ECO 30100: Intermediate Macroeconomics

Hunter College, City University of New York

Final Makeup, Spring 2025

Instructor: Weichao Guo
Exam Length: 75 minutes

Version: 1
Total Score: 100

Name: _____
ID: _____
Section: _____
Exam Date: _____

Write down all your answers for the Final Exam on the Answer Sheet at the end of the exam package (write down one by one vertically for subquestions).
I will **only grade your answers from the Answer Sheet**.
Draw the Graphing questions on the relevant graph provided. Be careful not to miss any.
Round all numbers to **2 decimal places**.
If you believe that the correct answer is not included in the options, provide your answer in the appropriate place on the answer sheet.
Hand back both the exam and the answer sheet.

1. Which of the following is considered out of the labor force?

A. The unemployed.
B. Those individuals who have started searching for employment for the first time.
C. Those who worked full time, but in a family business.
D. None of these.
E. Those temporarily laid off who will soon be recalled.

2. The non-institutional civilian population is 262 miliion, of which 133 million are employed and 5 million are unemployed. Base on the information, the unemployment rate is

A. 1.90735%
B. 3.62244%
C. 52.67029%
D. 96.37604%
E. 3.75824%

3. Evaluate whether each of the following statements is True, False, or Uncertain.
{Bonus} Write down the reason why the statement is False or Uncertain (in what condition is it true).

3.1 ___ In a medium-run equilibrium, the inflation rate is stable at zero.

3.2 ___ If $(u_t - u_n)$ is equal to zero, the output is at the potential level.

3.3 ___ The unemployment rate tends to be high in recessions and low in economic expansions.

3.4 ___ In a medium-run equilibrium, the change rate of inflation is stable at zero.

3.5 ___ The original Phillips curve relation has proven to be very stable across countries and over time.

3.6 ___ The central bank can always act to keep output equal to potential output.

3.7 ___ Workers who do not belong to unions have no bargaining power.

3.8 ___ A permanent increase in government spending would require a higher real policy rate to be put in place by the central bank in order to anchor expected inflation.

3.9 ___ The natural rate of unemployment is unaffected by policy changes.

3.10 ___ If people assume that inflation will be the same as last year's inflation, the Phillips curve relation will be a relation between the change in the inflation rate and the unemployment rate.

4. The text proposes the following model of expected inflation:

$$\pi_t^e = (1-\theta)\bar{\pi} + \theta\pi_{t-1}$$

4.1 If you believe the expected inflation to be at the long-run average inflation rate this year, regardless of what inflation was last year, then you then you should choose θ to be near to:
A. 2 B. 0.5 C. 0 D. 1

4.2 If you believe that last year's inflation rate will be the only input for you to revise your estimates for this year's expected rate, then you should choose θ to be near to:
A. 0 B. 1 C. 2 D. 0.5

5. Suppose that the Phillips Curve and the expected inflation are given as:

$$\pi_t = \pi_t^e + 0.70 - 78u_t$$

$$\pi_t^e = (1-\theta)\bar{\pi} + \theta\pi_{t-1}$$

The economy is at its natural rate at Period t.

5.1 The natural rate of the unemployment at $t =$ _____%

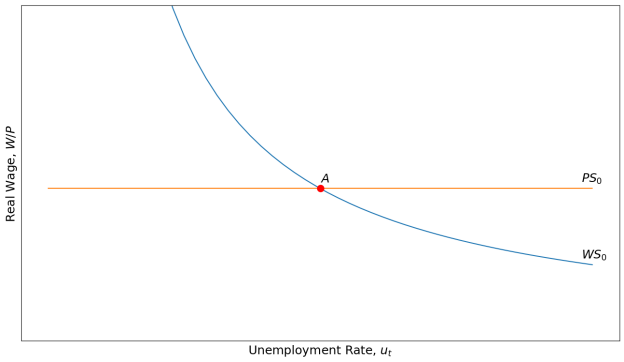
5.2 At Period $t+1$:
Suppose the government decides to bring the unemployment rate to -2.0% and people believe $\theta = 0$ and $\bar{\pi}$ to be the natural rate of the unemployment at t.
The inflation of Period $t+1 =$ _____%

5.3 At Period $t+2$:
Government maintains the unemployment rate to be the same as last period and people still believe $\theta = 0$ and $\bar{\pi}$ to be the natural rate of the unemployment at t.
The inflation of Period $t+2 =$ _____%

5.4 Since Period $t+3$:
Government maintains the unemployment rate to be the same as last period but people start to realize the actual inflation are different than $\bar{\pi}$. So people now believe $\theta = 1$.
The inflation of Period $t+3 =$ _____%
The inflation of Period $t+4 =$ _____%

6. The following Figure 1 shows the labor market of a country.

Figure 1: Labor Market



Suppose markup of prices over costs decreases to 5% and the Wage Setting equation is given as:

$$W = P(1 - 4u)$$

6.1 This event:

A. decreases the Price Setting
B. increases the Price Setting
C. increases the Wage Setting
D. decreases the Wage Setting
E. does not affect both of the Wage Setting and Price Setting

6.2 Comparing to the before the event scenario, the Equilibrium Unemployment Rate:
A. decreases B. does not change C. increases

6.3 Comparing to the before the event scenario, the Equilibrium Real Wage:
A. does not change B. decreases C. increases

6.4 The new Real Wage = _____

6.5 The new Natural Rate of Unemployment = _____%

6.6 **Draw** the change of the curve in Figure 1 to show the effect of the event. Remember the title and the labels of all the curves and the equilibria.

7. **7.1** What is the impact of a permanent increase in the price of oil on the natural rate of unemployment and the real wages?

A. The natural rate will increase and real wages will decrease.
B. The natural rate will decrease and real wages will increase.
C. Both the natural rate and real wages will increase.
D. The natural rate will increase and real wages will decrease.
E. Both the natural rate and read wages will decrease.

7.2 IS Curve: A. shifts to the left B. shifts to the right C. unchanged:

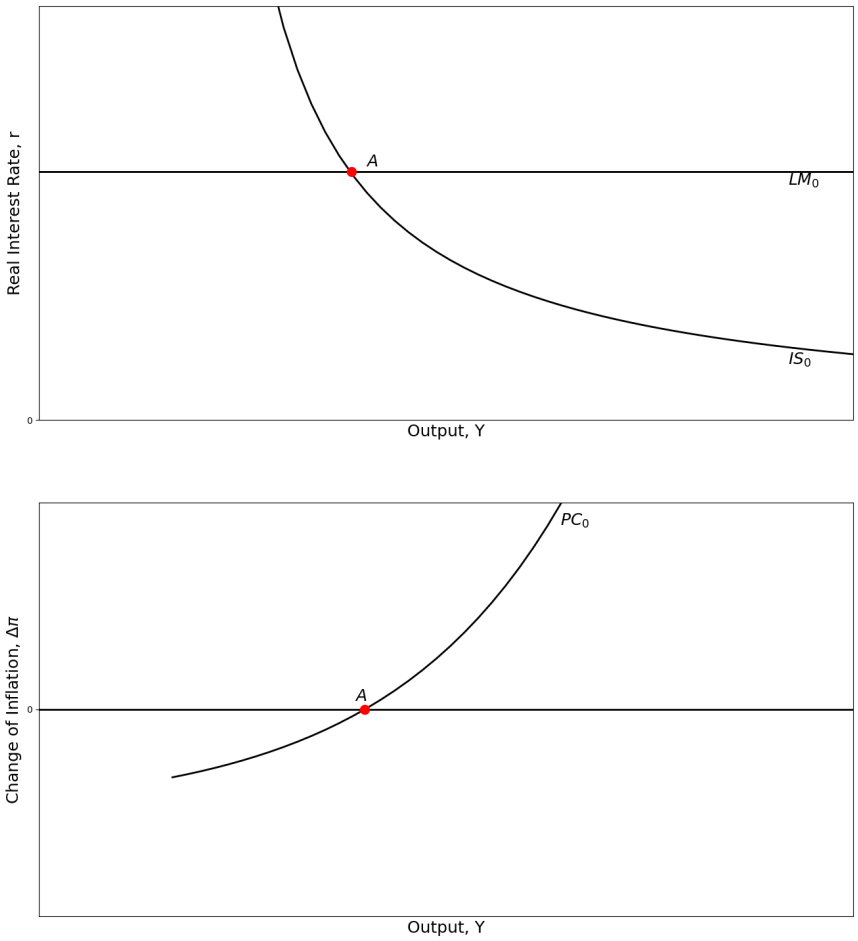
7.3 LM Curve: A. shifts up B. unchanged C. shifts down

7.4 PC Curve: A. shifts to the right B. shifts to the left C. unchanged

8. Suppose a country is at its **Medium Run Equilibrium originally**, shown as Point A in Figure 2. People of this country believes that inflation will be pretty unstable so they form the expected inflation only depends on its previous year value.
Suppose that the IS-LM-PC Model of this country is given as (with same notation in class):

$$\begin{cases} IS: Y_t = C(Y_t - T) + I(Y_t, r_t + x) + G \\ LM: r_t = \bar{i} - \pi_t^e \\ PC: \Delta\pi_t = \pi_t - \pi_t^e = \frac{\alpha}{L}(Y_t - Y_n) \end{cases}$$

Figure 2: IS-LM-PC Model



8.1 At period t: The government decides to increase tax (without any other events happening). Analyze the impact at Period t:

i. IS Curve: A. unchanged: B. shifts to the left C. shifts to the right

ii. LM Curve: A. shifts up B. unchanged C. shifts down

iii. PC Curve: A. shifts to the right B. shifts to the left C. unchanged

8.2 Suppose the new equilibrium at Period t is denoted as B. Comparing the new case B with the original case A:

i. Equilibrium Real Interest Rate: A. does not change B. increases C. decreases

ii. Equilibrium Output: A. decreases B. increases C. does not change

iii. Change of Inflation: A. does not change B. decreases C. increases

iv. Level of Inflation: A. decreases B. increases C. does not change

8.3 **Draw** the change of the curve in the graph below to show the equilibrium at Period t. Remember the title and the labels of all the curves. **Label** the new equilibrium as B and **Draw** arrows to indicate how the economy moves during this period.

8.4 At period $t+1$: The central bank reacts by changing the nominal interest rate, precisely to guide the output back to its current natural level.
Analyze the impact at Period $t+1$:

i. IS Curve: A. shifts to the right B. shifts to the left C. unchanged

ii. LM Curve: A. shifts down B. unchanged C. shifts up

iii. PC Curve: A. shifts to the left B. shifts to the right C. unchanged

8.5 Suppose the new equilibrium at Period $t+1$ is denoted as C. Comparing the new case C with case B:

i. Equilibrium Real Interest Rate: A. decreases B. does not change C. increases

ii. Equilibrium Output: A. decreases B. does not change C. increases

iii. Change of Inflation: A. increases B. does not change C. decreases

iv. Level of Inflation: A. does not change B. increases C. decreases

8.6 **Draw** the change of the curve in the graph below to show the equilibrium at Period $t+1$. Remember the title and the labels of all the curves. **Label** the new equilibrium as C and **Draw** arrows to indicate how the economy moves during this period.

8.7 {Bonus} At period $t+2$: The government and the central bank make no further change to the fiscal and monetary policy.

i. IS Curve: A. shifts to the right B. unchanged C. shifts to the left

ii. LM Curve: A. shifts up B. unchanged C. shifts down

iii. PC Curve: A. shifts to the left B. unchanged C. shifts to the right

8.8 {Bonus} Suppose the new equilibrium at Period $t+2$ is denoted as D. Comparing the case D with the original case A:

i. Equilibrium Real Interest Rate: A. increases B. does not change C. decreases

ii. Equilibrium Output: A. decreases B. increases C. does not change

iii. Change of Inflation: A. does not change B. decreases C. increases

iv. Level of Inflation: A. decreases B. does not change C. increases

8.9 [Bonus] After Period $t+2$, which of the value of θ you will choose to best model the economy? A. 0.5 B. 0 C. 2 D. 1

9. The equation of the Phillips curve from 1996 to 2018 is:

$$\pi_t = 0.051 - 0.29u_t$$

9.1 Which of the following explains why the natural rate of unemployment cannot immediately be calculated from the Phillips curve:

A. The expression only provides $(m+z)$ and α.

B. The expression only provides π^e and α.

C. All of these

D. None of these

E. The equation does not include a specific value for expected inflation.

9.2 If $\bar{\pi} = 4.0\%$, the Natural Rate of Unemployment = _____%

Midterm Retake

Write down your answers in the given space. For multiple choices questions, write down your answer to the left of the question number.
All the short answer questions must include formula, steps, and the final answer.
If you believe the correct answer is not included in the options, provide your answer clearly.

1. Consider a closed economy with Demand for Consumption, Investment, Government spending, and Taxes given by: $C = 86 + 0.5(Y - T)$, $I = 56$, $G = 52$, $T = 11$

1.1 Write down the Total Demand of the economy, Z.

1.2 Solve for the Goods Market equilibrium: equilibrium output, Y^* (round to 2 decimal places)

1.3 The multiplier in this economy = _____

1.4 Increase Tax by \$1 billion will change equilibrium output by \$_____ billion

1.5 Increase Government spending by \$1 billion will change equilibrium output by \$_____ billion

1.6 Increase Investment by \$1 billion will change equilibrium output by \$_____ billion

1.7 Equilibrium Consumption = \$_____

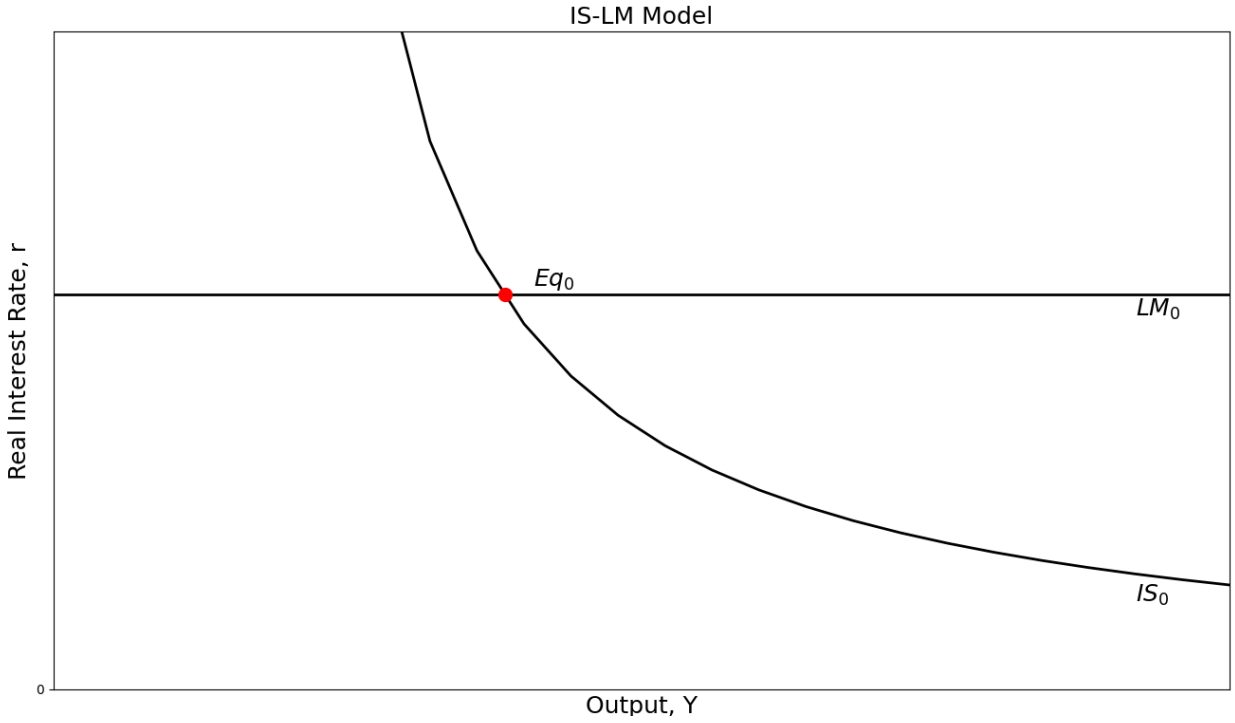
1.8 Equilibrium Disposible Income = \$_____

1.9 The Financial Markets equilibrium condition of this economy is given by: $\frac{M}{P} = 2Y - 7000i$, where i is the Nominal Interest Rate and $\frac{M}{P} = 200$ is the Real Money Supply. What will be the Equilibrium Nominal Interest Rate of the economy?

2. Suppose that the IS-LM Model of Country B is given as:

$$\begin{cases} IS: Y = C(Y - T) + I(Y, r + x) + G \\ LM: r = \bar{r} \end{cases}$$

where x is the Risk Premium of the risky assets and $\bar{r}$ is the equilibrium real interest rate that the central bank chooses (assume expected inflation is unchanged). The economy is at $Eq.0$ originally.



2.1 **Event A**: The country has completed a series of nationwide political and financial reforms, resulting in a more stable and regulated modern financial environment for the domestic market.
Analyze the impact of Event A:

i. IS Curve: A. shifts to the left B. shifts to the right C. unchanged:

ii. LM Curve: A. unchanged B. shifts up C. shifts down

2.2 As a result of Event A, the new equilibrium is denoted as A. Comparing the new $Eq.A$ with the original $Eq.0$:

i. Equilibrium Real Interest Rate: A. increases B. decreases C. does not change

ii. Equilibrium Output: A. does not change B. increases C. decreases

2.3 **Draw** the change of the curve(s) on the graph to show the equilibrium after Event A. **Label** all the curves and **mark** the new equilibrium as $Eq.A$.

2.4 **Event B**: To stabilize the economy from the impact of Event A, the central bank conducts a contractionary monetary policy. Comparing to $Eq.A$ situation, Event B will make:

i. IS Curve: A. unchanged B. shifts to the left C. shifts to the right

ii. LM Curve: A. shifts up B. unchanged C. shifts down

2.5 Suppose the new equilibrium after Event B is denoted as $Eq.B$. Comparing the new $Eq.B$ with $Eq.A$:

i. Equilibrium Real Interest Rate: A. decreases B. does not change C. increases

ii. Equilibrium Output: A. decreases B. does not change C. increases

2.6 **Draw** the change of the curve(s) on the graph to show the equilibrium after Event B. **Label** all the curves and **mark** the new equilibrium as $Eq.B$.

Final Exam Answer Sheet

Question	1.	2.	3.	4.	5.	6.	7.	8.	9.
Answer (list sub -questions one by one vertically)									