

**Economics 615**  
**MA Macroeconomics**  
**Spring 2008**  
**Final Exam**

Name \_\_\_\_\_

**Part 1: Long Answer. (weight: 50% of exam)**

**Answer exactly 10 of the following 11 questions.**

1. Assume an economy where there are two producers: A wheat producer and a bread producer. In a given year, the wheat producer grows 40 million bushels of wheat of which 30 million bushels are sold to the bread producer at \$3 per bushel, and 10 million bushels are stored by the wheat producer to use as seed for next year's crop. The bread producer produces and sells 100 million loaves of bread to consumers for \$3.50 per loaf. Determine GDP in this economy during this year using the product (i.e., value-added) approach and the expenditure approach.

2. Consider a society whose representative consumer has the following utility function:  $U = \min [c, c']$ , so the consumer has preferences with the perfect complements property. Time only has two periods. The representative consumer faces the usual lifetime budget constraint. First period income = 100, and second period income = 100.

a. If the interest rate is zero, how much will the representative consumer consume in each period? (Give an exact number)

Qualitatively, does the representative consumer save early on in life or borrow?

b. If the interest rate is 20%, how much will the representative consumer consume in each period? (Give an exact number)

Qualitatively, does the representative consumer save early on in life or borrow?

3. A consumer receives income  $y$  in the current period, income  $y'$  in the future period, and pays no taxes. The consumer can borrow and lend at the real interest rate  $r$ . This consumer faces a constraint on how much he or she can borrow, much like the credit limit typically placed on a credit card account. That is, the consumer cannot borrow more than  $x$ , where  $x < we - y$ , with  $we$  denoting lifetime wealth. Use diagrams to determine the effects on the consumer's current consumption, future consumption, and savings of a change in  $x$ , and explain your results.

In particular, assume that the consumer has conventional preferences, and be sure to illustrate a case where the borrowing constraint actually binds the consumer's decisions.

4. What is the effect of an increase in  $d$ , the depreciation rate, on the representative firm's investment decision, and on its optimal investment schedule? Explain your results carefully.

5. In the real business cycle model, suppose that firms become infected with optimism and they expect that total factor productivity will be much higher in the future.

a. Determine the equilibrium effects of this on the current real wage, investment, real output, and the real interest rate.

b. If waves of optimism and pessimism of this sort cause GDP to fluctuate, does the model explain the key business cycle facts? Which facts does it fit? Which does it fail to fit?

c. Suppose that the monetary authority wants to stabilize the price level in the face of a wave of optimism. Determine what it should do, and explain.

6. Consider a central bank trying to minimize the following loss function:

$$V = 2*(i-3\%)^2 + 1*(Y-10)^2$$

The Friedman-Lucas supply curve in this economy is:

$$Y = 10 + (i - E(i))$$

- a. If inflation equals its expected level in this economy, what will output equal?
  
- b. If the central bank faces a credible commitment (or time inconsistency) problem, and is unable to commit to a future inflation rate, what will the equilibrium inflation rate be in this economy?
  
- c. If the central bank is able to make a credible commitment to a future inflation rate, what will the equilibrium inflation rate be in this economy?

7. In an IS-LM framework, suppose that government purchases rise. What happens to the real wage, real output, and the real interest rate as a result?

Wage:

Output:

Interest Rate:

How does this compare to the predictions of the flexible-price equilibrium model we've used for most of the semester: Are the predictions for these three variables the same or different? If they are the same, why are they the same, despite the different underlying assumptions? If they are different, what differences in the model drive the differences in the predictions?

8. In the Keynesian sticky wage model, suppose that supply is initially equal to demand in the labor market and that there is a negative shock to the demand for investment goods, because the firm anticipates lower total factor productivity in the future (i.e., pessimistic “animal spirits”).

a. Determine the effects on real output, the real interest rate, the price level, employment, and the real wage, if government did nothing in response to the shock.

b. Determine the effects if monetary policy is used to stabilize the economy, with the goal of the monetary authority being zero Keynesian unemployment (i.e., returning output to the pre-pessimism level).

c. Determine the effects if government spending is used to stabilize the economy, with the goal of the fiscal authority being zero Keynesian unemployment.

d. Explain and comment on the differences in your results among parts a-c.

9. “Thus world economic history poses three interconnected problems: Why did the Malthusian Trap persist for so long? Why did the initial escape from that trap in the Industrial Revolution occur on one tiny island, England, in 1800? Why did the consequent Great Divergence take place? This book proposes answers to all three of these puzzles...”

In brief, what are Clark’s answers to these three puzzles?

10. Create a bubble on the following asset: Its starting value is \$100, and there is a one dollar bubble on it on date zero. The asset pays a five dollar dividend every year, and the interest rate on alternative assets is also 5%. What will the price of the asset be every year for the next 10 years if people believe the bubble has a 50% chance of bursting every period?

11. What is the story of the Capitol Hill Babysitting Co-Op? What is the economic lesson to be learned from this?

**Short answer (Weight: 50% of exam)**

**Answer all of the following:**

1. Determine the effects of an increase in the separation rate  $s$  on the reservation wage and on the long-run unemployment rate in the search model of unemployment.
2. According to the New Keynesian Phillips Curve, what is the relationship between the GDP gap and changes in inflation: Is it roughly positive, roughly negative, or nonexistent?
3. According to the flexible-price model as summarized by, say, McCandless and Weber, when the money supply doubles, what exactly happens to the price level as a result? What exactly happens to real output as a result? In both cases, give a numerical response.
4. According to Bernanke and Gertler, what is more important in explaining how a monetary policy shock impacts the economy: The interest rate effect or the credit channel of monetary transmission?
5. According to Bernanke and Gertler, do declines in output and investment tend to happen at roughly the same time as a spike in interest rates, or do they tend to last much longer than the spike in interest rates?
6. What is LeRoy's view: That the volatility of stock prices is too high to be explained by fundamentals; that the volatility of stock earnings is too high to be explained by fundamentals, or are both statements true according to LeRoy?
7. Who was closer to a "free banking" system, according to Selgin and White: early Scotland or the pre-Civil War U.S.?
8. According to Aghion, Bolton, and Dewatripont's free banking model, does free banking raise or lower the risk of moral hazard?

According to their model, does free banking raise or lower the risk of contagious bank failures?

9. Which version of Milton Friedman does Paul Krugman like best: Stagflation or Monetarism?

10. According to Milton Friedman, can the Federal Reserve peg the nominal interest rate permanently?

According to Milton Friedman, can the Federal Reserve peg the unemployment rate permanently?

11. According to Brad DeLong, is New Keynesianism deeply opposed to the following 5 propositions, or does it broadly support them?

According to Brad DeLong, would Milton Friedman deeply oppose the following 5 propositions, or would he broadly support them?

*1) The frictions that prevent rapid and instantaneous price adjustment to nominal shocks are the key cause of business cycle fluctuations in employment and output.*

*2) Under normal circumstances, monetary policy is a more potent and useful tool for stabilization than is fiscal policy.*

*3) Business cycle fluctuations in production are best analyzed from a starting point that sees them as fluctuations around the sustainable long-run trend (rather than as declines below some level of potential output).*

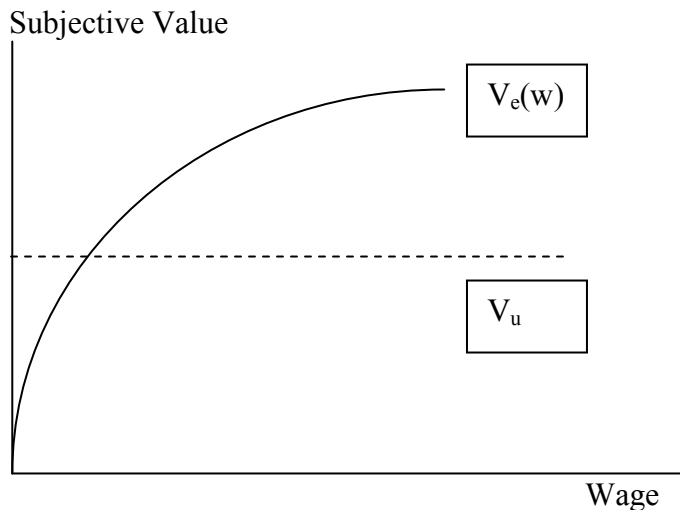
*4) The right way to analyze macroeconomic policy is to consider the implications for the economy of a policy rule, not to analyze each one- or two-year episode in isolation as requiring a unique and idiosyncratic policy response.*

*5) Any sound approach to stabilization policy must recognize the limits of stabilization policy, including the long lags and low multipliers associated with fiscal policy and the long and variable lags and uncertain magnitude of the effects of monetary policy.*

12. In the monetary intertemporal model, suppose that the money supply is fixed for all time.

Determine the effects of an increase in *current productivity* on the price level. Does the price level rise, fall, or can't you tell with the information given?

13. In the following model, show graphically what happens when unemployment benefits increase. Verbally, explain what happens to the equilibrium wage **and** the equilibrium unemployment rate as a result.



14. In the monetary intertemporal model, suppose that the money supply is fixed for all time.

Determine the effects of an increase in *future productivity* on the price level. Does the price level rise, fall, or can't you tell with the information given?

15. The nation experiences a major hurricane that destroys significant capital stock. Policymakers in the federal government reason that the destruction caused by the hurricane will reduce national income and this should be counteracted through an increase in government expenditures. As usual in Williamson's text, assume that government expenditures are purely wasteful.

a. If the goal of the government is to raise real GDP closer to its old pre-hurricane level, will this policy help accomplish that goal?

b. If the goal of the government is to rebuild the capital stock closer to its old pre-hurricane level, will this policy help accomplish that goal?

16 Let's see what various economic models predict about the impact of money supply shocks on real output.

If there is a one-time negative shock to the money supply, rank the following models according to how big and long-lasting the impact will be on real GDP. Just write "Large," "Medium," and "Small" next to the three models below. I think the answer to this question is unambiguous, but feel free to elaborate if you think it useful.

*New Keynesian Model*

*Real Business Cycle Model*

*Segmented Markets/Limited Participation Model*

17. Does money lead the business cycle or lag it?

18. What do McCandless and Weber have to say about the correlation between money growth and inflation around the world? Is the relationship roughly positive, roughly negative, or roughly nonexistent?

19. Is the Solow residual procyclical, countercyclical, or acyclical?

20. How did banks deal with financial panics in the days before the Federal Reserve existed, according to Milton and Rose Friedman?

21. Does Krugman, a staunch Keynesian, think that deficits are good for the economy's long-run health?

22. Who are the "strategic traders:" members of the Reagan administration, the first Bush administration (George H.W. Bush), or the Clinton administration?

23. In the Diamond-Dybvig model, how could a bank rule on the "restriction of payments" make the world a better place for the savers as well as for the banks?

24. According to the Friedman rule, what is the optimal rate of inflation? Be as precise as you can be.

25. In the U.S. since the 1950's, has the male labor force participation rate risen or fallen?

**Extra Credit (5% total)**

1. Out of all of the business cycle models we surveyed in this course, which one(s) match ALL of Williamson's key facts about business cycles?

2. Does an increase in money demand raise the price level or lower it?