Final Exam - Economics 101 - Fall 2003

You will have 120 minutes to complete this exam. It is divided into 130 points. On multiple choice questions MC#1-MC#38, choose the best answer and mark it on your scantron.

Section 1: (30 points total, 3 points each, write on scantron)

MC#1: According to the neoclassical model, an increase in labor force due to immigration would ____ the real rental rate on capital and ____ the real wage.
   a) raise, raise
   b) raise, lower
   c) lower, raise
   d) lower, lower

MC#2: According to the neoclassical model, a rise in taxes would cause consumption to _____ and the interest rate to ____.
   a) rise, rise
   b) raise, fall
   c) fall, rise
   d) fall, fall

MC#3: Which of the following might lower the natural rate of unemployment in the U.S.?
   a) a rise in unionization
   b) a rise in the legal minimum wage
   c) expansionary monetary policy
   d) a cut in unemployment insurance benefits

MC#4: According to the quantity theory of money, which of the following could lower the inflation rate?
   a) increase money growth rate
   b) increase in unemployment rate
   c) increase output growth rate.
   d) increase in money velocity
   e) none of the above.

MC#5: Under the Ricardian Equivalence theory of government debt, we may not need to worry about government debt resulting from a tax cut, because if it is paid for by future tax increases it will
   a) raise national saving.
   b) raise consumption
   c) raise private saving
   d) raise the interest rate
   e) raise output

MC#6: Suppose a country has the following Phillips curve: \( \pi = \pi^e - 0.5 (u - u^n) \), where expectations are adaptive. What is the sacrifice ratio here in terms of output (assuming that we are starting at the natural rate of unemployment, and using Okun’s law)?
   a) 4
   b) 2
   c) 1
   d) 0.5
   e) 0.25

MC#7: The “sticky wage” model of aggregate supply implies all of the following in the short run except:
   a) The short-run aggregate supply curve is upward sloping.
   b) Supply may not equal demand in labor market.
   c) The real wage is counter-cyclical.
   d) A rise in price level raises the real wage.

MC#8: Which of the following could cause a fall in the level of net investment:
   a) A rise in the marginal product of capital.
   b) A rise in the depreciation rate.
   c) A fall in the real interest rate
   d) A fall in the current relative purchase price of capital.

MC#9: According to the Baumol-Tobin model of money demand, which of the following would lead to a rise in money demand:
   a) a rise in the interest rate on savings accounts.
   b) a fall in total spending.
   c) a rise in the cost of going to the bank.
   d) a rise in the number of trips to the bank.

MC#10: According to the Real Business Cycle theory:
   a) prices are sticky in the short run.
   b) monetary policy is very effective in ending recessions.
   c) a rise in productivity raises employment.
d) a rise in the interest rate lowers employment

**Problem 1: IS/LM in the Short Run**  (28 points total)

Suppose the Federal Reserve were to raise the money supply. Use IS-LM to analyze the short run implications of this policy. (Assume the following unless otherwise stated: prices are completely fixed. Investment is just the usual function of the interest rate alone; consumption is a function of disposable income alone, with a constant marginal propensity to consume.)

a) (6 points) Graphically illustrate the short-run effect of this policy in an IS-LM graph. Be sure to label the axes, the curves, and use arrows showing the direction the curves shift. Also mark the initial equilibrium as point ‘1’, and the short-run equilibrium as point ‘2’. Explain briefly the reason for any curve shift.

b) (10 points) What will happen to the levels of the following variables in the short run? (Mark on your scantron.)

| MC#11: output | a) rise | b) fall | c) no change | d) ambiguous |
| MC#12: interest rate | a) rise | b) fall | c) no change | d) ambiguous |
| MC#13: investment | a) rise | b) fall | c) no change | d) ambiguous |
| MC#14: consumption | a) rise | b) fall | c) no change | d) ambiguous |
| MC#15: total national saving | a) rise | b) fall | c) no change | d) ambiguous |

c) (6 points) Suppose that money demand is more responsive to changes in the interest rate than assumed above. How would this change your answers to part (b)? In particular, for the first three variables from part (b), state if it changes more, less, the same, or if it is impossible to tell (ambiguous). (Mark on your scantron.)

| MC#16: output | a) more | b) less | c) same | d) ambiguous |
| MC#17: interest rate | a) more | b) less | c) same | d) ambiguous |
| MC#18: investment | a) more | b) less | c) same | d) ambiguous |

d) (6 points) Suppose that investment were a positive function of income as well as a negative function of the interest rate. How would this change your answers to part (b)? In particular, for the first three variables from part (b), state if it changes more, less, the same, or ambiguous. (Mark on your scantron.)

| MC#19: output | a) more | b) less | c) same | d) ambiguous |
| MC#20: interest rate | a) more | b) less | c) same | d) ambiguous |
| MC#21: investment | a) more | b) less | c) same | d) ambiguous |

**Problem 2: Growth**  (24 points total)

Suppose a country has the following production function: \( Y = 6K^{1/2}L^{1/2} \) (Note: this is not yet in per-worker terms). Assume that the population is growing at the rate of 4% per year, the saving rate is 10%, the depreciation rate is 6%, and that there is no technological progress.

a) (12 points) Compute the following:
   - steady state capital stock per person \((K/L)\),
   - steady state growth rate in capital \((K)\)
golden rule level of capital per person.
Record your answers and show your work in your bluebook.

b) (6 points, mark on scantron) If another country is identical to the one in part (a) above, except that it has a lower population growth rate, then for this country compared to the one in part (a), the:

- **MC#22** steady state capital stock per person is: a) higher b) lower c) same d) ambiguous
- **MC#23** steady state growth rate in capital is: a) higher b) lower c) same d) ambiguous
- **MC#24** golden rule of capital per person is: a) higher b) lower c) same d) ambiguous

(c) (6 points, mark on scantron) If another country is identical to the one in part (a) above, except that it has a lower saving rate, then for this country compared to the one in part (a), the:

- **MC#25** steady state capital stock per person is: a) higher b) lower c) same d) ambiguous
- **MC#26** steady state growth rate in capital is: a) higher b) lower c) same d) ambiguous
- **MC#27** golden rule of capital per person is: a) higher b) lower c) same d) ambiguous

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**Problem 3: Short Run and Long Run** (30 points total)

Suppose we are experiencing a recession due to a shock to consumer confidence that has permanently lowered consumption for each given level of income. In other words, for the consumption function

\[ C = \bar{C} + bY \]

suppose the level of \( \bar{C} \) falls permanently. Use the IS-LM / AS-AD tools to analyze the implications in the short run and the long run.

(Assume the following. Prices are completely fixed in the short run and completely flexible in the long run. Assume there is no change in government spending. Investment is a function only of the interest rate.)

a) (8 points, write in blue book) Draw the IS-LM and AS-AD graphs to show the short run and long run equilibria following this shock. Assume that prices are completely fixed in the short run. Be sure to label the axes, curves, use arrows to show shifts in curves, and mark the equilibrium points: 1 for the initial equilibrium, 2 for the short run equilibrium, and 3 for the long-run equilibrium. Explain in a sentence or two each curve shift.

b) (6 points, write on scantron) What happens to the following variables in the short run?

- **MC#28** output: a) rise b) fall c) no change d) ambiguous
- **MC#29** interest rate: a) rise b) fall c) no change d) ambiguous
- **MC#30** investment: a) rise b) fall c) no change d) ambiguous

c) (10 points, write on scantron) Consider the value that each of the variables goes to in the long run -- is this long-run value the same as the initial level before the shock (point 1 on your graphs), will it end up higher in the long run than its initial level, will it end up lower, or is this ambiguous for the given information.

- **MC#31** output: a) initial value b) higher c) lower d) ambiguous
- **MC#32** interest rate: a) initial value b) higher c) lower d) ambiguous
Problem 4: Consumption Theory  (18 points total, 6 points each part)

Suppose Mr. Mankiw lives by the 2-period Fisher model of consumption, where he works during period 1 of his life, and he is retired and earns nothing during period 2 of his life. During his working period he earns $60,000. Suppose he decides to consume $30,000 in both periods.

a) Compute what the real interest rate must be here. (write in blue book.)

b) If the interest rate were to rise higher than this, how would these variables change, given our usual assumptions about how indifference curves work? (scantron)

<table>
<thead>
<tr>
<th>MC#36</th>
<th>consumption in period 1</th>
<th>a) rise</th>
<th>b) fall</th>
<th>c) no change</th>
<th>d) ambiguous</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC#37</td>
<td>saving in period 1</td>
<td>a) rise</td>
<td>b) fall</td>
<td>c) no change</td>
<td>d) ambiguous</td>
</tr>
<tr>
<td>MC#38</td>
<td>consumption in period 2</td>
<td>a) rise</td>
<td>b) fall</td>
<td>c) no change</td>
<td>d) ambiguous</td>
</tr>
</tbody>
</table>

c) Explain in a paragraph or two in your bluebook what the “consumption puzzle” is in macroeconomic theory, and how the intertemporal model of consumption above can explain it.

(6 points, write in blue book) In a paragraph of 3-4 sentences, discuss how your analysis of the long run here compares to the analysis of the standard Neoclassical model. Explain what role the interest rate plays here in economic allocation.