

THE PRINCIPLES OF MACROECONOMICS CLASS:  
TEACHING AGGREGATE THINKING

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It is an honor to be invited to share my observations about teaching the Principles of Macroeconomics class with an audience of excellent teachers. In situations like this, I often feel that I should sit down and listen rather than stand up and talk. We all have a great deal to learn from each other about that mystical art we call teaching.

I recently gained perspective on the life cycle of a teaching career when I realized that I have now taught for more years than I probably will continue to teach, or – as my sister the football fan put it – “You’re in the third quarter.” In a gathering like this, some of us are awaiting the opening kickoff or are in the first half; some are, like me, in the third quarter; some are in the fourth quarter or past the two-minute warning; and there may be some among us who would claim, “I’m in the first overtime.” I now see that it’s much more important to share with other instructors than to hoard my teaching tricks, many of them – of course – appropriated from others. In keeping with my policy of openness, I’ll tell you that a lot of what I have to offer is available online at my website: <http://cob.jmu.edu/woodwc>, or just search for “William Wood economics.”

I have three simple pieces of advice about the teaching of the macro principles course: (1) Teach aggregate thinking; (2) Use a diversity of stimuli; (3) Understand the student. Although it is difficult to disentangle these three points, especially the first two, I will use these points as an organizing framework.

### **STORY LIBRARIES FOR DRAFTED MICROECONOMISTS**

We can start from the fact that *more microeconomists are drafted to teach macroeconomics than macroeconomists are drafted to teach microeconomics*. That is a natural consequence of graduate education in economics. Dissertation topics in microeconomics abound; not so on the macro side. Therefore many of us came up in the micro tradition, and yet student preference and curriculum structure often demand that our departments offer a great many sections of macro principles. Some of us get drafted, and I count myself in that group, although with time I have developed respect and even affection for the macro half of the principles course.

My first point is that in the principles of macroeconomics course, we need to teach aggregate thinking. We do that, first of all, by becoming better macroeconomists. We teach ourselves aggregate thinking: thinking about larger rather than smaller units and how they fit together, and how the whole is not just the sum of the parts. In particular, we need to work on what I'll call our "story library." We need a set of stories to tell. As microeconomists, we have a whole set of stories: why the best Washington state apples, on average, are to be found on the East Coast, why a restaurant shouldn't raise its prices after being robbed "to make up the loss," and on down the line. When we're drafted to teach macroeconomics, we don't have that story library. We have to develop it over time.

Let me illustrate with the swimming pool story. Many of us teach macro principles students about the duration of unemployment. Greg Mankiw's (2007, p. 317) Principles book puts it this way: "Most spells of unemployment are short, and most unemployment observed at any given time is long-term."

Our students wonder how that could be. Here's the story: At the swimming pool, most of the teenagers there spend their time sunning, listening to music and hanging out with friends. Every now and then, one of them will jump into the pool, get wet and swim around, and then come back out and resume hanging out. Meanwhile, there are some younger kids who hit the water as soon as they can and play in the pool as long as they can. These are the "water rats." If we observe the pool at any time during the afternoon, we see all of the water rats and maybe one of the teenagers who has just jumped in. Over the whole afternoon, a large number of teenagers will have jumped in and out while the water rats played. "Most spells of swimming are short, and most swimmers observed at any given time have been in the pool a long time." Now the students get it. In my macro principles class, I have volunteer students come down front and pretend to be water rats or teenagers.

I hope that I just illustrated to you those first two principles: (1) Teach aggregate thinking; and (2) Use a diversity of stimuli. Telling the swimming pool story is good, and it's better than reciting the stylized facts of unemployment duration. Getting the students involved is even better.

If you're a drafted microeconomist, you may not have the swimming pool story in your story library at first. The question then becomes how we can all develop our story libraries in the process of becoming better macroeconomists. Here are some of the ways I have added to my story library:

- ◆ Our macro seminar at James Madison University. Once a week, we have an informal gathering of faculty interested in macroeconomic teaching and research. We take turns presenting – our own research when we have a paper or are thinking about a topic, but more often a published or working paper that strikes our interest. Sometimes we work through the models and sometimes the discussion turns to policy, but even if by accident we steadily build our story libraries.
- ◆ Writing whatever can get published or almost get published. All of us would like to publish in top-ranked journals throughout our careers. Realistically, by the numbers, few of us have the gifts to do that, so we do something else – but I think that “something else” can make us better teachers of macroeconomics. I formerly thought that, after all of us had a shot at scholarly fame and fortune in papers from our dissertations and our years as “young lions” on the tenure track, perhaps we should draw back and not write much if we pursued more teaching-oriented careers. I don't feel that way any more. My current thought is that if we can't get into high-ranking journals, we should go for low-ranking ones. If we can't get into refereed journals, then we should write for unrefereed journals, or for a local newspaper if that's the opportunity that's open. Writing makes us sharper and it helps us identify with our students; we can't experience what it's like to get an “F”

any more, but we can receive referee reports that duplicate the emotional impact. Writing helps keep us humble. Mankiw (1996), perhaps being too modest, put it this way: “I think of myself as a mediocre writer. I do not come by my mediocrity naturally. It is the result of hard work and determination. This may seem like a small accomplishment, but I reassure myself with the fact that most economists do not live up to this standard.” Inspired by this quotation, I too strive for mediocrity.

- ◆ Teaching the hardest course in the department when we’re not teaching principles. I believe there is real merit in seeking out the course that is the hardest to teach, and the hardest to learn. In the case of my department, that class may well be econometrics. I originally taught the class out of departmental necessity, but I found that it sharpened my principles teaching to do it. Colleagues have reported similar experiences.
- ◆ Teaching somewhere else. There are a number of ways to encounter students different from your usual audiences in a different setting. Visiting appointments, faculty exchanges, and summer teaching are all possibilities. Even covering someone else’s classes can be a learning experience if we approach it in the right spirit. Every time that I teach in a different setting, I come away with something new.

Beyond just becoming a better macroeconomist, there are other strategies more directly geared toward teaching aggregate thinking. Consider GDP, which comes early in the course. We all know to focus on the aggregate nature of the figure, as “the market value of all final goods and

services,” with the emphasis on “all.” When we exclude things, it’s usually so we don’t count more than all.

### **DIVERSITY OF STIMULI AND ACTIVE LEARNING**

Before I had a story library and tricks, I might have taught GDP by telling students, “Now write this down in your notebooks:

$$\text{GDP} = \text{C} + \text{I} + \text{G} + \text{NX}”$$

Today I go very quickly from the formula to a cheer. I remind students that a classic from the history of cheerleading was to spell out the name of the school, starting with “Give me a B!” and ending with “What have you got?” which, in the case of my high school, was “Berry.” (I am told that this cheer did not work very well at Virginia Polytechnic Institute and State University.) In the case of GDP, the cheer goes:

Give me a C!

C!

Give me an I!

I!

Give me a G!

G!

Give me an NX!

NX!

What have you got?

GDP!

After this cheer, few students forget the formula for GDP.

There's "diversity of stimuli" again. Is it also "active learning?" We have all heard the message, and I'm not oversimplifying much, that lecture is bad and everything else is good. But it takes time to set up an active learning exercise and it's hard to do in big classes. My strategy is to do some "active learning" explicitly, but make lectures more active even when I'm lecturing. The GDP cheer is part of that.

I have an active learning story that seems to line up well with emerging economic education research. Early in my time at James Madison University, I received some grant money to do an active learning experiment. I taught two sections of Principles that were as identical as possible except for active learning being employed in one. Given the time demands of active learning, I ended up covering less in the active learning section but I hoped that the active learning section had retained more. There was a block of multiple choice questions on the final exam from areas covered by both classes. And finally, there were student evaluations of both classes. Simple statistical tests showed that the active learning section learned less but enjoyed it more. This experience left me less than fully convinced of the value of active learning.

Continuing with the theme of teaching aggregate thinking with a diversity of stimuli, it's inevitable that we come to the aggregate supply-aggregate demand model. Although it is true that economic knowledge depreciates (Doyle and Wood 2005), if your students will remember one macro model from the course, this is probably it. For reasons that have been well outlined (see Fields and Hart 1990, for example), this is a slippery model. Even so, I don't think we

should spend much time criticizing the model and should instead focus our efforts on teaching the model.

Our students will try to make the aggregate demand curve a micro demand curve. We must not let them. We have to emphasize that this is an aggregate curve; I start even when I label the axes, trying to pronounce “P” as a long sweeping letter to emphasize that it’s the average price of just about everything. I even use the language of “a different world” when we’re thinking about a higher price level. How is the world different at a higher price level? In the standard treatment there’s a wealth effect, an interest rate effect and an exchange rate effect. I have a small stunt that I do, having students hold up cards to emphasize how all the effects work.

Content merges into teaching tricks in my mind. One teaching trick that helps me and helps my students, I think, is the stretch – just have students stand up, stretch, and sit down. A brief stretch break increases student attentiveness. Students must understand you’ll go on with class in about 30 seconds. Most of us can’t stop class long enough to reassemble everyone, but even that brief stretch break will help our students to refocus on the task at hand.

In keeping with the theme of teaching aggregate thinking at every turn, I like to demonstrate the fallacy of composition: “incorrectly assuming that what is true for the individual is true for the group.” I have students imagine they’re at the football game on a fall afternoon. I have a student in the middle of the class – preferably a short and good-natured student – stand up to see the game better. I then have the whole class stand and ask the short, good-natured student how the view is now. The exercise can be repeated by asking one student to open an imaginary umbrella

and stay dry, but then observing that if everyone opens an umbrella everyone will be under somebody else's dripping umbrella rib.

Students are easily motivated by competition, even when the stakes are not very high. I have sometimes run a GDP predicting contest in which every student is asked for a forecast. The contest closes, and then when the quarterly GDP figures are announced, I declare a winner. Each of the top three receives a box of cookies, a surprisingly well received prize.

Even when we are doing micro foundations, we can promote aggregate thinking. I have one exercise in which I have asked student to find out, and report using a Web form, what percentage of tax revenue is collected from the top 50 percent of taxpayers. I then ask them what percentage they think would be appropriate. Some students want to argue with the question, which I think is wonderful because it shows their awareness of framing effects. Most of my students are inclined to answer the tax question with nothing more than pure redistribution in mind, but this exercise makes them think. Some of them see the incentive effects of taxation right away and others see the incentive effects in time – but in either case, they find the tax question highly motivating.

### **UNDERSTANDING THE STUDENT**

It is difficult to cover this point separately from teaching aggregate thinking and using a diversity of stimuli. The backgrounds and inclinations of students will require most of us to figuratively grab them by the collar and drag them into macroeconomics. “Continuous partial attention” is a noted phrase attributed to former Microsoft researcher Linda Stone (2006), and it describes what

students want to give us in class. Yet few of our students are bright enough to do macroeconomics with only part of their brainpower.

I believe we can break through “continuous partial attention” by keeping the class moving and, again, employing a diversity of stimuli. I like to use the analogy of golf vs. football to illustrate the student’s role. Students want to be the flag stick on a golf course, saying or thinking: “Oh, you presented interest rates too fast, so I can’t get it.” They expect to stand there inertly like the flag stick on the green, putting forth no learning effort, and claiming they don’t get it if the golf ball rolls up two feet short. I sometimes tell students they’re more like a wide receiver in a football game: “I’m going to throw the ball (interest rates) out there beyond the defensive back and you run under it.”

Although I am reluctant to engage in administrator bashing, I would like to note that when administrators judge teaching only through student evaluations, they promote the golf flagstick model – which students greatly prefer. I do know about one school where a question on the annual report asked faculty to describe students’ complaints registered on evaluations and what corrective action the faculty member took.

At times it has seemed that technology could combat “continuous partial attention.” More realistically, today we know that technology is only a partial solution – and may be part of the problem. Students grow up with technology that shortens their attention spans. They have little patience for any extended analytical exercise. I don’t think we can fully indulge that lack of

patience. You can't just do the aggregate demand-aggregate supply model in five minutes to avoid boring the students.

I do think we can keep things lively with a technology strategy. I don't personally recommend going to the cutting edge of technology unless you're sure you have a comparative advantage in it – or can buy the product of someone else's comparative advantage. Low-tech solutions have much to recommend them. One example I sometimes use is the applause poll. I turn my back and ask the students to register their responses to questions with their applause. For example, are individual income taxes too high? too low? or about right? This can be done more systematically with in-class clickers, and I commend those who work to make that technology enhance their classes, but there is also some appeal to doing a poll with total spontaneity.

The first generation of PowerPoint use in classrooms has taught us some lessons. If using PowerPoint causes our students to go into TV watching mode, we will only get their “continuous partial attention.” As technology has advanced, many of us have come to appreciate the high efficiency of low-tech solutions. The standard blackboard is a rich analog device, as we learn when we try to replicate it electronically. E-mail is a thin medium and a poor teaching medium, as we learn when we try to answer more than a few student questions that way.

We would do well to remember that for students born in 1987, the first president they can remember is Bill Clinton, elected when they were five years old. To them, there has “always” been an Internet. They are as removed from the Vietnam War as today's mid-career faculty were from World War II. You may find it helpful to think about someone close to the age of your

students and visualize what would appeal to that specific person. Early in a teaching career, that person may be you. Later it can be a brother, sister or cousin. Still later in a teaching career, it can be your children's friends and, eventually, your grandchildren.

In designing a teaching strategy for today's students, it is especially important to account for offsetting behavior. By this I mean students' tendency to reduce their own effort when we do more for them. Examples abound, illustrating why we should not work hard with the specific goal of making things easy for students. When comprehensive PowerPoints for a class are posted online, students are more likely to skip class. When we take a formulaic approach to supply and demand, students memorize that and don't really learn equilibrium model analysis. When we work hard to prepare a review session held late on the day before a test, many students will reduce their own preparation time and count on the review session to get them ready.

Offsetting behavior is rational in a standard model in which students value learning and leisure. Our instructional improvements (1) will certainly increase their endowment and (2) will change the rate at which they can substitute leisure for learning. Students then take part of their expanded endowment in the form of increased leisure. We can't fault students for doing this when our own models predict they will.

Students reveal the reality of offsetting behavior in casual conversation when they say, "Professor X is so bad, I had to study my tail off!" They clearly imply that if X had been replaced by the good instructor Y at the start of the semester, they would not have studied so hard. Offsetting behavior is one of the reasons that improved teaching may have smaller than

expected effects on learning. Offsetting behavior also means that students do not get the full advantage of good teaching at “good teaching schools”; nor do they suffer the full consequences of bad teaching at “good research schools,” since they work harder.

Offsetting behavior presents a challenge to good teaching. Perhaps we can do no better in the face of such behavior than to make sure we are sharp and intellectually current, to prepare well for class and be thoughtful about testing. Clearly, however, we should not spend great amounts of resources with the sole goal of making it easy for students.

## CONCLUSION

The students in our classrooms today grew up in a networked world that has given them continuous stimulation. Although I have recommended strategies in this paper for teaching aggregate thinking through a diversity of stimuli, partly in response to shorter student attention spans that result from their always-on environment, I also believe it is important to manage expectations. The instructor who has a game or stunt in every class for the first two weeks will, intentionally or not, create an expectation that this pace will continue. The instructor who shows respect for students by preparing well, but also makes no apologies for systematically covering difficult analytical models, will in turn earn students' respect. All of us who teach principles of macroeconomics can ourselves become better macroeconomists and serve our students better in the process.

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