

Key

ECO 402. Fall 2011
Exam 2.

Name _____

The total of this exam is 100 points.

Part I (2 points each)

Summarize your answers in the space below.

- 1. 3 2. F 3. T 4. F 5. ↑w, ↓
- 6. iv 7. 18% 8. ↓ 9. 1/4 10. T
- 11. y/p 12. F 13. T 14. F 15. F
- 16. F 17. F 18. ↓↑ 19. r ↓ I 20. ↑↓
- 21. ↓↑

$12 - 4 = 5 + \text{○}$

- 1. If the money supply increases 12 percent, velocity decreases 4 percent, and the price level increases 5 percent, then the change in real GDP must be 3 percent.
- 2. The opportunity cost of holding money is the real interest rate and the real return on holding money is minus the inflation rate. T/F (F)
- 3. In order to stop a hyperinflation, in addition to stopping monetary growth, the government must raise taxes and reduce government spending. T/F (F)
- 4. The relative price of bread is a nominal variable. T/F (F)
- 5. In the case of unions, the conflict of interest between different groups of workers results in insiders wanting higher wages, while outsiders want more employment
- 6. Efficiency-wage theories suggest that a firm may pay workers more than the market-clearing wage for all of the following reasons except to (i) reduce labor turnover; (ii) improve the quality of the firm's labor force; (iii) increase worker efforts; (iv) reduce firm's wage bill. Answer iv.
- 7. If the steady-state rate of unemployment equals 0.10 and the fraction of employed workers who lose their job each month (the rate of job separation) is 0.02, then the fraction of unemployment workers who find jobs each month (the rate of job findings) must be 18%

$s = 0.02$

$\frac{s}{s+f} = 0.10$

$\frac{0.02}{0.10} = 0.02 + f$

$0.2 = 0.02 + f$
 $\Rightarrow f = \underline{0.18}$

- 8. According to the quantity equation, if the velocity of money and the supply of money are fixed, and the price level increases, then the quantity of goods and services purchased declines

9. A short-run aggregate supply curve shows fixed prices, and a long-run aggregate supply curve shows fixed output.
10. The long run refers to a period during which prices are flexible. (T/F)
11. Assume that the economy starts from long-run equilibrium. If the Federal Reserve increases the money supply, then output increase(s) in the short run and prices increase(s) in the long run.
12. Starting from long-run equilibrium, if a drought pushes up food prices throughout the economy, the Fed could move the economy more rapidly back to full-employment output by increasing the money supply, which would restore the original price level. (T/F)
13. If the interest rate is above the equilibrium, the supply of real money balances exceeds the demand. (T/F)
14. An explanation for the slope of the LM curve is that as income rises, money demand rises, and a lower interest rate is required. (T/F)
15. According to the theory of liquidity preference, velocity is negatively related to the interest rate. (T/F)
16. The intersection of the IS and LM curves determines the values of r, Y, and P given G, T, and M. (T/F)
17. If the LM curve is vertical and government spending increases by ΔG , in the IS-LM analysis, then equilibrium income rises by $\Delta G/(1-MPC)$. (T/F) \circ
18. In the IS-LM model when M rises but P remains constant, in short-run equilibrium, in the usual case, the interest rate ↓ and output ↑.
19. The monetary transmission mechanism works through the effects of changes in the money supply on interest rate / investment.
20. If taxes are raised, but the Fed prevents income from falling by raising the money supply, then investment ↑ but consumption ↓.
21. Within the IS-LM framework, an increase in the demand for money, at any given income level and level of interest rates, will ↓ output and ↑ interest rates.

Part II

1. (20 points) *given by the quantity equation* Assume that the long-run aggregate supply is vertical at $Y = 4,000$ while the short-run aggregate supply curve is horizontal at $P = 2.0$. The aggregate demand curve is and $M = 1,000$.

- If the economy is initially in long-run equilibrium, what are the values of P and Y ? What is the velocity of money in this case?
- Suppose that the velocity of money declines 25%. What happens to the aggregate demand curve?
- Find the new short-run equilibrium values of P and Y .
- What are P and Y in the new long-run equilibrium?
- Draw an AD-AS diagram and mark the position of the economy (i) in the initial equilibrium, (ii) the short-run equilibrium, and (iii) the new long-run equilibrium by "A", "B", and "C", respectively.

a. $MV = PY$.

$Y = 4000, P = 2.0, M = 1000 \Rightarrow V = 8.$

b. $V' = 6$. AD curve shifts to the left.

c. $P = 2.0$ (no change)

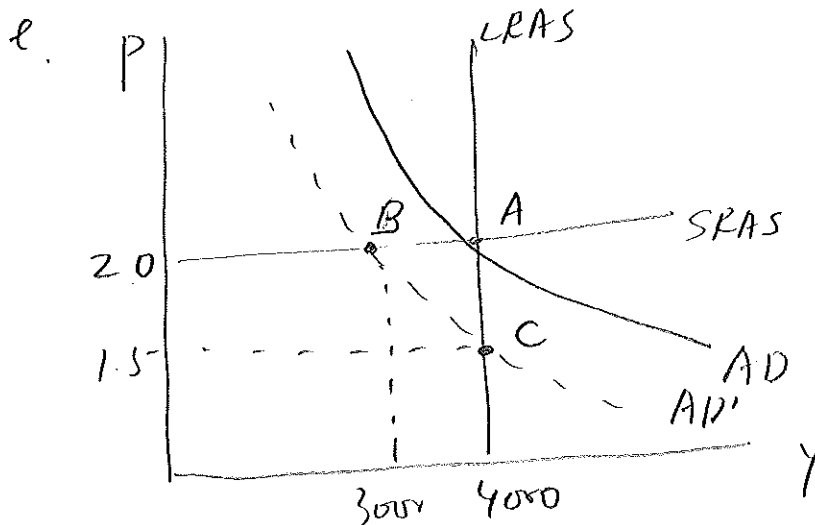
$Y = 3000$

$\leftarrow MV = PY$
 $(1000)6 = (2.0)Y$

d. In the long run

$Y = 4000$

$\Rightarrow P = 1.5$ from $MV = PY$



2. (18 points) Assume the following model of the economy, with the price level fixed at 1.0:

$$\begin{aligned} C &= 0.8(Y-T) \\ I &= 1000 - 20r \\ Y &= C + I + G \\ M^d/P &= 0.4Y - 40r \\ T &= 1000 \\ G &= 800 \\ M^s &= 400 \end{aligned}$$

- Write an equation for the IS curve, showing Y as a function of r .
- Write an equation for the LM curve, showing Y as a function of r .
- What are the short-run equilibrium values of Y and r ?
- Obtain private saving, government saving, and national saving. Check that national saving indeed I .
- Assume that G increases by 200. Obtain the new short-run equilibrium values of Y and r . What is the government-purchases multiplier in this model?

a. $Y = C + I + G$
 $Y = 0.8(Y - 1000) + 1000 - 20r + 800$

$$0.2Y = 1000 - 20r$$

$$\boxed{Y = 5000 - 100r}$$

b. $\frac{M^d}{P} = \frac{400}{1.0} = 0.4Y - 40r$

$$\Rightarrow \boxed{Y = 1000 + 100r}$$

c. $5000 - 100r = 1000 + 100r$
 $\Rightarrow 4000 = 200r \Rightarrow \boxed{r = 20}$
 $\boxed{Y = 3000}$

d. $S_p = Y - T - C = 3000 - 1000 - 0.8(3000 - 1000) = 400$

$$S_g = T - G = 1000 - 800 = 200$$

$$S = 600$$

$$I = 1000 - 20(20) = 600 \Rightarrow \underline{S = I}$$

e. new IS: $0.2Y = 1200 - 20r$

combine this with LM:

$$\Rightarrow \boxed{Y = 2500 \quad Y = 3500} \Rightarrow \frac{\Delta Y}{\Delta G} = \frac{500}{200} = \boxed{2.5}$$

$$\boxed{Y = 6000 - 100r}$$

$$Y = 1000 + 100r$$

3. (10 points) Consider the impact of an increase in thriftiness in the Keynesian cross. Suppose the consumption function is $C = \bar{C} + c(Y - T)$ where \bar{C} called autonomous consumption and c is the MPC.

- What happens to equilibrium income when the society becomes thriftier, as represented by a decline in \bar{C} ?
- What happens to equilibrium saving?

a. Equilibrium income declines by $\frac{1}{1-c} \Delta \bar{C}$.

$$S_p = Y - T - C = Y - T - \bar{C} - c(Y - T) \\ = (1-c)(Y - T) - \bar{C}$$

as $\bar{C} \downarrow$ by $\Delta \bar{C}$, $Y \downarrow$ by $\frac{1}{1-c} \Delta \bar{C}$.

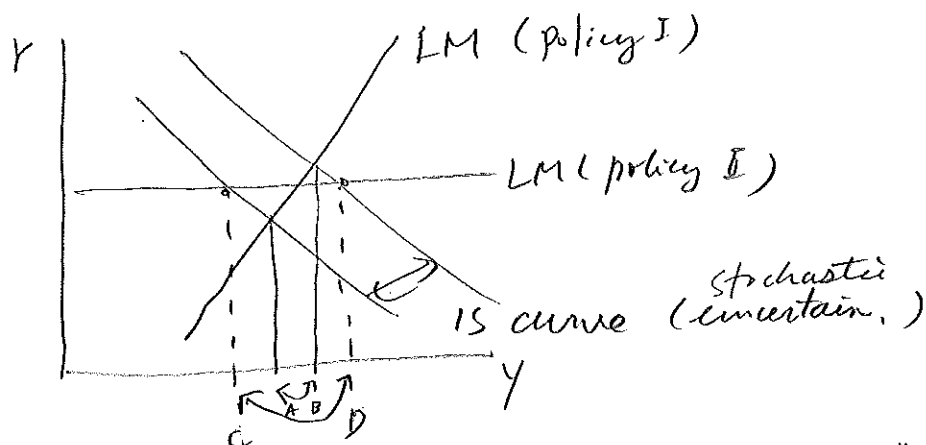
These two offset each other and S_p remains unchanged. i.e. $\Delta S_p = (1-c)(\Delta Y) - \Delta \bar{C} = 0$

4. (10 points) The Fed is considering two alternative monetary policies:

- Holding the money supply constant and letting the interest rate adjust, or
- Adjusting the money supply to hold the interest rate constant.

In the IS-LM model, which policy will better stabilize output if all shocks to the economy arise from exogenous changes in the demand for goods and services? Compare the results of the two alternative policies using a diagram.

In this case, the IS curve is unstable & shifts around. With policy I, the LM curve will have the normal shape. With policy II, the LM is horizontal at the target interest rate.



with policy I, Y will be somewhere between A and B.
 " II " Y " " C " D

\Rightarrow output will be more stable with policy I. so it is preferred.