

## Final Exam - Economics 105 - Fall 2003

You will have 120 minutes to complete this exam. It is divided into 145 points.

On multiple choice questions MC#1-MC#43, choose the best answer and mark it on your scantron. Mark your student ID number on your scantron. Assume a closed economy unless otherwise stated.

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**Section 1:** (39 points total, 3 points each) Choose the best answer and mark on your scantron.

- 1) Which of the following might worsen the natural rate of unemployment in the U.S.?
  - a) a decrease in the legal minimum wage
  - b) contractionary monetary policy
  - c) a decline in unionization
  - d) a cut in unemployment insurance benefits
  - e) a cut in government-funded worker retraining programs
- 2) The consumer price index differs from the GDP deflator in that it:
  - a) tends to understate the level of inflation because of substitution bias.
  - b) has weights that don't change each period.
  - c) measures the aggregate price level rather than the aggregate level of output.
  - d) excludes imported goods.
  - e) all of the above
- 3) According to the quantity theory of money, which of the following could lower the inflation rate in the U.S.?
  - a) increase money growth rate
  - b) increase output growth rate.
  - c) increase in unemployment rate
  - d) increase in money velocity
  - e) none of the above.
- 4) In the Keynesian Cross model, if taxes are cut by \$10 million, GDP will
  - a) not change
  - b) rise by \$10 million.
  - c) rise by less than \$10 million.
  - d) rise by more than \$10 million.
  - e) rise, but it is not clear how much.
- 5) Which of the following would tend to make fiscal policy more effective in raising output:
  - a) investment is very responsive to interest rate
  - b) money demand is very responsive to income
  - c) money demand is very responsive to the interest rate
  - d) all of the above
  - e) none of the above
- 6) Which of the following is a reason to avoid active use of monetary policy to prevent recessions?
  - a) According to the Lucas Critique, discretionary monetary policy lacks credibility.
  - b) It takes a long time for monetary policy makers to decide on a policy.
  - c) It can take a long time for a policy action to have an effect on the economy.
  - d) all of the above.
- 7) Which of the following might cause a flatter short run aggregate supply curve?
  - a) A smaller share of firms preset price.
  - b) Money demand is less responsive to the level of output.
  - c) The internet makes it easier for producers to get accurate price information.
  - d) A larger share of nominal wages are preset in contracts.
- 8) Which of the following is true about the sticky nominal wage theory of aggregate supply?
  - a) It helps explain why the real wage is procyclical in actual data.
  - b) It implies the labor market clears.
  - c) It implies a vertical SRAS curve.
  - d) None of the above.
- 9) Suppose a country has the following Phillips curve:  $p = p^e - 0.25(u - u^n)$ , 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) 8
  - b) 4
  - c) 0.5

- d) 0.25  
e) 0
- 10) Which of the following would make the aggregate demand curve steeper?  
a) goods prices are stickier  
b) investment is more responsive to the interest rate  
c) money demand is more responsive to the interest rate  
d) the marginal propensity to consume is larger  
e) none of the above
- 11) In the Mundell-Fleming model of the small open economy, under flexible exchange rates, a rise in government spending will:  
a) raise the value of the domestic currency.  
b) raise the GDP  
c) raise the interest rate  
d) raise net exports  
e) all of the above
- 12) Under the theory of Ricardian Equivalence of government debt, we may not need to worry about a tax cut that raises government debt, 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 output  
e) raise the interest rate
- 13) In recent macroeconomic data, productivity growth in the U.S. has been:  
a) unusually high.  
b) low but positive  
c) zero  
d) negative
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**Problem 1: Growth** (30 points total)

Suppose a country has the following production function:  $Y = AK^{1/2}L^{1/2}$  (Note: this is not yet in per-worker terms). Assume that the population is growing at the rate of 6% per year, the saving rate is 25%, the depreciation rate is 14%, the level of technology A is 8, and that there is no technological progress.

- a) (12 points) Compute the following: steady state capital stock per person (K/L), the steady state growth rate in capital (K), and the golden rule level of capital per person. Record your answers and show your work in your bluebook.
- b) (6 points) If another country is identical to the one in part (a) above, except that it has a higher population growth rate, then for this country compared to the one in part (a), the:  
MC#14) steady state capital stock per person is: a) higher b) lower c) same d) ambiguous  
MC#15) steady state growth rate in capital is: a) higher b) lower c) same d) ambiguous  
MC#16) golden rule of capital per person is: a) higher b) lower c) same d) ambiguous
- c) (6 points) If another country is identical to the one in part (a) above, except that it has a higher saving rate, then for this country compared to the one in part (a), the:  
MC#17) steady state capital stock per person is: a) higher b) lower c) same d) ambiguous  
MC#18) steady state growth rate in capital is: a) higher b) lower c) same d) ambiguous  
MC#19) golden rule of capital per person is: a) higher b) lower c) same d) ambiguous
- d) (6 points) If another country is identical to the one in part (a) above, except that it has a higher level of technology, A, then for this country compared to the one in part (a), the:  
MC#20) steady state capital stock per person is: a) higher b) lower c) same d) ambiguous  
MC#21) steady state growth rate in capital is: a) higher b) lower c) same d) ambiguous  
MC#22) golden rule of capital per person is: a) higher b) lower c) same d) ambiguous



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**Problem 2: Neoclassical Open Economy** (26 points total)

Analyze the following small open economy (assuming complete price flexibility and perfect capital mobility).

Suppose the supply side of the goods market can be characterized as follows:

$$Y = 8K^{0.3}L^{0.7} \quad K = 100 \quad L = 100$$

Suppose the demand side can be characterized by the following:

$$\begin{aligned} C &= 50 + 0.75(Y-T) & G &= 250 & T &= 200 \\ I &= 400 - 2000r & NX &= 150 - 100\epsilon & r^* &= 0.10 \end{aligned}$$

(where  $NX$  is net exports,  $\epsilon$  is the real exchange rate, and  $r^*$  is the interest rate in the world financial market.)

- a) (12 points) Compute the equilibrium values of the following variables in this economy: private saving, total national saving, investment, real wage, net exports, real exchange rate. Record your answers and show your work in your bluebook.
- b) (14 points) Suppose there is a rise in taxes. Then what happens to the equilibrium values of the following variables? (no computations necessary.)
- |                                   |         |         |              |              |
|-----------------------------------|---------|---------|--------------|--------------|
| MC#23) private saving             | a) rise | b) fall | c) no change | d) ambiguous |
| MC#24) total national saving      | a) rise | b) fall | c) no change | d) ambiguous |
| MC#25) home interest rate ( $r$ ) | a) rise | b) fall | c) no change | d) ambiguous |
| MC#26) investment                 | a) rise | b) fall | c) no change | d) ambiguous |
| MC#27) net exports                | a) rise | b) fall | c) no change | d) ambiguous |
| MC#28) real exchange rate         | a) rise | b) fall | c) no change | d) ambiguous |

Discuss how the behavior of investment here differs from that in a closed economy, and explain in a few sentences why this is so.

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**Problem 3: IS/LM in the Short Run** (24 points total, 6 points each part)

- a) Suppose we are entering into a recession due to a shock raising money demand. Using the ISLM diagram, show in your bluebook how this could lead to a recession in the short run. 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 in 2-3 sentences why curves shift and why variables change.

(Make the usual assumptions: **Closed economy**, prices are fixed in the short run, consumption is a function of just disposable income, investment is a function of the interest rate, money demand is a function of income and the interest rate.)

- b) What would be happening to the following variables:
- |                          |         |         |              |              |
|--------------------------|---------|---------|--------------|--------------|
| MC#29) the interest rate | a) rise | b) fall | c) no change | d) ambiguous |
| MC#30) investment        | a) rise | b) fall | c) no change | d) ambiguous |
| MC#31) consumption       | a) rise | b) fall | c) no change | d) ambiguous |

- c) Suppose that the investment function were less sensitive to the interest rate than you assumed above. How would this affect the severity of the recession? The rise in money demand would cause the GDP to fall:
- MC#32) Output                      a) more      b) less      c) same      d) ambiguous.  
 Would the following variables move more or less than you found in part (b) above?
- MC#33) interest rate              a) more      b) less      c) same      d) ambiguous.  
 MC#34) consumption              a) more      b) less      c) same      d) ambiguous.
- d) Suppose we combat this recession using fiscal policy. In particular, suppose government purchases are increased enough to restore output to its initial level. Would the following variables also return to their values at the initial equilibrium before the recession (point 1), be higher than this, lower, or is it ambiguous?
- MC#35) the interest rate    a) initial value      b) higher      c) lower      d) ambiguous  
 MC#36) investment            a) initial value      b) higher      c) lower      d) ambiguous  
 MC#37) consumption        a) initial value      b) higher      c) lower      d) ambiguous

**Problem 4: Short Run and Long Run** (26 points total)

Suppose the Federal Reserve increases the nominal money supply permanently. Use the IS-LM / AS-AD tools to analyze the implications in the short run and the long run. (Assume the usual: Prices are completely fixed in the short run and completely flexible in the long run. Assume there is no change in government spending. Consumption is a function only of disposable income, with a constant marginal propensity to consume. Investment is a function only of the interest rate. Closed economy.)

- a) (10 points) Draw in your bluebook the IS-LM and AS-AD graphs to show the short run and long run equilibria following this policy. 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 the exact reason for each curve shift.
- b) (6 points) What happens to the following variables in the short run?
- MC#38) output:                      a) rise      b) fall      c) no change      d) ambiguous  
 MC#39) interest rate:              a) rise      b) fall      c) no change      d) ambiguous  
 MC#40) real money balances:      a) rise      b) fall      c) no change      d) ambiguous
- c) (6 points) Suppose that the money demand function is less responsive to changes in the interest than you assumed above. In this case, in the short run the rise in money supply would make the variables move:
- MC#41) output:                      a) more      b) less      c) same      d) ambiguous  
 MC#42) interest rate:              a) more      b) less      c) same      d) ambiguous  
 MC#43) real money balances:      a) more      b) less      c) same      d) ambiguous
- d) (4 points) In your bluebook define the “Classical Dichotomy,” and in 2-3 sentences discuss how well it holds in this model.