Monetary Policy Game Experimental Instructions

Welcome to this experiment in the economics of group decision-making.

In today’s session, you will participate in a number of periods of a group decision-making task.

Prior to the start of the very first period, you will be randomly assigned to a group of size 5. Within this 5-player group, 4 players will be assigned the role of “private sector” players. The objective of each private sector player is to correctly forecast the inflation rate in each period. The remaining, 5th player in each group is assigned the role of the government’s “central bank”. The central bank’s objective is to set the interest rate in each period in such a way that he or she minimizes deviations of inflation from a certain benchmark (as discussed in detail below). The roles of the five players in each group will remain fixed over all periods of the experiment.

The timing of moves and the choices to be made each period

In each period, the private sector players move first. Each forms a forecast of the inflation rate for the period. Specifically, each private sector player is asked “What do you think inflation will be this period?” If you are a private sector player, you enter your forecast in the box on your computer screen and then click the OK button. Your forecast of inflation should be in percentage terms; if you think inflation will be X% then enter X, where X is a real number. Your forecast can be any real number up to two decimal places. In choosing a forecast, each private sector player’s objective is to accurately forecast the actual inflation rate for the period. Specifically, each private sector player’s payoff in points is: , where “My Inflation Forecast” is the private sector player’s own inflation forecast and the determination of the actual “Inflation” rate is explained below. After all four private sector players have submitted their forecasts for inflation, the average of these four inflation forecasts is calculated, and this is denoted as “Average Expected Inflation”.

The actual Inflation rate in each period is determined by the equation:

(1)

The first term, Average Expected Inflation is determined by the four private sector players. The “Output Gap” is the difference between actual and potential output (GDP). If actual output is above potential (if the Output Gap is positive), that raises inflationary pressure, while if actual output is below potential (if the Output Gap is negative) that reduces inflationary pressure. Notice however, that the weight on the Output Gap in determining inflation is ¼ the weight on Average Expected Inflation in determining Inflation.

After Average Expected Inflation is determined, the Central Bank player learns the value of Average Expected Inflation and must choose the Interest Rate for the period. The central bank’s choice of the Interest Rate directly affects the Output Gap via the equation:

(2)

In this equation, is a demand shock that is randomly drawn each period from a normal distribution having a mean of 0 and a variance of 0.25. This means that 0 is the most likely realization for, 68% of all realizations for will lie between -0.5 and +0.5 and 95.5% of all realizations for will lie between -1 and +1.

Notice in equation (2) that an Interest Rate greater than 2 leads to an expected negative Output Gap (since the expected value of E is 0) while an Interest Rate less than 2 leads to an expected positive Output Gap. Notice further that once the Central Bank has set the Interest Rate, then the Output Gap is determined via equation (2) and once the Output Gap is determined, then the Inflation rate is also determined via equation (1). Prior to choosing the Interest Rate for the period, the Central Bank knows the following information for the period: Average Expected Inflation and the realization of the shock E. After viewing this information, the Central Bank is asked: “What interest rate do you want to choose this period?” If you are the Central Bank player, you enter your choice for the Interest Rate in the box on your computer screen and then click the OK button. Your interest rate choice should be in percentage terms; if you want to choose an interest rate of R% then enter R, where R is a real number. You can enter any real number up to two decimal places.

The Central Bank’s payoff function in points is: . That is, the central bank’s payoff is highest when actual Inflation is exactly equal to a target value of 2.5 *and* when the Output Gap is exactly equal to a target value of 0. While the Central Bank must try to achieve these twin objectives each period, it has only a single instrument to do so, namely its choice for the Interest Rate. Notice also that the Central Bank’s loss from missing its Output Gap target of 0 is 1/10 its loss from missing its Inflation target of 2.5.

Feedback

At the end of each period, both types of players (Private Sector and Central Banks) will learn, or be reminded of: The Average Expected Inflation, the actual Inflation rate, the Output Gap, the Central Bank’s choice of the Interest Rate and the actual realization of the shock E for the period. In addition, all players will learn their payoffs for the period. If the final period has not yet been played, the game will proceed to the next period, where the timing of moves and the choices to be made will be the same. However, in each period, there will be different random draws for the shock E.

Earnings

Your earnings are the sum of your payoff points from all periods played. A Private Sector player’s maximum payoff is 10 points per period while a Central Banker’s maximum payoff is 20 points per period.

Questions

Are there any questions before we begin?