Question 2 (2 points)

Type your answer into the box in gradescope. If this were on paper, we would give you about 2/3 page for this question.

The Taylor Rule from the textbook is $r = r_0 + r_\pi (\pi - \pi^t)$. This Taylor rule actually does a decent job of capturing how the Fed is *currently* setting interest rates.

A)   Define r_0 in words. Define π^t in words. Define r_π in words. (Your answer can't be "r_0 is r-naught." That's not a definition.)

B)   Until the pandemic, the Fed was setting interest rates not in reaction to what the inflation rate actually was, but in reaction to the Fed's predicted value of the inflation rate some time in the future. Offer and defend an equation that captures that sort of Taylor rule.

Question 3 (2 points)

For a, do your work on paper, take a photo of it, then upload. For b, type your answer into the box in gradescope. If this were on paper, we would give you a full page for this answer.

A.   Starting from these 3 relationships, derive the equation for the monetary policy reaction function: $u = u_0 + \phi(\pi - \pi^t)$. Be sure to show the full expression for ϕ.

- Taylor rule: $r = r_0 + r_\pi(\pi - \pi^t)$
- IS equation: $Y = \frac{A_0}{1-MPE} - \left(\frac{I_r + X_\varepsilon \varepsilon_r}{1-MPE}\right)r$, where MPE = $C_y(1-t) - IM_y$
- Okun's Law: $u = u^* - 0.4\left(\frac{Y-Y^*}{Y^*}\right) = u^* + 0.4\left(\frac{Y^*-Y}{Y^*}\right)$

B.   Suppose that we tweaked the standard model by allowing investment to depend on both income and interest rates: $I = I_0 + I_Y Y - I_r r$. Would this increase, decrease, or have no effect on the slope of the MPRF? Explain. In your explanation, be sure it's clear what "the slope of the MPRF" means in terms of the relationship between inflation and unemployment in the economy.

Question 4 (3 points)
For a, draw the graphs on paper, take a photo, and upload the file. For b and c, type your answers into Gradescope. If this were on paper, we would give you about a full page for a, 1/3 of a page for b, and 2/3 of a page for c.

Throughout this question, assume that expectations are <u>static</u>. Also assume the standard equations, except as noted below.

A.   Draw 3 separate graphs. Above each graph, as the title, write A, B, or C. In each graph, draw a standard upward-sloping MPRF. Label it $MPRF_1$. This MPRF will be the same in each of the 3 graphs.

Then in each graph, draw a Phillips curve (different PC for each graph). Try to make your original equilibrium point (u_1, π_1) the same in each of your three graphs. Label the original equilibria points with u_1, π_1 in each of the 3 graphs.

    Graph A: a Phillips curve with fully-flexible wages and prices
    Graph B: our usual Phillips curve, a PC with sticky wages and prices
    Graph C: a Phillips curve in which the inflation rate never changes

Now, in each graph, shift the MPRF so it shows the impact of a decrease in AD. Label this curve $MPRF_2$. (Remember: we are assuming static expectations.) Label the second equilibria (u_2, π_2) in each of the 3 graphs.

B.   In part a, you've shown the effects of a decrease in aggregate demand graphically. Here we want you to write out what the graphs show. How do the effects of the decrease in AD on unemployment and inflation vary between A, B, and C? To ease grading, organize your answer this way: u & π effects for A, then u & π effects for B, then u & π effects for C.

C.   Is the Fed's reaction to the decrease in AD the same in each case, A, B, and C? Explain.

Question 5   (2 points)

Suppose a recession has hit and the economy can be described by the following (assume the standard equations apply):

$$Fed's\ target\ inflation\ rate = 2\%$$
$$initial\ expected\ inflation\ rate = 2\%$$
$$r_\pi = 0.75$$
$$r_0 = 1\%$$
$$MPE = 0.4$$
$$A_0 = 6{,}000$$
$$I_r = 40{,}000$$
$$X_\varepsilon \varepsilon_r = 20{,}000$$
$$u^* = 3\%$$
$$OLC = 0.4$$
$$Y^* = \$10{,}000\ billion\ per\ year$$
$$supply\ shocks = 0$$
$$\beta = 0.3$$

A.   Suppose expectations are static. What are the short-run sticky-price equilibrium values of the inflation rate, the unemployment rate, the real interest rate set by the Fed, and real GDP?

B.   Suppose instead that expectations are adaptive: $\pi_{t+1}^e = \pi_t$. In the next period, what are the new equilibrium values of the inflation rate and the unemployment rate? What real interest rate does the Fed now set? What is the new equilibrium value of real output?

Question 6: The Essay (3 points total)

Consider this argument: "Dang! Have you looked at what the Fed has done to the money supply?!?! Inflation is going to soar in the U.S.!"

 Your essay should reflect your understanding of how to critique an argument and your understanding of the quantity theory of money.

You need not identify <u>all</u> assumptions in the argument, but do need to at a minimum identify the assumption that you change in step 3.

1. Replicate Argument

2. Identify assumptions

3. Change one of these assumptions

4. Use logic to determine new conclusion (If the conclusion is the same, try changing the assumption)

5. Verify results with empirical evidence or rhetoric

Remember that in economics (as in life), the conclusions you come to will depend in part on the assumptions you make. Don't invoke wildly unrealistic assumptions; the assumptions you make should be reasonable.

While it is unlikely that you will need to cite sources for your essay, if you do then you must use quote marks " " around any words you quote exactly from any source (and then provide the source for the quote). Also, if you get ideas from anyone else, or if you paraphrase someone else, you must again give them credit for their ideas. To do otherwise is plagiarism.

Specifications: 400 words maximum, one page maximum. ("Works Cited" list can be on a second page and does not count against the 400 word maximum.) Double space. 10-11-12 pt font. 1" margins on all sides. Your name, date, and the word count in the top right corner.