14.02 Principles of Macroeconomics
Fall 2009

Quiz 2
Thursday, November 5th
7:30 PM – 9 PM

Please answer the following questions. Write your answers directly on the quiz. You can achieve a total of 100 points. There are 5 multiple-choice questions, followed by 2 free response questions. You should read all of the questions first.

Good luck!

NAME: _____

MIT ID NUMBER: _____

TA: _____

CLASS TIME: _____

EMAIL: _____

(Table is for corrector use only)

	1	2	3	4	5	6	7	8	Total
Multiple Choice Questions									
Long Question 1									
Long Question 2									
Total									

1 Multiple choice (30 points)

1. (6 points) The increase in use of ATMs decreases the currency/deposit ratio (cu). According to the Keynsian theory of sticky prices:

   (a) output increases and the interest rate goes down,

   (b) output increases and the interest rate goes up,

   (c) output decreases and the interest rate goes up.

2. (6 points) In the standard IS-LM model, an increase in Government spending (G) without changing taxes has

   (a) a positive effect on equilibrium consumption,

   (b) a negative effect on equilibrium consumption,

   (c) an ambigous effect on equilibrium consumption.

3. (6 points) According to the misperception theory, an expected increase in money supply

   (a) increases output and increases interest rate,

   (b) increases output and decreases interest rate,

   (c) has an effect on neither output nor interest rates.

4. (6 points) Consider a fractional reserve banking system with a legally required reserve-deposit ratio of **m**. Suppose that an individual deposits **ID** dollars in one bank. Then, the economy-wide change in total deposits

   (a) will be at most ID / m,

   (b) will be equal to ID / m,

   (c) will be equal to $m \cdot ID$.

5. (6 points) According to the Taylor rule, a positive output gap (i.e. real GDP above potential real GDP) will most likely result in

   (a) the Fed adjusting its estimate of potential real GDP,

   (b) the Fed decreasing the nominal federal funds rate,

   (c) the Fed increasing the nominal federal funds rate.

2 IS-LM with Liquidity Trap (35 points)

Consider the following IS-LM model with prices fixed at $P = 1$ (we are in the short run):

$$\begin{aligned}
\frac{M^d}{P} &= Y - r \\
C &= 1 + 0.5Y \\
I &= 1 - 0.5r \\
G &= \overline{G} \\
Y &= C + I + G \\
\frac{M^s}{P} &= \frac{\overline{M}}{P} \\
\frac{M^d}{P} &\leq \frac{M^s}{P}, \text{ with } \frac{M^d}{P} = \frac{M^s}{P} \text{ if } r > 0 \\
r &= i - \pi^e \\
\pi^e &= 0
\end{aligned}$$

1. (7 points) Explain the minimum value that the real interest rate, r, can take.

2. (7 points) Derive the IS curve.

3. (7 points) Write down the LM curve.

4. (7 points) What are the equilibrium interets rate and output level in the economy? What is the condition for the equilibrium interest rate to be positive?

5. (7 points) Suppose that the economy described above is going through a recession and the government is trying to stimulate the economy. When will monetary policy be effective in stimulating the economy? Explain why under certain conditions monetary policy fails to be effective as a policy instrument.

3 AS-AD (35 points)

[**Supply side**] Consider a labor market characterized by the following production and labor supply functions:

$$\begin{aligned} F(N) &= 20N - N^2 \\ N^s &= \frac{1}{2}\frac{w}{p} \end{aligned}$$

1. (3 points) Using the fact that the marginal product of labor $MPN = 20 - 2N$, obtain and graph the labor demand function.

2. (3 points) Graph the labor supply function and solve for equilibrium (find $\left(\frac{w}{p}\right)^*$ and N^*) in the labor market.

3. (5 points) Take prices p as given. Consider the case in which the government introduces a minimum nominal wage $\bar{w} = 50$.Explain in words the qualitative effects of this policy on equilibrium wages and employment as a function of p. (Hint: consider three cases $p \geq 5$, $\frac{5}{2} < p < 5$ and $p \leq \frac{5}{2}$).

4. (5 points) Solve for the real wage and number of workers, taking prices as given. Make sure you consider the three cases $p \geq 5$, $\frac{5}{2} < p < 5$ and $p \leq \frac{5}{2}$.

5. (4 points) Solve for the aggregate supply function and graph it.

[Demand side] Consider the demand side characterized by the following consumption, investment and real money balances demand functions. Also, government expenditures are $g = 50$.

$$\begin{aligned} c &= 25 + \frac{y}{2} \\ i &= 25 - \frac{r}{2} \\ \frac{M^d}{p} &= 100 - \frac{r}{2} + \frac{y}{2} \end{aligned}$$

6. (4 points) Obtain the IS and LM relations as a function of money supply M^s.

7. (3 points) Obtain the aggregate demand function.

[Equilibrium]

8. (4 points) For $M^s = 150$, solve for equilibrium output and prices. What is the effect on output of an expansionary monetary policy?

9. (4 points) For $M^s = 450$, solve for equilibrium output and prices. What is the effect on output of an expansionary monetary policy?

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