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Six guidelines for teaching intermediate macroeconomics

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Over the span of my career, I have taught intermediate macroeconomics to Harvard undergraduates about 15 times, and I have written a textbook for the course that is now in its 10th edition. In this article, I describe several guidelines that I would suggest to intermediate macro instructors based on my experiences.

Like all advice, pedagogical advice should be taken with a grain of salt. I will do my best to explain the reasoning behind my approach. I hope other instructors—first-timers, especially – will find my suggestions useful and thought-provoking as they design courses and develop their own classroom style. But, as the old adage goes, your mileage may vary.

Guideline number 1: Suppress your idiosyncrasies

When teaching a required course for economics majors, such as a principles course or an intermediate course, the professor should embrace the role of being an ambassador for the economics profession. The students are not there to learn your particular views of how the economy works. They are there to learn the foundational ideas that have been broadly established and accepted.

As a result, if your views differ substantially from the consensus, your obligation is to suppress your idiosyncrasies. For example, you may passionately believe that the business cycle is driven by exogenous shocks to technology, that monetary policy has no real effects, and that observed fluctuations are Pareto-optimal intertemporal responses that can never be improved by any sort of policy. If so, you should keep this opinion to yourself when you enter the classroom to teach intermediate macroeconomics. Most of your colleagues in the economics profession have a very different view about the business cycle. And your students are better off learning the professional consensus than your idiosyncratic perspective.

My sense is that most teachers of intermediate macro follow this guideline. The four best-selling texts for this course—mine, Blanchard, Jones, and Abel, Bernanke, and Croushore – all present a synthesis view that includes a classical long run and a Keynesian short run. To be sure, each of these books takes students on a somewhat different pedagogical journey, but the books share a common destination. Students leave the course with a solid understanding of the current consensus among macroeconomists.

Guideline number 2: Reinforce basic principles

Many intermediate macro students have, before this course, taken only introductory economics. Don't assume that they have fully learned the key lessons from the introductory course. Economics is a hard subject for many people, and they may need to hear the basic principles a

few times before they internalize them all. As you review basic principles, you can cover the material more quickly than you would in an introductory course because, after all, it is a review. But the review is crucial to jog students' memories before moving on to more advanced material.

For example, in chapter 1 of my intermediate macro book, I include a review of the basic model of supply and demand. Ostensibly, it is there to illustrate the concept of model building and to define exogenous and endogenous variables. The hidden agenda, however, is to remind students about how this important model works.

Guideline number 3: Revel in the act of model building

One big difference between introductory courses and intermediate courses is that students in intermediate courses are presumptively majors in economics or something similar (like business). At the intermediate level, instructors don't need to be as concerned about the math-averse English major who is taking the course as an elective or to fulfill a distribution requirement. As a result, the use of mathematics can be significantly greater than at the introductory level. Intermediate courses are an opportunity to expand students' appreciation for the use of mathematical models to understand and communicate economic concepts.

One intermediate-level model I particularly enjoy teaching is the Solow growth model. It is an elegant model showing how saving, population growth, and technological progress interact, leading to a steady state with balanced growth. The math is straightforward, but the diagrams are novel, and the results are surprising (or at least they are before you understand the model). I usually teach the Solow model early in the course, because it provides an important benchmark: it explains the long-run growth path around which short-run fluctuations occur. In other words, the fluctuations described by, say, the IS-LM model are occurring superimposed on top of the long-run growth described by the Solow model.

Let's face it: economists enjoy playing with economic models, much like children enjoy playing with models of cars, boats, and planes. That may be a nerdy thing to admit, but that is okay. The intermediate course is where we can begin to nerd out without apology. And some students will come to learn the fun of nerding out as well.

Guideline number 4: Admit our models' limitations

Just as students in the intermediate course can develop a more sophisticated appreciation for model building, they can also develop a greater understanding of models' limitations. They can start to see that models are simplifications and that the art in economics is in determining when a simplification clarifies important ideas and when it obscures the key forces at work.

Growth theory is again a good example. The Solow model shows that once an economy reaches its steady state, the growth in income per person is driven entirely by technological progress. But the model takes technological progress as exogenous. Like the old joke, the Solow model seems to assume a can opener. To really understand the advance in living standards from generation to generation, we need other models to explain technological progress. Hence, after students have learned to appreciate the elegance of the Solow model, they quickly understand the appeal of endogenous growth theory.

Discussing economic growth also encourages students to appreciate that many important factors are hard to model. Economic historians often point to the importance of institutions and culture as reasons why some nations are more prosperous than others. But institutions and culture are not readily amenable to conventional economic modeling. By acknowledging this fact, instructors help students appreciate that other social sciences, such as sociology, may be important for explaining some phenomena central to economics.

When teaching intermediate macroeconomics, I emphasize that every model is a simplification and therefore limited in what it can accomplish. There is no single comprehensive model that explains everything. Instead, economics is like a Swiss army knife—a collection of tools useful for different purposes. Students at the intermediate level can start to more fully appreciate the sense in which this is true.

Guideline number 5: Don't go overboard

Some years ago, one of my Harvard colleagues was asked to teach the mathematical track of intermediate macroeconomics. He decided to use David Romer's textbook *Advanced Macroeconomics*. He reasoned that in addition to having Harvard students, who are among the best in the nation, he had the Harvard students most receptive to the use of mathematics. Nonetheless, my colleague quickly learned that his choice was a mistake. Romer's text is a great book, but it is too hard for sophomores, even if they are the mathematically sophisticated ones at an elite school like Harvard.

One of the biggest challenges instructors face is avoiding the tendency to overestimate students' knowledge and ability to absorb new information. This is sometimes called the curse of knowledge: once you know something, it is hard to remember what it is like to not know it. It is easy to unwittingly overwhelm students. They have more trouble following notation, applying mathematics, and connecting concepts than many instructors appreciate. (The same phenomenon is often observed in seminars when economists present their own research. After spending years thinking about it, they overestimate how much the audience can absorb in 90 minutes.)

There is no simple remedy for the curse of knowledge, but let me offer a suggestion. Keep a particular person in mind as you teach. That person should be someone you know well—a parent, a spouse, or a best friend (as long as that person is not an economist). Pretend you are explaining the material to them. Are they getting it, or are they lost? If you know this person well, you may be able to more easily empathize with their learning challenges. You might prevent yourself from going overboard.

Guideline number 6: Remember the real world

Intermediate micro and macro courses are largely about theory and model building, but it is crucial to keep reminding students that all this abstraction is aimed at understanding phenomena from the real world. I try to incorporate as many empirical applications, case studies, and current events as possible.

Students at this level don't relate to complex econometrics. To them, it is meaningless to say that some multi-equation model was estimated by the general method of moments and that the over-identifying restrictions were tested. Applications should be more straightforward and more vivid. Scatter plots work well. So do dramatic historical narratives. Students are likely to remember what happened to real wages after the bubonic plague, why some historians view *The Wizard of Oz* as a monetary allegory, and why Henry Ford paid \$5 for a day's work when the going wage was much lower.

Better yet are examples from a current newspaper. For example, when President Trump recently complained about Federal Reserve chair Jay Powell, it was a great opportunity to discuss the importance of central bank independence. Bad public policies are bad for the nation, but they are great fodder for the economics classroom. As an instructor, you can count on a ready supply.

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