Economics 330 Menzie D. Chinn
Fall 2006 Social Sciences 7418
University of Wisconsin-Madison

Final Examination Answers

This exam is 120 minutes long, and is worth 120 points. Part I is multiple choice, Part II is a derivation/short answer, Part III is an essay. The points are allocated in proportion to the time you should spend on each problem. Place Parts I and II in Bluebook A, Part III in Bluebook B.

PART I: Multiple Choice [81 minutes total, 3 points each]. Do NOT explain.

1) The monetary base minus currency in circulation equals
A) reserves.
B) the borrowed base.
C) the nonborrowed base.
D) discount loans.

2) There are two types of open market operations: _____ open market operations are intended to change the level of reserve and the monetary base, and _____ open market operations are intended to offset movements in other factors that affect the monetary base.
A) defensive; dynamic
B) defensive; static
C) dynamic; defensive
D) offensive; defensive

3) The monetary liabilities of the Federal Reserve include
A) government securities and discount loans.
B) currency in circulation and reserves.
C) government securities and reserves.
D) currency in circulation and discount loans.

4) There are two ways in which the Fed can provide additional reserves to the banking system: it can _____ government bonds or it can _____ discount loans to commercial banks.
A) sell; extend
B) sell; call in
C) purchase; extend
D) purchase; call in

5) If reserves in the banking system increase by $100, then checkable deposits will increase by $400 in the simple model of deposit creation (no currency and no excess reserves) when the required reserve ratio is
A) 0.01.
B) 0.10.
C) 0.20.
D) 0.25.

6) The money supply is _____ related to expected deposit outflows, and is _____ related to the market interest rate.
A) negatively; negatively
B) negatively; positively
C) positively; negatively
D) positively; positively

7) Over the long run the primary determinant of movements in the money supply is the
A) currency ratio.
B) excess reserves ratio.
C) required reserve ratio.
D) nonborrowed base.

8) The Fed uses three policy tools to manipulate the money supply: open market operations, which affect the _____; changes in borrowed reserves, which affect the _____; and changes in reserve requirements, which affect the _____.
A) money multiplier; monetary base; monetary base
B) monetary base; money multiplier; monetary base
C) monetary base; monetary base; money multiplier
D) money multiplier; money multiplier; monetary base

9) When the federal funds rate equals the discount rate
A) the supply curve of reserves is vertical.
B) the supply curve of reserves is horizontal.
C) the demand curve for reserves is vertical.
D) the demand curve for reserves is horizontal.

10) In the market for reserves, an open market sale _____ the _____ of reserves, causing the federal funds rate to increase, everything else held constant.
A) increases; supply
B) increases; demand
C) decreases; supply
D) decreases; demand

11) The Federal Reserve usually keeps the discount rate
A) above the target federal funds rate.
B) equal to the target federal funds rate.
C) below the target federal funds rate.
D) equal to zero.

12) The most common definition that central bankers use for price stability is
A) low and stable deflation.
B) an inflation rate of zero percent.
C) high and stable inflation.
D) low and stable inflation.

13) A central feature of monetary policy strategies in all countries is the use of a nominal anchor, which is a nominal variable that monetary policymakers use as an
A) operating target, such as the federal funds interest rate.
B) intermediate target, such as the federal funds interest rate.
C) intermediate target to achieve an ultimate goal such as price stability.
D) operating target to achieve an ultimate goal such as exchange rate stability.

14) If the government finances its spending by selling bonds to the central bank, the monetary base will _____ and the money supply will _____.
A) increase; increase
B) increase; decrease
C) decrease; decrease
D) not change; not change

15) A nominal anchor promotes price stability by
A) outlawing inflation.
B) stabilizing interest rates.
C) keeping inflation expectations low.
D) keeping economic growth low.

16) Monetary policy is considered time-inconsistent because
A) of the lag times associated with the implementation of monetary policy and its effect on the economy.
B) policymakers are tempted to pursue discretionary policy that is more contractionary in the short run.
C) policymakers are tempted to pursue discretionary policy that is more expansionary in the short run.
D) of the lag times associated with the recognition of a potential economic problem and the implementation of monetary policy.

17) Which of the following is a disadvantage to monetary targeting?
A) It relies on a stable money-inflation relationship.
B) There is a delayed signal about the achievement of a target.
C) It implies larger ouput fluctuations.
D) It implies a lack of transparency.

18) The rate of inflation increases when
A) the unemployment rate equals the NAIRU.
B) the unemployment rate exceeds the NAIRU.
C) the unemployment rate is less than the NAIRU.
D) the unemployment rate increases faster than the NAIRU increases.

19) If the money supply is $600 and nominal income is $3,600, the velocity of money is
A) 1/60.
B) 1/6.
C) 6.
D) 60.

20) The classical economists' conclusion that nominal income is determined by movements in the money supply rested on their belief that _____ could be treated as _____ in the short run.
A) velocity; constant
B) velocity; variable
C) money; constant
D) money; variable

21) The Keynesian theory of money demand emphasizes the importance of
A) a constant velocity.
B) irrational behavior on the part of some economic agents.
C) interest rates on the demand for money.
D) expectations.

22) In the Keynesian framework, as long as output is _____ the equilibrium level, unplanned inventory investment will remain negative and firms will continue to _____ production.
A) below; lower
B) above; lower
C) below; raise
D) above; raise

23) Everything else held constant, a decrease in the cost of production _____ aggregate _____.
A) increases; demand
B) decreases; demand
C) increases; supply
D) decreases; supply

24) If the aggregate price level adjusts slowly over time, then an expansionary monetary policy lowers
A) only the short-term nominal interest rate.
B) only the short-term real interest rate.
C) both the short-term nominal and real interest rates.
D) the short-term nominal, the short-term real, and the long-term real interest rates.

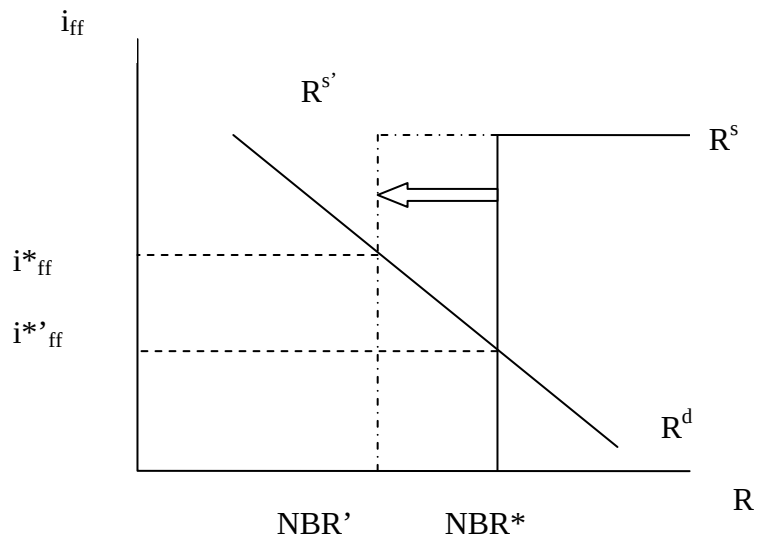
25) A contractionary monetary policy decreases net exports by
A) lowering real interest rates and decreasing the value of the dollar.
B) lowering real interest rates and increasing the value of the dollar.
C) raising nominal interest rates and increasing the value of the dollar.
D) raising real interest rates and increasing the value of the dollar.

26) Because of the presence of asymmetric information problems in credit markets, an expansionary monetary policy causes a _____ in net worth, which _____ the adverse selection problem, thereby _____ increased lending to finance investment spending.
A) decline; increases; encouraging
B) rise; increases; discouraging
C) rise; reduces; encouraging
D) decline; reduces; discouraging

27) A rise in stock prices _____ the net worth of firms and so leads to _____ investment spending because of the reduction in moral hazard.
A) raises; higher
B) raises; lower
C) reduces; higher
D) reduces; lower

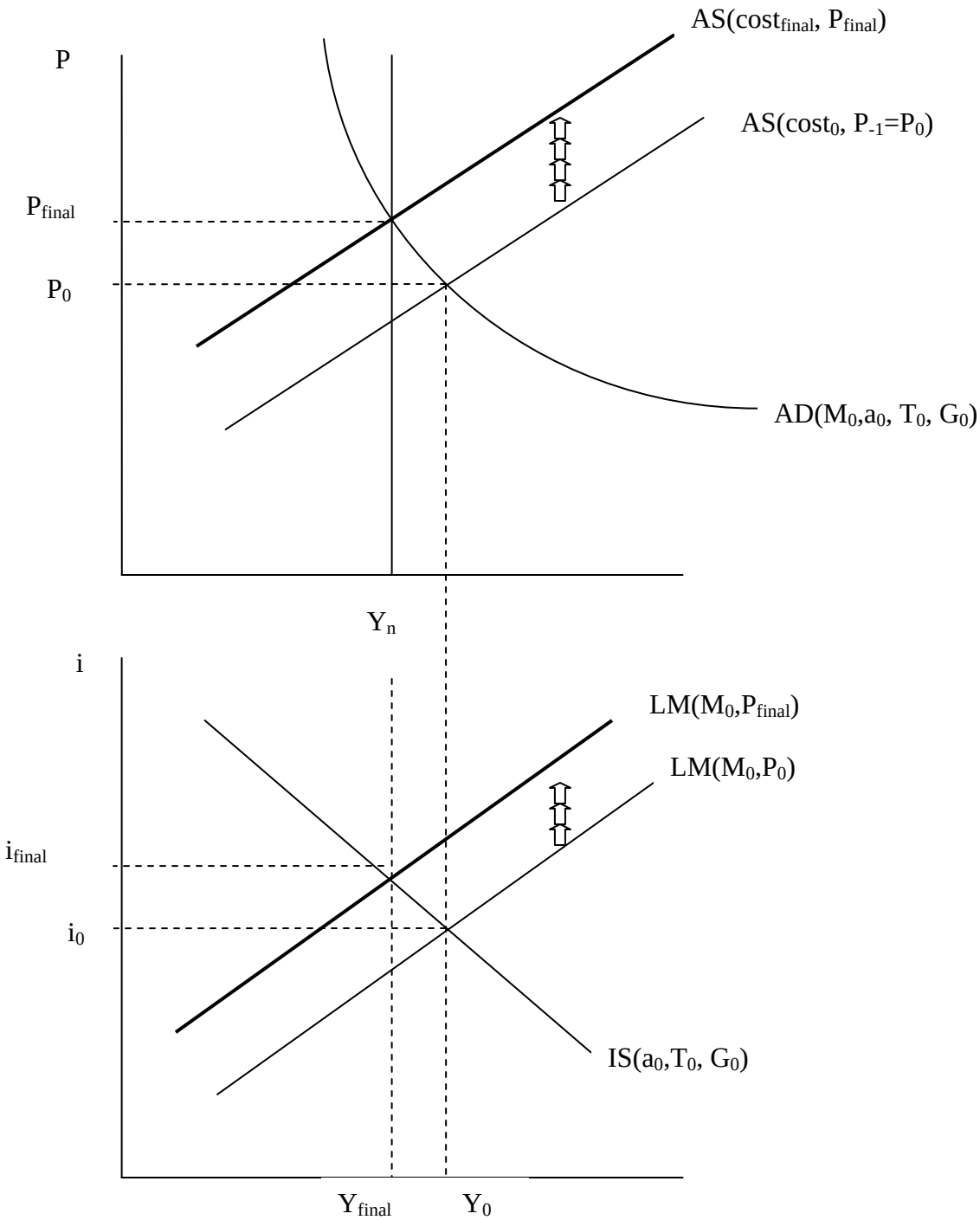
PART II: Short Answers [19 minutes total]

1. (6 minutes) Suppose the U.S. Federal Open Market Committee wanted to decrease the money supply. Show how the Fed would most likely implement this change *in the market for reserves*. Be sure to use the relevant graph, label the curves, intercepts, and indicate the curve shifts. You may assume the price level is constant in the short run.



=

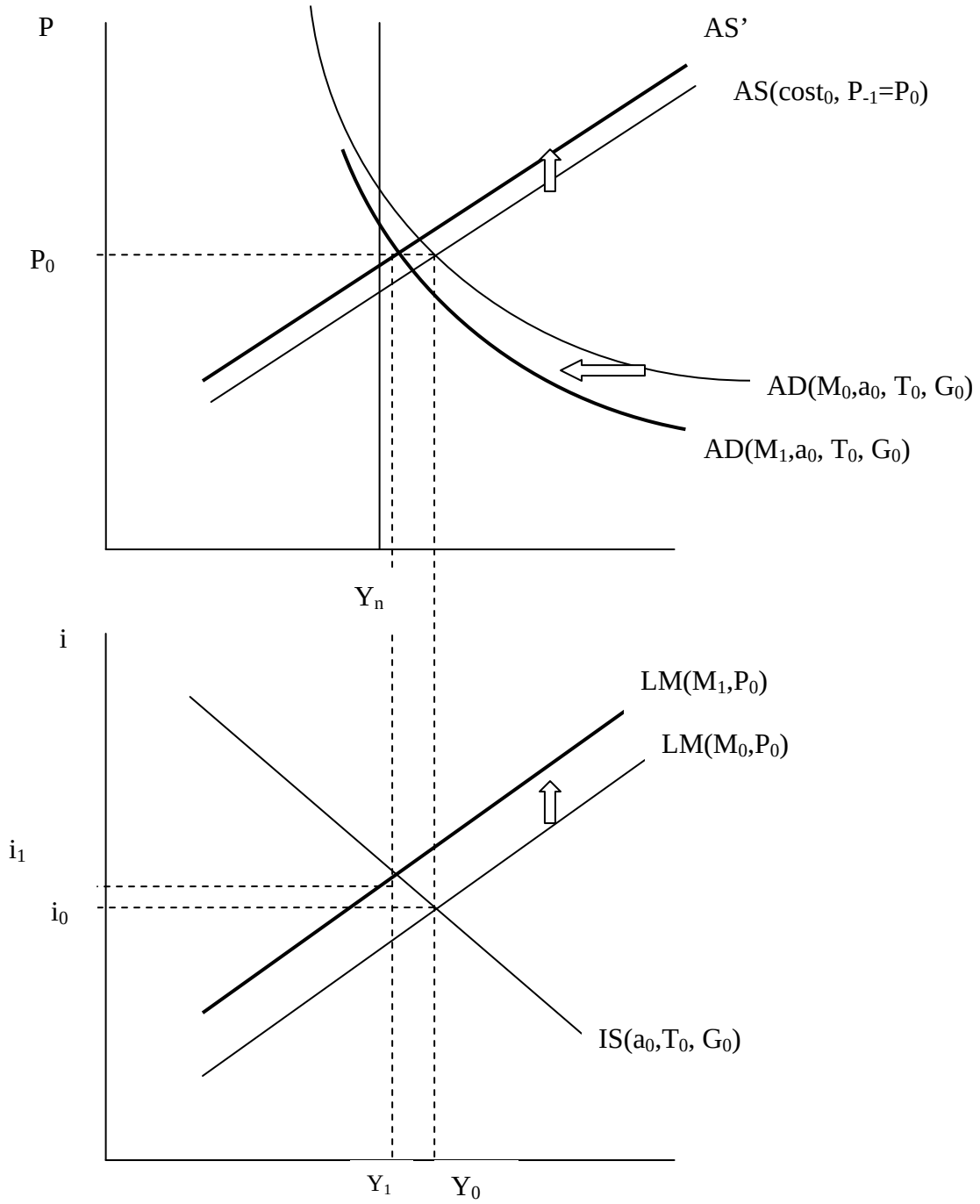
2. Suppose the economy were described by an AD-AS/IS-LM model,



Where Yn is the natural level of output, also known as potential GDP. P0 is the price level in period 0, which is assumed to be the same as the price level in period -1. The "0" indicate that these are the levels of each variable that determines the position of each curve (*a* is the autonomous component of consumption, *T* and *G* are taxes and government spending respectively, *M* is nominal money, *cost* is input costs (e.g. oil)).

2.1. (5 minutes) Describe what happens over time if no offsetting government (fiscal or monetary) policy is undertaken. Be sure to use a graph in your explanation. ***See figure above***.

2.2. (8 minutes) Assume that the Fed's goal is to have no change in prices (strict price stability). What must the Fed do to monetary policy? Use a graph to show how this policy will affect output and the price level, clearly indicating all the curve shifts. ***In the short run, reduce money supply to set $Y=Y_1$. See figure below.***



Since output exceeds the natural rate of output, wages are rising, so the next period, the price level would rise in the absence of action. The Fed in the short run can pull in the LM curve and the AD curve by reducing the money supply to set output at Y1, interest rate at

i1. Notice that the next period, output will again exceed the natural level of output, so the Fed will once again have to pull in the AD and LM curves. The Fed will have to do this over and over again until one reaches the long run situation where P0=Pfinal, and the LM curve is at a permanently higher level.

PART III. Short Answer/Policy [20 minutes]

1. (5 minutes) Write down the Taylor rule (defining the variables you use in your equation).

$$i_{ff}^{*} = \pi + i_{r,ff}^{*} + 0.5 \times (\pi - \pi^{*}) + 0.5 \times (y - y^{*})$$

Where $i_{r,ff}^{*}$ is the equilibrium real Fed Funds rate, π is the inflation rate, π^{*} is the target inflation rate, y is log real GDP, and y^{*} is log potential GDP. Hence, $(\pi - \pi^{*})$ is the inflation gap and $(y - y^{*})$ is the output gap.

2. (5 minutes) Suppose the inflation rate rises by 2 percent, but the output gap and other variables remain unchanged. What happens to the target Fed Funds rate?

This is almost the same as the problem in PS 5. Take the total differential of the Taylor rule:

$$\Delta i_{ff}^{*} = \Delta\pi + \Delta i_{r,ff}^{*} + 0.5 \times \Delta(\pi - \pi^{*}) + 0.5 \times \Delta(y - y^{*})$$

$$\Delta i_{ff}^{*} = \Delta\pi + 0.5 \times \Delta(\pi - \pi^{*}) + 0.5 \times \Delta(y - y^{*})$$

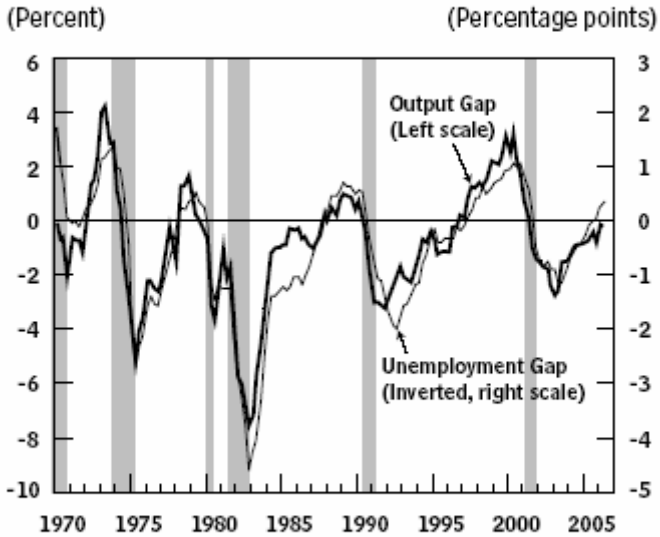
$$\Delta i_{ff}^{*} = 0.02 + 0.5 \times 0.02 + 0.5 \times (-0.00) = 0.03$$

Rises by 3.0%

3. (10 minutes) Ignore question 2. Consider this graph from CBO, *The Budget and Economic Outlook: An Update* (August 2006). Assume the last observations in the graph pertain to November 2006.

Figure 2-3.

Output and Unemployment Gaps



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis; Department of Labor, Bureau of Labor Statistics.

Assume the target inflation rate is 2%, the equilibrium real Fed Funds rate is 2%. According to the Taylor rule, what should the target Fed Funds rate be if the annualized month-on-month inflation rate in November was 2.4%?

The output gap is zero. So substituting into the Taylor rule:

$$i_{ff}^{*} = \pi + i_{r,ff}^{*} + 0.5 \times (\pi - \pi^{*}) + 0.5 \times (y - y^{*})$$

$$i_{ff}^{*} = 0.024 + 0.02 + 0.5 \times (0.024 - 0.02) + 0.5 \times (0) = 0.044 + 0.02 = 0.046$$

Or 4.6%

e330finala_f06
22.12.2006 rev 5:10pm