Extra Credit Assignment: Exercises

June 5, 2017

1. (a) Suppose that the central bank has an inflation target of $\pi^T = 2.5$. Compute the loss L to the central bank when the actual inflation rate is 0, 1, 2.5, and 3. *You don't have to show your work.*

   (b) When $\pi^T = 2.5$, what is the value of π that minimizes the central bank's loss function given in equation (3)? *You don't have to show your work.*

2. (a) Rewrite the aggregate supply equation (2) to express the output gap y as a function of π and π^e. *You don't have to show your work.*

(b) Use your answer to part (a) to eliminate y from the IS equation (1) and solve for the real interest rate r as a function of π, π^e, and ϵ. *You don't have to show your work.*

(c) Suppose that the public expects that the inflation rate will equal the central bank's target (i.e., $\pi^e = \pi^T$). Use the equation for the real interest rate that you derived in 2(b) to compute the appropriate real interest rate for each combination of π^T, π^e, and ϵ.

π^T	π^e	ϵ	r
2.5	2.5	0	
2.5	2.5	0.5	
2.5	2.5	1	
2.5	2.5	-0.5	
2.5	2.5	-1	

(d) Now, suppose that the public expects that the inflation rate will equal the central bank's target plus 1 percent. (i.e., $\pi^e = \pi^T + 1$). Use the equation for the real interest rate that you derived in 2(b) to compute the appropriate real interest rate for each combination of π^T, π^e, and ϵ.

π^T	π^e	ϵ	r
2.5	3.5	0	
2.5	3.5	0.5	
2.5	3.5	1	
2.5	3.5	-0.5	
2.5	3.5	-1	

(e) Compare your answers to part (d) with your answers to part (c). How does the increase in the expected inflation rate affect the appropriate value of the real interest rate?