris Pissarides, Dale Mortensen and Peter Diamond for the theory that unemployment is caused by “search frictions” in labour markets. But the important theoretical contribution of Diamond, Mortensen and Pissarides was not effectively integrated into the macroeconomic models that are used to guide policy.

Both new-Keynesians and RBC economists continue to build models in which the quantities of labour demanded and supplied are always equal to each other. These models have been used by central banks and government economists to analyse economic policy for the past forty years. Yet in these models, there *is no such thing* as unemployment.

There were also economists, myself included, who studied the role of confidence and self-fulfilling prophecies in generating business cycles. This work was important, but it was not fundamental. Just as the new-Keynesians reintroduced money into the real business cycle model, so the literature on self-fulfilling prophecies reintroduced confidence. Both branches of the literature helped to provide a more complete mathematical version of Pigou’s verbal theory of business cycles.

What was missing from previous work, including my own work on self-fulfilling prophecies in macroeconomics, was the recognition that unemployment can persist as a steady state equilibrium.

When I connected that idea to the literature on self-fulfilling beliefs, I realized that it would lead to a profound change in the properties of our economic models. In conventional economic models, everything is driven by three fundamental forces; preferences, technology and endowments. To make sense of Keynesian insights, it is necessary to add confidence as an additional fundamental. Confidence becomes an independent driver of economic activity that can permanently increase the unemployment rate. That is one of the original contributions that I have formalized in my recent books, *Expectations Employment and Prices*, and *How the Economy Works, Confidence Crashes and Self-Fulfilling Prophecies*. This line of enquiry leads to very different implications for the advice that policy makers should follow in order to restore full employment.

## Three Proposals for the Reform of Graduate Macroeconomics

I have given a personal perspective on what needs to change. I also have some more general recommendations that I will state as three proposals for graduate programme reform.

First; to those schools that no longer teach economic history; reverse course. Integrate the teaching of history with the teaching of theory and use history to explain why our theories were developed in the first place. I have alluded to the disappearance of economic history from some departments. This is a process that I hope will be reversed in the coming years. Economic history is our data and it is as essential to economics as is a knowledge of the constellations to an astronomer.

Second; To those schools that do not teach the history of thought; reverse course. A knowledge of the history of economic ideas is essential to a non-experimental science because our research agendas often become diverted for the wrong reasons. Good ideas become forgotten and must be rediscovered. In physics and chemistry ideas are discarded after their predictions are falsified in the face of repeated experiments. In economics, good ideas are sometimes discarded because they fall out of fashion.

That leads me to my final recommendation. There are very few empirical facts in macroeconomics. There are time series data that co-move in mysterious ways and there is a large set of theories that could potentially account for those co-movements. A knowledge of mathematics, statistics and econometrics is essential to understand that unfortunate reality. Theory and measurement are conjoined twins and we must teach both to our graduate students if they are to have a hope of unravelling the mysteries of the social universe.

## Prospects for the Future

The macroeconomics of the last thirty years has consisted of rediscovering truths that were known to Pigou and his contemporaries in the 1920s. Gradually, RBC economists have reintroduced, one by one, the shocks that were known to our predecessors. Whereas 1920s theory was verbal, the macroeconomics of 2011 is formalized with a rigor that was not possible in 1928 because the mathematical tools did not exist. We are standing on the same ground that Arthur Pigou, John Maynard Keynes, Friedrich von Hayek and Irving Fisher trod in 1929 and we are debating the same ideas.

We have been hit with a similar catastrophe to the one that caused Keynes to give up on the framework of classical economics and to develop *The General Theory*. The Great Depression was nursemaid to two important new ideas. The first is that high unemployment can persist forever as the steady state of a free market economy. The second is that confidence, Keynes called this “animal spirits”, is an independent force that drives business cycles. Those ideas were forgotten by several generations of Keynesians; I have endeavoured to achieve their return. They have not yet been absorbed by modern macroeconomic theory and their implications for economic policy are imperfectly understood. To a young macroeconomist, about to start his or her career, that is a tremendously exciting prospect.

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