

Teaching an Economics Capstone Course Based on Current Issues in Monetary Policy

Economics faculties often struggle with the design of a Capstone course for Economics majors. The goals of such a course are diverse but usually include the need to both assess and improve students' writing and oral presentation skills, to introduce students to research methods, and to ensure that all students have been exposed to a certain set of topics that may not have been covered in other required courses. In this paper, I describe one way to accomplish these goals in a format that provides much value-added to students and holds their interest. The main idea is to structure the course in terms of a debate about monetary policy issues, and I will describe how I have organized the course for several years and how successful it has been at accomplishing its goals.

Introduction

Many Capstone courses in Economics are organized around a research theme. My institution also followed such a theme for many years, but we found that detailed instruction on how to engage in research was not of much value for many of our students. So, we changed our structure so that students for whom doing a major research project would be valuable were directed to our honors program, and the rest would take a redesigned Capstone course.

We considered many options for such a course, such as a topics course, a course based on reading classic Economics articles, and a course based on reading symposia from the *Journal of Economic Perspectives*. Ultimately, we settled on a course based on the analysis of current issues in monetary policy.

The inspiration for this concept came from our participation in the College Fed Challenge, which is an intercollegiate competition, organized by a number of Federal Reserve Banks around the country. In the competition, teams of students from different universities present their views about how monetary policy should be conducted. The contest is judged by practicing macroeconomists, usually Federal Reserve economists. Engaging in the competition requires students to gain in-depth knowledge about different sectors of the economy and current issues in monetary policy.

Our implementation of the Fed Challenge idea in a Capstone course is designed to use the structure and main outcomes of the Fed Challenge, without having students engage in the intercollegiate competition, but rather an internal competition. It provides students an introduction to research, without having to devote the whole course to a semester-long writing project. And the course can handle our needs for assessment of students and assurance of learning in easy ways.

Our objectives for our students to accomplish in the Capstone course are to gain additional knowledge about economics, especially macroeconomics and monetary policy, to learn how research is done by engaging in a small-scale project, to improve their writing ability and presentation skills, to learn about ethical issues in Economics, and to broaden their base of knowledge about foreign economies and international interdependence.

The course allows our Economics department to satisfy a number of goals, as well. In the course, we are able to assess and improve students' knowledge, writing skills, and presentation skills. We increase their knowledge in three areas: macroeconomics and monetary policy, economics and ethics, and international issues. We also show them how to do research with a

small project, which can lead to greater interest among students in research than if they did a larger project. Because we use the course to assess our students' achievements and knowledge after four years, it gives us a useful tool for evaluating our program, which is required by accrediting agencies.

Research on economics capstone courses was propelled by Siegfried, et al. (1991), who argued that such a capstone would greatly enhance the effectiveness of the Economics major. Hansen (1986) described a set of proficiencies for economic majors and later refined it (Hansen 2001) to include six main capabilities: (1) access existing knowledge; (2) display command of existing knowledge; (3) interpret existing knowledge; (4) interpret and manipulate economic data; (5) apply existing knowledge; and (6) create new knowledge.

Ensuring that every student who earns an economics major has these proficiencies requires an entire curriculum, not just one course. Presumably many of Hansen's proficiencies are accomplished in a number of economics courses. But the Capstone course can be used to provide students the opportunity to work on the last two proficiencies (applying existing knowledge and creating new knowledge), as Salemi and Siegfried (1999) recommend, and allow Economics departments to assess their students for all six proficiencies.

In addition to these proficiencies, many Economics departments have additional goals for their students. For example, in some universities such as ours, students can earn their degrees through either the School of Arts and Sciences or the School of Business. So, the department must meet the learning objectives of each school. Recently, our business school adopted learning goals requiring our graduates to: (1) be able to analyze and think critically to solve complex economic problems; (2) be effective communicators; (3) be able to understand global economic

and diversity issues; and (4) be ethical leaders and decision makers. Associated with each of these goals were a set of objectives for the students. So, not only do we have goals for accomplishments in Economics that we expect of our graduates, we also need to fulfill the general goals set forth by the business school.

Literature on Capstone Course Concepts

Following Siegfried et al., the economics literature contains some discussion of how to conduct a capstone course for undergraduate economics majors. Donihue (1995) shows how to use forecasting as the centerpiece of a capstone course, in which students form a team working with a large macroeconomic model of the economy, producing an annual newsletter about the economy and the forecasts that the students develop. Edwards (2008) describes a capstone course in which students use cluster theory to analyze the locations of business firms in a region. Students learn the basic theory, gather data, and present oral and written reports on the topic.

McGoldrick (2007) discusses a capstone course that requires a full research paper as its core. She thoroughly examines the topic, describing research by undergraduates in economics, factors for faculty to consider in pursuing such a capstone experience, the goals that such a capstone project can accomplish, how faculty can support student's research attempts, and how such projects can be evaluated. Seeborg (2008) also describes a research-oriented capstone, which is complemented by work on a student-run economics journal and encouraging student participation at undergraduate research conferences.

Carlson, Cohn, and Ramsey (2002) discuss how to implement Hansen's proficiencies throughout the curriculum, but include a discussion of capstone courses based on last two

Hansen proficiencies: using existing knowledge to explore issues and creating new knowledge. They suggest that a capstone experience (research project) could be placed within any existing 300-level course. In this model, the faculty members teach the basic course as normal, but students who are taking the course as their capstone then work on a research project related to the course material.

A very different model is described by Elliott, Meisel, and Richards (1998). Their model has senior economics majors engage in research on topics related to the research of distinguished economists, such as Nobel laureates. Students are asked to read, critique, and explore topics related to those of the economist whose work they are studying. In this way, the students engage in economic analysis and reasoning in an applied context.

Colander and Holmes (2006) are skeptical about the value of capstone courses that focus on research because most students do not have enough preparation to do research well, nor are they likely to pursue research careers. They also see the three basic areas in economics, Microeconomics, Macroeconomics, and Statistical Analysis, as not being amenable to a capstone course because they cannot easily be tied together.

Based on our department's experience with a capstone course in which students spent an entire semester writing a research paper, which we had done for 7 years, we decided to pursue a different model. We decided that most of our majors would not be engaging in research, as many had obtained jobs in business or financial firms. Our faculty members were reluctant to spend numerous hours working with students on research projects when those students did not have any interest in doing research. And we already had in place an honors program which was geared to

students who might become researchers. So, we decided to try an alternative capstone course, based on monetary policy and the Fed Challenge concept, for the remaining students.

Major Component 1: Macroeconomics and Monetary Policy

With most students taking only one macroeconomics course beyond their principles course, the Capstone course provides students with more practical applications of macroeconomics than they have received in other courses. But because monetary policy depends on many microeconomic ideas (for example, banking structure, interest rates and their influences, and labor market issues), the course is not strictly a macroeconomics course. It is helpful, however, to organize the course around a textbook in Money and Banking, such as Croushore (2014) because many students like the comfort of a background text.

The topics that we cover in this part of the course depend on current monetary policy issues. Here are some of the topics that we have covered in the past four years, along with the reason for covering such a topic:

1. The term structure of interest rates is discussed, which is necessary because the Fed engaged in an Operation Twist policy (formally, the Maturity Extension Program) in which it sold short-term bonds and bought long-term bonds to attempt to reduce long-term interest rates.
2. The time-inconsistency problem is discussed so that students can evaluate the issues of rules versus discretion and whether the Fed was engaging in policies similar to those in the 1970s that might increase inflation. This discussion is also relevant to many microeconomic topics that students were interested in studying, especially incentives by financial institutions.

3. The Taylor rule, often used as a guideline by central banks in setting a short-term nominal interest rate, is analyzed so that students can see the main factors that influence the setting of monetary policy. Students learn about the disagreement between John Taylor, who invented the rule and who believed that Fed policy in the early 2010s was too easy, and then-Fed-Chairman Ben Bernanke, who argued that Fed policy was, in fact, in line with the Taylor rule.

4. The payment of interest on reserves, which was begun by the Fed in 2008, shows how a regulatory change can completely alter the manner in which monetary policy is transmitted to the economy. Prior to 2008, banks minimized the amount of excess reserves they held; since 2008, banks have held large volumes of excess reserves. The long-run impact of such reserves has yet to be determined.

5. The Lucas critique of monetary policy evaluation is introduced so that students can gain a deeper understanding of the importance of models in economic analysis. Students tend to accept at face value the idea that the government or the Fed can influence the economy. The Lucas critique suggests some reasons for students to be skeptical about economic analysis of policy changes.

6. The zero lower bound and the liquidity trap are analyzed so that students can learn one view about the reasons why monetary policy may have little impact on the economy. These topics are demonstrated in the standard IS-LM model context, as well as through reading Federal Reserve publications on the topic.

7. Banking regulation, including the Dodd-Frank Act, are discussed so students can understand the aftermath of the financial crisis and what it means for future financial regulation. Particular

attention is given to the role of the Financial Stability Oversight Committee and how it tries to reduce systemic risk.

8. The Fed's planned exit strategy from its quantitative easing program is analyzed. Though the idea of quantitative easing has been discussed often, the unknown aspect of this policy is how a central bank can reverse course as the economy returns to more normal circumstances. Based on research by Fed economists, we examine the path by which the Fed plans to reverse its recent quantitative easing program, which includes raising interest rates, using reverse repurchase agreements and a deposit facility to keep excess reserves from leading to inflation, and selling assets. We examine the implications of the Fed's expected capital losses of hundreds of billions of dollars.

In addition to these topics, students are assigned to read a number of articles on both microeconomic and macroeconomic topics related to monetary policy that are written by Fed economists. In each case, students write a one-paragraph summary of the article and answer three questions about each article. This gives students practice in reading relevant articles about current issues in economics and putting them in context.

Of course, through the semester, the Fed will generally have several meetings of the Federal Open Market Committee (FOMC), which determines monetary policy. These are generally the source of a full class discussion, especially when the FOMC releases new projections for the economy, or when the Fed chair delivers the semi-annual Humphrey-Hawkins testimony before Congress.

Highlighting the course in recent years have been appearances in class or on campus by FOMC members, including Ben Bernanke (Fed chairman), Betsy Duke (Fed governor), Charles

Evans (president of the Chicago Fed), and Jeff Lacker (president of the Richmond Fed). Having students hear directly from these policymakers, or observing them debating each other, brings policy issues to life in ways that reading cannot. We are fortunate to be located in a city that has a Federal Reserve Bank, which is the main reason that this has been possible. But many FOMC members are quite willing to make appearances at universities and enjoy talking with students and encouraging their study of economics.

Major Component 2: Sector Analysis

The second major component of the course is to have students work on their own to study a sector of the economy. Each student analyzes some major part of the macroeconomy, looking at variables such as those on this list:

1. Household sector—consumption spending, consumer confidence, housing market
2. Business sector—durable goods orders, Business Outlook Survey, Purchasing Managers Index
3. International sector—exports, imports, exchange rates, international financial issues
4. Labor market—unemployment rate, payroll employment, labor force participation rates, discouraged workers, job openings
5. Inflation—alternative measures, energy prices, TIPS bond interest rates, inflation expectations
6. Government—spending, debt, deficit, tax policy
7. Financial sector—stock market, interest rates, derivatives prices

Lectures help students learn how to analyze the data in their sectors. I give lectures on topics such as: (1) How to analyze, interpret, and graph current data, which gives the students valuable skills working with Excel to create graphs and gives them a lot of practice doing so; (2) How to understand alternative inflation indexes (comparing the CPI to the PCE price index to the GDP deflator); (3) Implications of mis-measurement of economic data, which makes students realize that government data agencies make estimates of data with limited resources; (4) The idea of factor models, which are the basis of indexes like the Chicago Fed National Activity Index (CFNAI). I also talk about my own research, which is about data revisions and their implications for monetary policy, economic research, and forecasting.

To bring everything together, students must decide upon five key variables that represent the activity in their sector. They must plot the recent history of those variables and determine what the main driving forces are behind the movement of those variables. They must do three short (five-minute) presentations during the semester, each one about a different variable in their sector, how the data are gathered, how to interpret the data, and what the data tell us about the current state of the economy. They are given a number of small assignments in which they analyze the data. About three-fourths of the way through the semester, each student writes a 5-to-10 page paper describing the current state of their sector and what is causing the variables to move the way it has in the past few years. For the presentations, students are graded on their presentation ability and their content; for the paper, students are graded on their writing ability and on their economic analysis.

Major Component 3: Fed Challenge Competition

One of the elements of the course that the students enjoy the most is the Fed Challenge competition. Students are split into teams near the end of the semester. Their goal is to use all the knowledge about macroeconomics and monetary policy that they have gained over the semester to make a case for a particular path of monetary policy in the future. Many teams use the sector analysis that team members have done to describe the state of the economy and the need for monetary policy action of some type. In splitting up the students into teams, I divide students by ability, so that every team has at least one leader on it. Some of the students have participated in the actual College Fed Challenge, so they have spent an entire year preparing for that competition and thus have a natural advantage as team leaders.

The goals of the competition are for students to exhibit teamwork, to gain experience doing a presentation as a team, to reflect on monetary policy, and to form an independent decision on what they think is the appropriate future path of monetary policy. I find it interesting that the students really want to win, but they do not realize until later that although the activity is set up as a competition, the goals are achieved by the process, not the outcome.

Major Component 4: Research Paper

The last major component of the capstone course is for students to write a research paper related to their sector. Unlike our previous capstone course, this paper is a much smaller piece of the overall course. Still, it does require some effort, but results in only a 5-to-10-page paper as its final outcome.

To keep the research project manageable within a short time frame, I have students follow these steps. First, they are to find three articles written by Federal Reserve economists that are relevant to their assigned sector of the economy. I encourage them to use the San Francisco Fed's web search engine, Fed In Print (www.fedinprint.org), which catalogs articles written by Fed economists and to focus on articles written for the general public, rather than technical working papers. The advantage of focusing on Fed articles is that doing so helps limit the volume of possible research. The Fed articles are often descriptions of research but avoid the use of technical jargon that could only be understood by PhDs. Students must find three articles that interest them, write up a summary of each article and the main idea behind it, and develop some idea for how to do additional research based on the article, using regression analysis. The additional research is usually a simple extension of the idea in the paper, such as modifying the sample period, or applying the analysis to another country, or adding some additional explanatory variable to a regression and testing its relevance. (Note: A prerequisite course for the capstone course is a business statistics course and an econometrics course that introduces students to regression analysis.) Many Fed articles provide hints that students can follow, especially when the article makes a suggestion "for future research."

Based on the three articles that students have analyzed, I go through them and pick one of them for the student to pursue. Often I suggest that they scale back their project, because they often want to pursue ideas that would take far too much time to do, or that would require the use of a large data set that would be unmanageable in one semester. Once the project's main idea is determined, I immediately require them to gather the relevant data. This is where projects sometimes fall apart, so it is important to have the students gather the data as soon as possible. Some want to pursue projects based on microeconomic data sets, but once they see the

complexity of the data-gathering effort, they realize that the project is too large, and we often figure out a way to use macroeconomic data instead, or to further reduce the scope of the project. For example, one ambitious student wanted to use banks' call report data, which she had learned how to work with during a summer internship; but she found that her data set was too large to manipulate effectively, so we limited her work to the largest ten banks in the country instead of trying to study every national bank in the country.

The advantages of doing a research project like this that is limited in scope is that it is large enough to require significant effort in doing empirical research and give the students a flavor of how such research is done, but is not such a large project that it is overwhelming to do in a semester. The danger for the instructor is that individual projects can require a lot of time in helping students, which is why it is vital to have the paper be based on existing research with a simple extension. I no longer allow students to do a theoretical project because those seldom work well, even with students who are joint math and economics majors, mainly because the math knowledge of students is not sufficient for them to do theoretical research.

The research project has two main outputs: a 15-minute presentation to the class about the research, and a final paper due during exam week (in lieu of a final exam). I supply rubrics on how each of these parts is to be graded, based on the business school's assessment mechanism. The presentation piece is very important and forces students to work hard on their project, for fear of being embarrassed in front of their peers.

Skills Gained and Additional Topic Coverage

In the capstone course, we assess students' writing and presentation skills, we sometimes provide an additional team activity to assess their teamwork skills, and we cover topics on ethics and international issues to round out their education.

Writing skills are fundamental to students' success in life, so our capstone course requires students to write a lot. First, there are two significant (5-to10-page) papers, the sector report and the research report. Then, there are numerous short writing assignments. Some of these are the responses to readings about monetary policy described earlier, in which students write a one-paragraph summary of an article and answer three questions in one paragraph each. In addition, there are two-page prompts about ethics in economics and international issues, described later in this section. The time-consuming part of teaching the course this way is providing feedback on students' writing. I especially try to provide help for weaker writers, sometimes sending them to our writing center for additional help.

Students are required to do three short presentations on data in their sector, and two major presentations: one team presentation during the Fed Challenge competition, and a 15-minute presentation on their own about their research project. The students are given a rubric in advance on how their presentations are being graded, so that they are aware of what makes a good presentation. Some students, especially those who are business school economics majors, have much experience in presenting and are very good at it. Others, often arts and sciences economics majors, have less experience in presenting, so this offers a good learning experience. After all, it is much easier to give a presentation to a friendly audience of your peers than it will be later in life when you may be presenting to a group that is judging your performance critically.

In some semesters, one of the components of the course has been for the students to participate in a video contest related to economics. For example, one semester the students split into teams of 3 to 5 students and each team prepared a video on financial literacy for teenagers in a contest sponsored by the Federal Reserve Bank of Richmond. Another semester, the Department of Education sponsored a contest for students to prepare a video showing how to use colleges' net price calculators on their websites. The goals of this component are for students to learn how to explain economic concepts to others and to work within teams.

Because our business school requires all of its students to have some exposure to ethical issues, our department determined that one of the components of our capstone course would be some discussion of that topic. The importance of this issue became clear in the recent financial crisis. To expose students to ethical issues, I have them watch clips from the movie *Inside Job*, about economists who display questionable ethics. In the movie, some prominent economists were offered large sums of money to provide misleading information about the banking system or the state of the economy. The movie also suggests that some economists' views may have been influenced by payments from financial firms. This leads to a vigorous discussion by students about whether such actions are ethical or legal violations. They also debate whether the payments by financial firms affected the statements made by economists, or whether financial firms were simply paying economists because of the views they held anyway. Students are also given a set of readings on ethical issues, including the recent change in the ethical standards of the American Economic Association.

Because many economics courses consider only closed economies and do not sufficiently discuss trade and international investment, a final part of the capstone course is designed to illustrate economic interdependence between countries. Students are asked to read articles about

the impact of one country's economy on others. In addition, they are given a reading on how differences in cultures lead to different economic outcomes and values.

Summary

Basing a capstone course on current issues in monetary policy provides an applied framework for bringing together macroeconomics, microeconomics, and statistical analysis. It is a challenging and fulfilling course for students, who often comment that it is one of the most valuable courses they have ever taken. The course helps enhance their communications tools, both oral and written. The course helps to enhance their overall understanding of the economy and how to apply economic analysis to the real world.

Basing a course on current issues in monetary policy obviously requires that the faculty member in charge of the course be aware of such policy issues. As such, it is likely to be taught by someone who is a macroeconomist or who follows monetary policy closely. Still, the research topics and sector analysis done by the students do not have to be macroeconomic in nature.

My experience in teaching the course is that it is extremely rewarding for the faculty member teaching it. You get to see the full range of skills of your students and can predict which of them are likely to be successful at future endeavors. Sadly, there are some students who are simply unable to complete the course because they lack the organizational skills to do so; such students are not ready for the real world. But it is exciting to see the level of intellectual maturity of many students at the end of their college careers.

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