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 4 players, who comprise the “private sector” of an economy. The objective of each private sector player is to correctly forecast the inflation rate in each period. The average expected inflation of the private sector matters for the realization of other variables in the economy as discussed in detail below.

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?” As 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 second term “Inflation Last Period,” is the Inflation Rate from the last period. The final term, “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 1/2 the weight on either Average Expected Inflation or Inflation Last Period in determining the rate of Inflation.

After Average Expected Inflation is determined, the Central Bank (an automated player) learns the value of Average Expected Inflation and sets 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. That is, the most likely realization for is 0, 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). The central bank’s objective is to use variations in the Interest Rate to control Inflation. Specifically, the Central Bank seeks to achieve a target value for Inflation of 2.5 (percent).

The Central Bank chooses the Interest Rate according to the following formula:

(3)

Notice that if Inflation is greater than the target value of 2.5, the Central Bank’s Interest Rate choice will be greater than 2 (by 1.5 times the difference between Inflation and the target value) while if Inflation is less than the target value of 2.5, the Central Bank’s Interest Rate choice will be less than 2 (by 1.5 times the difference between Inflation and the target value). In the first period, we will set the value of “Inflation Last Period” in equation (1) equal to this target value of 2.5. Thereafter, in periods t=2,3,…Inflation Last Period will be the actual Inflation rate for the last period (t-1).

Prior to choosing the Interest Rate for the period, the Central Bank knows the Average Expected Inflation and the realization of the shock, . Thus, using equation (2) the Central Bank considers how its choice of the Interest Rate determines the Output Gap. With knowledge of how its Interest Rate choice determines the Output Gap, together with its knowledge of Average Expected Inflation, the Central Bank can determine the Inflation Rate via equation (1). Finally, with knowledge of how the Interest Rate affects Inflation, the Central Bank chooses the Interest Rate to set according to its policy rule (3).

Feedback

At the end of each period, you will learn the Interest Rate chosen by the Central Bank, the realization of the shock, E, and Average Expected Inflation for the period. You are also told the value of the Output Gap and Inflation for the period, and you are reminded of your own Inflation forecast. Finally, each player will learn his or her individual payoff in points for the period, which is based on the difference between their Inflation forecast and actual Inflation 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 a different random draw for the shock,.

Earnings

Your earnings are the sum of your payoff points from all periods played. Your maximum payoff is 10 points per period.

Questions

Are there any questions before we begin?