Demonstrations in Large-Enrollment Principles Courses

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Martha L. Olney (U.C. Berkeley)
http://www.econ.berkeley.edu/~olney
Olney@berkeley.edu
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Why should our colleagues in the sciences have all the fun? They are blowing up things, making liquids change color, cutting open things that make me squeamish. Students remember the demonstrations long after they forget much of the “material” from the course.

In my Principles of Economics course at U.C. Berkeley, I have introduced several demonstrations into the lecture time. Students enjoy the demonstrations and – more importantly – remember the point. Indeed, as they studied for the Spring 2009 final, one student wrote to her classmates in the chat room “thanks julie, i remember it [credit default swaps] now from the demonstration olney did in class.”

My poster for the ASSA meetings describes several of the demonstrations I’ve done. In this accompanying handout, I describe the class I teach and provide detail about the in-class demonstrations.

What are Demonstrations?

By “demonstrations,” I mean in-class activities that “act out” principles or concepts. Most demonstrations bring a few students to the front of the room to participate. Some demonstrations keep all students in their seats but still directly involve a few in the experience.

Demonstrations are separate from iClicker or other CRS activities. There are many iClicker activities that can also be used to illustrate economic concepts, but that is not the point of this presentation.

It is important when doing in-class demonstrations to be prepared. What is the goal of the demonstration? What props do you need? What questions will you pose? What if a student’s reply is seemingly unrelated to your intent? As much as possible, leave nothing to chance. The message of a demonstration is lost if it is embedded in mumbling and bumbling.

The Advantages to Demonstrations

- Demonstration break up the 50-minute lecture period. Mixing up the ways in which you are presenting the material helps keep students engaged.
- Demonstrations appeal to a different part of the brain than lectures do. For some students, retention is greater with demonstrations than with lecture. Kinesthetic or experiential learners in particular benefit from the use of demonstrations.
- Demonstrations may improve learning. Research on this point is primarily in the physics field, and is mixed. It is clear that active student participation enhances learning. Passively observing the professor doing a demonstration is no different than passively observing any other aspect of class. But active participation can come in a number of ways: being part of the demonstration, offering suggestions to a classmate, anticipating what will happen in the demonstration.
- Demonstrations bring students to the front of the room. They have fun and receive applause. Their classmates enjoy seeing someone other than the professor up on the stage.
- Demonstrations are fun for the prof, too!

About My Class

My Principles of Economics class at U.C. Berkeley covers both micro and macro in one term. There are 700 students and 12 graduate student teaching assistants. Students meet with me in one group of 700 students in 29 fifty-minute lecture sessions over 15 weeks. They meet with their graduate student instructor in groups of 30 students in about 26 fifty-minute discussion sessions.

The students are expected to complete 5 problem sets, do group problems and 2 presentations in section, write 2 exam papers, do 2 exams, write 2 presentations in section over 2 midterms and 2 exams. They are given 2 exams over 2 midterms and 2 exams.

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I do about 4 or 5 demonstrations during the term. The novelty and excitement would be lost if I tried to create too many demonstrations.

The Demonstrations

I describe four different demonstrations below.
### Credit Default Swaps

**Goal:** To explain what a credit default swap is.

**Number of student volunteers:** 5+ volunteers

**Props:**
- Several prepared slips of paper.
- A set of identifiers. These are 8.5x11 signs that say who/what each volunteer is. The signs can be held by the students, held by a teaching assistant standing next to or behind the student, or (for the crafty among us) attached to pieces of string or yarn and hung around the students' necks. The signs should say (in very large font):
  - The Bank
  - AIG (an insurance company)
  - Diana's Diner
  - Restaurant equipment seller
  - Just some guy (make several of these)
- Money. I use money from a board game. You can also just cut up green sheets of paper into appropriate size pieces.
- Several identical insurance certificates (CDS). I make small slips of paper that say on them: "If Diana's Diner defaults, we (the insurance company) will pay you $10,000."

The activity: One student is "the bank." Another is "AIG." Another is "a borrower" such as "Diana's Diner." Another is "restaurant equipment seller." Another is "just some guy." It helps to have several different people who are each "just some guy."

Diana's Diner borrows money from the bank (bank gives green "dollars" to borrower), and uses the money to buy equipment (borrower gives same green dollars to equipment seller). Bank buys CDS from AIG to insure itself against risk that Diana's will default (bank pays premium to AIG, AIG gives bank an insurance certificate). "Just some guy" also buys CDS from AIG, which will also pay out if Diana's Diner defaults.

(Alliteration makes the demo more fun.) Then the recession hits. Fewer people eat out. You ask Diana: can you make your loan payments? Diana's Diner will respond: "Sorry, no money."

Have Diana tell the banker, "Sorry, no money." Banker turns to AIG and says, "Diana's Diner defaulted. AIG, go on Barker. Barker is happy.

You can have "Just some guy" offer bail on the "diner." Then the recession hits. Fewer people eat out. You ask Diana: can you make your loan payments? Diana's Diner will respond: "Sorry, no money."

### Distribution of Income

**Goal:** To illustrate the distribution of income (or any other distribution)

**Number of student volunteers:** 5-50 volunteers (must be multiple of 5), depending upon the size of the stage and the class. I did this with 25 volunteers, which worked well.

**Props:** 100 slips of green paper, dollar sized.

The activity: Call up the first group of volunteers and have them stand at the far left of the stage. This is the lowest quintile of income earners. Call up the next group of volunteers, and have them stand together, but somewhat apart from the first group, to the right of the first group. Call up the 3rd, 4th, and 5th groups. Once everyone is on stage, you'll have 5 equal sized groups, each group standing a bit apart from the next group.

"If these 100 slips of paper were the total income in the economy, how much income would the people in the first group have?" Ultimately the students will answer "20." Give 20 pieces of paper to the first group. Then give 20 to each of the next four groups as well.

Now display the actual distribution of income on the screen.

Go to the first group (lowest quintile) and take away slips of paper so they are left with their share of total income. "You only receive 3% of total income, so give me back 17 of those slips of paper."

Repeat this for all the groups, giving them less and less money as you move up the income distribution. By the time you get to the 4th quintile, you'll be giving them extra "money."

"Just some guy" will get an outsized share of the income and may be very happy.

"Time to show how CDS work, when will AIG pay me?"

Distribution of Income

The activity: The students are asked to imagine a world where income is distributed evenly. How much income would each group receive in this scenario?

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Spending Multiplier

Goal: Illustrate both the closed and open economy spending multipliers

Volunteers: 3-5 students

Props: Money (I use money from a board game; you can also use green slips of paper)

Staging: Have some part of your room that you can define as being "outside of this economy." For instance, in my lecture hall, there is a projection booth on the 2nd floor with windows that open to the lecture hall. I ran up the stairs and used the projection booth as "another country" when I got to the open-economy aspect of this demonstration.

Pitfalls: Student responses are unscripted. Be ready for answers that aren't what you expect!

The Activity: Start with some initial burst of spending. The government pays 1,000 workers to build a bridge. Or, 1,000 businesses decide to purchase new equipment. The key is that you want to be clear that the initial burst of spending is going to a lot of people, not to just one person.

"Who wants to represent the 1,000 workers building a bridge?" Some student will volunteer. "Congratulations, each worker receives an extra $1,000 a week in income for bridge building!" Run over to that student and give them $1,000. "What will you do with that $1,000? Will you save some? Use any to pay off debt? Spend some?" (Pitfall: the first time I did this, I told the student he was representing all 1,000 workers and receiving $1,000,000 per week. He said he'd "buy Disneyland" with the money. Whoops!)

Here is where you have to be able to "dance with the [ever-changing] music." The student might save it all, might use it all to pay off debt, might spend none or some or all. Whatever their response, use it to illustrate what happens next. "I'll save some, pay off some debt, and spend some." How much will you spend? $400. Ask the student to give you the $400. "What will you buy with $400?" The student might answer something like "a washing machine." Turn to the class and ask, "Who here sells washing machines?" Go to that student and give them $400. "This is $400 in income for you!" What will you do with it: save, pay off debt, or spend some? Hand me the money.

The first time you do the exercise, the initial injection of spending is probably going to be more than the initial burst of spending. If your first student saved all of the income, you can point out that if the MPC = 0, there is no spending multiplier.

Now you can repeat the exercise, but this time allow for imports. When a student says, "I'll buy clothes," or some other item that is typically imported, take the spending money from the student and run to the place you've designated as being "outside of this economy" or "the rest of the world." Point out that the spending multiplier process stops in the home economy but continues in the other economy.

Utility Maximization

Goal: To illustrate that MU/P is equal across all goods when utility is maximized

Volunteers: 1 student (perhaps a 2nd to help the 1st student decide the "right" action)

Props: Apples, books, and coffee cups (or other items that begin with "A," "B", and "C")

The Activity: Set out the items on a table at the front of the room. Display the MU table for all to see. Choose one student volunteer. Give the student $20 to spend. The student might say he/she will buy books and/or a cup of coffee. The "right" answer is to buy a cup of coffee because the price per unit of utility is highest. Analyze the marginal utility and price ratios of all goods to illustrate the process of the multiplier.
30:14.

Consider an alternative learning environment. The physics teacher (September 1997)
recognizes the need to change and that change necessitates learning.

30:23.


References

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Executive a concept and for you to have a little bit of fun in your class.

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