

- Minutes sum to 120. Time available = 150 minutes
- You can use LaTeX to format equations. See Piazza pinned post @7.
- Alternatively, you can simply use  $\epsilon$  for  $\epsilon$ . Use an underscore  $\_$  to indicate a subscript. Use a carat  $\wedge$  to indicate a superscript.
- So  $\epsilon_{0}$  for  $\epsilon_0$ ,  $r^f$  for  $r^f$ , and so on.
- Can do it all in word, then copy & paste.
- #1 sent by email to students in advance.

**Question 1 (5 points; 4 minutes)**

Be sure you read the email, sent Sunday afternoon, with logistics.

In your own *handwriting*, write the words in the pledge below. (Pen-enabled tablet or on a piece of paper; either is fine.) Sign your name below the pledge. Take a photo of the pledge and your signature, and upload it. (any of png, jpg, pdf are fine)

*Pledge: On my honor, I will not copy from sources prepared by anyone other than myself. On my honor, I will neither give nor receive any assistance from anyone other than an Econ 100B instructor in the taking of this exam. On my honor, I will refrain from discussing the exam with anyone other than an Econ 100B instructor while the exam window is open. The consequence of violating this pledge is an F (NP) in the course and referral to the Center for Student Conduct.*

**Question 2 (15 points; 13 minutes; in hard copy, 1 full page)**

In the text box below, write an essay (the equivalent of 1-page handwritten) in which you consider the following two points about models.

- When someone makes a prediction (say, of when the COVID-19 case load curve will bend, or when the economy will recover), it is important to know the assumptions of their model. Discuss why.
- In April, Dr. Fauci of the White House Coronavirus Task Force said, "Disease models are only as accurate as the data used to prepare them." That statement is true for economics models, too. Explain what it means to say "Economic models are only as accurate as the data used to prepare them."

**Question 3 (45 points total; 40 minutes total; hard copy space noted in each part)**

Throughout this question, assume that expectations are static.

a. (5 points, 4 minutes, 1" of space in hard copy)

The equation for the Phillips curve is  $\pi = \pi^e - \beta (u - u^*) + \text{ss}$ . Why is  $-\beta$  the slope of the Phillips curve? Your explanation should reference calculus.

b. (10 points, 8 minutes, in hard copy each graph would be about 2"x2")

On a piece of paper, you'll draw 3 graphs. We suggest uploading the file \*after\* you have written the answers to parts c and d of this question.

- Above each graph, as the title, write A, B, or C.
- Be sure you label your axes.
- In each graph, draw a standard upward-sloping MPRF. Label it  $MPRF_1$ . This will be the same in each of A, B, & C.
- Then in each graph, draw a Phillips curve (different PC for each graph). Try to make your original equilibrium point the same in each of your three graphs.
- Case A: a Phillips curve with fully-flexible wages and prices
- Case B: a Phillips curve with sticky but not stuck wages and prices (our usual PC)
- Case C: a Phillips curve with stuck (constant, unchanging) wages and prices
- Label your original equilibria with subscripts 1.
- Now, in each graph – A, B, C – show the effect of a decrease in AD. Label this curve  $MPRF_2$
- Label the second equilibria with subscripts 2. (Reminder: we are assuming static expectations.)

Take a photo of the graphs (one photo that includes all three graphs) and upload it. png, jpg, pdf all work as file types.

c. (15 points; 12 minutes; in hard copy, about 4" of space)

You've shown in the graphs the effects of a decrease in aggregate demand. Now comes the written part.

- (6 points) How do the effects on unemployment and inflation vary between cases A, B, and C? To ease grading, organize your answer this way:  $u$  &  $\pi$  effects for A, then  $u$  &  $\pi$  effects for B, then  $u$  &  $\pi$  effects for C.
- (9 points) Is the Fed's reaction to the decrease in AD the same in each case – A, B, and C? Explain.

d. (15 points; 12 minutes; in hard copy, about 4" of space)

Now think about the connection between Case A and the long-run flexible-price model of chapter 7. If wages and prices are fully flexible and the decrease in AD is due to a decrease in  $C_0$ , what happens to each of  $C$ ,  $I$ ,  $G$ ,  $G_X$ , and  $IM$  and why?

#### Question 4 (35 points; 30 minutes; hard copy space noted in each part)

Three possible strategies to increase living standards in the long run are  $\uparrow s$ ,  $\downarrow n$ , and  $\downarrow \delta$ .

In your answer to this question, you need to focus on one of these three strategies. \*\*Choose one strategy & that's the focus of your answers for all 4 parts of this question.\*\*

It will make your answers more concrete if you also \*\*focus on a particular country\*\*. It can be the country you live in, a country you've studied, a country you know a lot about for whatever reason. But make this concrete by talking about a particular country.

\*\*At the beginning of each part, re-state the strategy & country\*\*. We need you to restate it for each part because it's hard to see the answer to 4.1 when we're grading 4.2. Put it in the box at the top of 4.1 and copy/paste it into the boxes at the top of 4.2, 4.3, and 4.4. No commentary, just (your strategy, your country). For example: ( $\uparrow s$ , Jamaica), ( $\downarrow \delta$ , Cuba), and so on.

Note that the words "strategy" and "policy" have different meanings here. "Strategy" is one of these three:  $\uparrow s$ ,  $\downarrow n$ , or  $\downarrow \delta$ . "Policy" is a public policy designed to achieve that strategy.

a. (10 points, 8 minutes; in hard copy, about 2" of space)

(State the strategy & country you are focusing on.) Propose and defend a policy that would achieve this strategy. For instance, if you chose "increase  $s$ ," then specifically, what is a policy in your country that the government or the central bank (your choice) could implement that would lead to an increase in  $s$ .

b. (10 points, 8 minutes; in hard copy, about 2" of space)

(State the strategy & country you are focusing on.)

(6 points) Explain why the strategy you've chosen will increase  $Y/L$  in the long run.

(4 points) Draw, label, and upload a BGE graph that supplements your answer. The graph should be at least 3" x 3" in size. It can be in png, jpg, or pdf format.

c. (5 points, 4 minutes; in hard copy, about 1" of space)

(State the strategy & country you are focusing on.)

What effect will the strategy you've chosen have on the growth rate of living standards in BGE? What effect will the strategy you've chosen have on the growth rate of living standards during the transition to a new BGE? Briefly (1-2 sentences) explain.

d. (10 points, 8 minutes; in hard copy, about 2" of space)

(State the strategy & country you are focusing on.)

(8 points) In the short run, what effect will your policy have on aggregate demand and why?

(2 points) What's the effect on unemployment in the short run?

unemployment increases

unemployment decreases

unemployment is unaffected

#### **Question 5 (10 points, 8 minutes; in hard copy, about 3" of space)**

Usually a recession starts with a drop in investment spending. The recession we're now experiencing started with a drop in autonomous consumption. Why is a drop in interest rates effective in spurring a recovery during a usual recession? Why is a drop in interest rates unlikely to be effective in spurring a recovery this time?

#### **Question 6 (10 points, 8 minutes; in hard copy, about 2" of space)**

The monthly unemployment report issued on Friday May 8 provided information about employment and unemployment in April. I'll summarize the report here, but you're welcome to pull it up on your computer:

<https://www.bls.gov/news.release/empsit.nr0.htm> is the overall report, and in this question, I'll be referencing Table A-15, <https://www.bls.gov/news.release/empsit.t15.htm>

The headline number was an unemployment rate of 14.7 percent. This is called the "U-3" measure of unemployment. To be counted as unemployed in U-3 unemployment, someone must be out of work (no hours at all), and must either be on temporary furlough (your boss has told you that you'll be rehired when this is over) or have done something to look for work in the last 4 weeks.

Another measure of unemployment is "U-6" unemployment, which includes everyone in the U-3 measure plus people "marginally attached to the labor force" (out of work, want a job, but haven't looked for a job) and people who are now part-time because their weekly hours at work have been cut for economic reasons. The "U-6" unemployment rate was 22.8 percent in April.

Which measure of unemployment – U-3 or U-6 – should be used with Okun's law? Why?

**Question 7 (20 points; 17 minutes; in hard copy, a full page for the derivation and a half page for parts b & c)**

Suppose the economy can be described by the following equations (TR stands for transfer payments,  $-tr = \frac{\Delta TR}{\Delta Y}$ ; TA stands for tax payments,  $ta = \frac{\Delta TA}{\Delta Y}$ ):

$$\begin{aligned}C &= C_0 + C_y Y^D \\TR &= TR_0 - tr \cdot Y \\TA &= TA_0 + ta \cdot Y \\I &= I_0 - I_r r \\G &= G_0 \\GX &= GX_0 - X_\varepsilon \varepsilon_r r \\IM &= IM_0 + IM_y Y\end{aligned}$$

- a. (10 points; 8 minutes; in hard copy, a full page though you shouldn't need that much)  
Derive the expression for the short-run equilibrium value of income (Y) in this economy. **\*\*Put a box around your final expression.\*\*** Show all your work on a page that you will upload.
- b. (5 points; 4 minutes; in hard copy, about 1.5" of space)  
Based on your expression in part a, derive the multiplier showing how equilibrium output will change when there is a change in  $C_0$ . **\*\*Put a box around your final expression.\*\***
- c. (5 points; 4 minutes; in hard copy, about 1.5" of space)  
As part of the CARES Act, Congress made unemployment insurance benefits much more generous. Referring to your answer in Question 7.2, does making unemployment insurance benefits more generous make the multiplier larger or smaller?

Does it make the impact of the drop in autonomous consumption more damaging or less damaging to the economy?

Briefly (1-2 sentences) explain.