THE EFFECTS OF FISCAL AND MONETARY POLICIES ON ECONOMIC OUTCOMES:
A CLASSROOM ACTIVITY USING MANKIW'S "PRESIDENTIAL GAME"

Hilde Patron and William J. Smith[1]

Abstract

We describe the use of a serious game in intermediate macroeconomics: Mankiw's Presidential Game. Students in the classroom are assigned different roles as monetary and fiscal policy makers, while the online game is used to estimate the impact of their decisions. After the game, the instructor and students discuss the problems they experienced with the implementation of the different policies. Students are given a take-home assignment to complete the activity.

Introduction

Computer simulation models have been around for decades and have been used to hone the skills of astronauts, to test design integrity, and generally to simulate complex systems that involve the interaction of multiple influences. The major benefits of computer simulations are that they provide both a platform for testing theory and a setting for simulating what may otherwise be costly decision processes, but doing so safely within a controlled environment. Furthermore, computer simulations can provide a perspective unavailable to any individual in the real world and insight into multiple points of view. Simulations that are designed for problem solving, training, or education have been referred to as "serious games."

The typical purpose of serious games is instruction, but this does not preclude their ability to entertain. Betz (1995) found that serious games illustrate entire interactive systems, are able to help the student organize and integrate complex skills, and illustrate the impacts of actions on complex systems. According to Ritterfield, Cody and Vorderer (2009), two key features of serious games are that they are immersive and educational. Casual games may immerse the player, but often provide no educational benefits. Teachers have recognized that serious games can support important knowledge and skill development, including strategic thinking and planning, the use of data and math, and the use of interpersonal skills for negotiation and group decision making (Kirriemuir and McFarlane, 2006). In addition, using games, especially immersive games, may be educationally valuable because they are built to motivate the student-player. Specifically, these games employ features such as challenge, control, interaction with other players, and putting students in competition with each other in the pursuit of a particular goal (Ritterfield, Cody and Vorderer ed., 2009).

Below, we describe the use of one serious game in the classroom (The Presidential Game) and compare it with a popular alternative (the Fed Chairman Game). Both games were h

---

[1] The authors are Associate Professors in the Department of Economics, University of West Georgia.
Hpatron@westga.edu and wjsmith@westga.edu.

designed to be used by students in a macroeconomics course to help them gain insight into the dynamic nature and the interactions that occur in the implementation of fiscal and monetary policy, especially in the presence of different historical events and economic shocks.

Macroeconomics and money and banking courses usually cover at least one short-run macroeconomic model. The IS-LM, IS-MP, or Aggregate Supply-Aggregate Demand models can be used to describe how output and inflation are determined in the short run, how different events influence the economy, and how monetary and fiscal policies can be used to influence short-run economic outcomes. The implications for economic stabilization drawn from these models are clear. For example, to stimulate the economy the government could increase spending or lower taxes, and the central bank could lower interest rates (or increase money supply). Real life economic stabilization is not as straightforward. Lags, uncertainty, and estimation errors, among other things, make economic policy-making a complex endeavor.

A great way to review the lessons from these short-run models and to introduce students to the difficulties of real life economic policy making is to have them play a short-run economic policy game. Two very interesting and fun serious games are the Fed Chairman Game, hosted by the Federal Reserve Bank of San Francisco's website,[2] and the Presidential Game, hosted by Gregory Mankiw's Macroeconomics textbook's website.[3] Both the Fed Chairman Game and the Presidential Game place the player in a variety of situations and then force the player implement one of the typical assortment of policy prescriptions, including doing nothing.

The Fed Chairman Game puts the player in the role of the Federal Reserve Chair and its Board of Governors. The focus of the game is implementing policies available to the Fed to ensure US economic stability. The Presidential Game puts the player in the role of both the Federal Reserve Board of Governors and all two branches of the US federal government, the Executive and Legislative branches. The focus of the game is on both monetary and fiscal policy to ensure US economic stability.

The Presidential Game has one significant advantage over the Fed Chairman Game. Although the Presidential Game allows for an idealistic level of coordination between these two branches of government, it also allows the player to determine both monetary and fiscal policy simultaneously. One can further increase the realism of the game by sub-dividing the class into groups and assigning each a group a set of decisions. Allowing the players control over both monetary and fiscal policy provides added insights into the interactions between these two types of macroeconomic policies.

Stimel (2009) describes how he uses the Fed Chairman Game in his principles and intermediate macroeconomics courses, and presents some follow up assignments to accompany this game. Here, we describe how to use the Presidential Game in intermediate macroeconomics classes and suggest possible classroom discussion topics and follow-up assignments.

Instructions

The Presidential Game has (a maximum of) sixteen periods. In each period, a player inputs into the computer the rate of money growth, the ratio of government spending to output, and the ratio of taxes to output. The objective of the game is to maintain a "healthy" level of economic activity. The president's performance is measured with an approval rating; if this falls under 30%, the president is removed and the game ends.

---

[2] http://www.frbsf.org/education/activities/chairman/index.html
[3] http://bcs.worthpublishers.com/mankiw8/default.asp#796152__806174__

To play the game in class the instructor needs a computer with *Shockwave Player*, an Internet connection, and 10-15 minutes of class time. We divide students into three groups: the President, Congress, and the Fed. The President and Congress choose spending and tax ratios, while the Fed chooses the money growth rate. We nominate a student to be President, and try to choose a student who is outgoing and engaging and who has done well in the class up until that point. The president chooses three students to be the central bankers, and these students choose a chairman among themselves. All other students in the class make up Congress.

After students are assigned to the different groups, we explain the rules of the game. Although the game allows for taxes and government spending to be changed every period, we restrict fiscal policy decisions in the classroom to every three periods. The President makes a recommendation to Congress and Congress votes on it. Decisions are enacted after a majority vote. All fiscal policy deliberations are made in public in front of the other students. Monetary policy decisions are made every period. The central bankers deliberate in private (quietly among themselves) and announce their decisions out loud to the class. The instructor enters the decisions into the computer as they are announced so that students can immediately see how the economy is progressing in graphs and tables.

The game may be played more than once during a class period. The second time the game is played, instructors can switch the order in which fiscal and monetary policy decisions are made, for example, or they can increase or decrease the frequency with which they are made.

Classroom Discussion

After the game is over, we discuss the activity with the students. Some interesting points to discuss include:
1. Did the economy react as predicted by the models?
2. Were there too many unexpected shocks or did the economy run smoothly?
3. Did central bankers believe that fiscal decisions hampered or aided their performance? Did they think that fiscal policy was too lax, too restrictive, or just right?
4. Did Congress believe that central bankers chose appropriate policies? Or did Congress think that central bankers were too aggressive (or not aggressive enough)?

This discussion allows us to introduce topics such as inside and outside lags of economic policy, the complex nature of economic shocks, the (lack of) coordination of monetary and fiscal policy, the advantages and disadvantages of using rules rather than discretionary policy, and the importance of choosing the right type of person to lead the central bank.

Follow-up assignment

The class activity can be followed with an assignment. We ask students to play the game at home under two different scenarios and to report their results. The assignment is posted in the university's classroom management site and students are asked to submit their answers in an electronic drop-box. The instructions to the assignment are given below.

Playing in a classroom setting versus playing the game alone provides the student with different perspectives about the problems associated with monetary and fiscal policy. In the classroom setting, students divide up playing different roles and are forced to coordinate and collaborate in the process of developing strategies to deal with macroeconomic issues Each group, the President, Congress and the Fed Chair and Board of Governors, has a different set of objectives in the game. As such, a particular group may find it difficult to translate its objectives

into actions, especially when other groups can enact policies that either offset their policies or cause their policy to miss its mark. This added touch of realism provides insight into the political as well as technical problems faced by each of these economic actors. The students may soon realize that coordinating fiscal and monetary policy for the US economy is like putting the different controls of a car, such as the brakes, the gas pedal, and the steering wheel into the hands of different individuals intent on heading to different destinations, and then attempting to drive.

Playing the game at home provides each student the opportunity to act as the supreme economic dictator. Initially, the student is required to keep fixed taxes and government spending equal to 0.15 of GNP. This restriction reduces the game's complexity and focuses the student's attention on monetary policy alone, effectively reducing the Presidential Game to the Fed Chair Game. In the second phase, that game starts again and all policy actions are open to the student's choices. This reinforces the level of difficulty facing anyone attempting to coordinate policy across a national economy and gives the student an opportunity to play all roles in the game instead of just one. When the student is playing alone, technical expertise in a variety of different policies becomes more important, rather than the problems of coordination. Furthermore, by comparing the time and negotiations involved in the classroom experience to that of the individual outside of class, a teacher can easily motivate a discussion of the complex political processes involved in economic policy changes.

Conclusion and Recommendations

There are several possible pedagogical benefits derived from using a serious game for instructional purposes. Games may increase the level of learning because they involve real-time active problem-solving skills that keep students engaged and focused on the subject matter. Furthermore, playing a role in a game increases the learning incentives for the student-player by tapping into the student's competitive nature. Since serious games have been applied in a variety of settings, teaching economic concepts, such as fiscal and monetary policy, is a natural extension of other types of simulation or role playing games.

There are a multitude of different types of exercises that may increase a student's ability to understand complex materials. The difficulty for the typical instructor is not in developing exercises that, if performed, will allow a student to develop and hone new skills, but in making the learning process more attractive to students and providing a medium in which the student is an active seeker rather than a passive observer in the educational process. Serious games may provide such an educational medium.

References
Betz, Joseph A. 1995-1996, Computer Games: Increase Learning in an Interactive Multidisciplinary Environment. *Journal of Educational Technology Systems,* Volume 24, Number 2, 195-205.

Kirriemuir, J., and McFarlane A. 2006. *Literature Review in Games and Learning*, Futurelab Series, Report 8. Bristol, UK

Mankiw, N. Gregory. 2012. *Macroeconomics,* 8th Edition. New York: Worth Publishers.

Ritterfield, U., Cody M., and Vorderer P., (edited, 2009), *Serious Games: Mechanisms and Effect*. Taylor and Francis, New York, NY.

Stimel, Derek. 2009. Using the San Francisco Federal Reserve's Online Fed Chairman Game in the Classroom. *Mountain Plains Journal of Business and Economics,* Vol 10, 16-28.

<div style="border">

Presidential Game Assignment

Go to the textbook's companion website
                http://bcs.worthpublishers.com/mankiw8/default.asp#t_796152____
and select the "Presidential Game". Alternatively, you may go directly to the game by directing your browser to
                http://bcs.worthpublishers.com/mankiw8/default.asp#796152__806174__
You are going to play the game twice. Your goal is to keep inflation close to 2% or 3% and unemployment close to 5.5%.

The first time you play the game set taxes and government spending equal to 0.15 (of GNP). These values cannot change while you play the game. Your only tool is money supply. Make a table reporting your choice of money supply and the resulting values of inflation and unemployment every period. Include a short sentence explaining your decisions. Use the IS-LM or AS/AD terminology/model to explain your choices. A sample table is provided at the end of this assignment.

The second time you play the game you are free to choose money supply, taxes and government spending. Record your choices (for all three values) and the resulting unemployment and inflation rates. Report all values neatly in a table. Include a short sentence explaining your choices. Use the IS-LM or AS/AD terminology/model to explain your decisions.

Conclude with a paragraph explaining your performance. Did you do better when fiscal policy was fixed or when you were allowed to select fiscal and monetary policy?

Sample table:

Year	G	T	M	Reasoning
2011	0.20	0.20	0.08	
2012	0.20	0.20	0.08	
2013	0.15	0.15		
2014	0.15	0.15		

</div>