Notes for Econ 302-001 FALL 2010 Midterm 1 Exam

The Fall 2010 Econ 302-001 course used Hall and Papell, *Macroeconomics* (Norton) as a textbook. The notation differs from Blanchard, *Macroeconomics* 5/2 (Pearson).

Concordance for notation:

- Variable R corresponds to i
- Variable AD corresponds to Z
- Variable Y_d corresponds to Y_D
- Placeholder variable A_0 corresponds to Λ_0

- The parameter k, the income sensitivity of real money demand, is set equal to 1 in Blanchard.
- The parameter a_0 corresponds to c_0
- The parameter e_0 corresponds to b_0
- The parameter b corresponds to c_1
- The parameter t corresponds to t_1
- The parameter m corresponds to m_1
- The parameter d corresponds to b_2
- The parameter TA_0 corresponds to t_0
- The parameter $\tilde{n}$ does not correspond to any parameter in Blanchard (set to 0 for purposes of solving the problem).
- In this exam, the parameter b_1 is set to zero.

Economics 302
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University of Wisconsin-Madison

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Social Sciences 7418

Midterm 1 Exam

This exam is 70 minutes long, and is worth 70 points. Part I is multiple choice, Part II is a short answer, and Part III is a derivation. The points are allocated in proportion to the time you should spend on each problem.

PART I: Multiple Choice [20 minutes total, 2 points each]. Do NOT explain.

1. If the GDP deflator is rising by 2% per year, and nominal GDP is rising by 4.5%, then
a) the inflation rate is positive.
b) real GDP growth is negative.
c) real GDP growth is 6.5%.
d) real output is growing by 2.5%
e) (a) and (d) above.

2. In an IS-LM model,
a) all points on the IS curve represent combinations of Y and R where money supply equals money demand.
b) all points on the IS curve represent combinations of Y and R where there is no unintended inventory accumulation.
c) all points on the LM curve represent combinations of Y and R where aggregate demand equals output.
d) all points on the LM curve represent combinations of Y and R where money supply equals money demand.
e) both (b) and (d) above.

3. United States Gross Domestic Product
a) measures the total value of goods and services produced by American-owned factors of production (land, labor, capital).
b) is a measure of the wealth of Americans.
c) measures the total value of goods and services produced by factors of production (land, labor, capital) located in within the borders of the United States.
d) is the measure of aggregate American utility.
e) (b) and (d) above.

4. An increase in the tax rate in the demand-determined Keynesian model:
a) necessarily increases the budget balance.
b) necessarily decreases the budget balance.
c) decreases output.
d) increases output.
e) (a) and (c) above.

5. Transactions crowding out of income is greater:
a) the greater the income sensitivity of money demand.
b) the greater the interest sensitivity of money demand.
c) the greater the proportion of wealth people desire to hold as bonds.
d) the greater the interest sensitivity of investment.
e) (a) and (d) above.

6. In a simple Keynesian model:
a) the government spending multiplier is larger the higher the marginal propensity to consume.
b) the government spending multiplier is larger the higher the marginal propensity to save.
c) the government spending multiplier is larger the higher the marginal tax rate, since higher taxes allow higher government spending.
d) both (a) and (c)
e) none of the above.

7. Potential GDP, Y^*,
a) depends upon the budget deficit in the previous period.
b) is the level of output consistent with the natural rate of unemployment in the economy.
c) depends directly upon the price level.
d) depends in part on the labor force.
e) both (b) and (d) above.

8. The national saving identity states:
a) private saving plus the government budget balance must equal investment.
b) the current account must equal the sum of the budget balance and private saving minus private investment.
c) that changes in the government budget balance cause changes in the trade balance (net exports).
d) private saving equals private investment.
e) none of the above.

9. Which of the following is true of "real" measures of spending?
a) real components of GDP measured by the "traditional" approach sum to real GDP.
b) real components of GDP measured by the chain-weighted approach sum to real GDP.
c) chain weighted real measures are calculated as the sum of expenditure weighted growth rates of each good.
d) both (a) and (c) above.
e) none of the above.

10. Suppose the price level is given by P_t. Then, using *monthly* data,
a) the annual inflation rate is given by $((P_t/ P_{t-1})-1)\times 100\%$
b) the annualized monthly inflation rate is $((P_t/ P_{t-1})^{12}-1)\times 100\%$
c) the annual inflation rate is given by $((P_t/ P_{t-12})-1)\times 100\%$
d) the annual inflation rate is given by $(P_t - P_{t-12}) \times 100\%$
e) both (b) and (c)

PART II: Short Answer (20 minutes total)

1. Suppose the economy is described by these two equations:

(1) $$R = -\left(\frac{1-b(1-t)+m}{d+\tilde{n}}\right)Y + \left(\frac{1}{d+\tilde{n}}\right)A_0$$ <IS curve>

where $A_0 \equiv a_0 - b(TA_0) + e_0 + GO_o + g_0$.

(2) $$R = \left(\frac{\mu_0}{h}\right) - \left(\frac{1}{h}\right)\left(\frac{M_0}{P_0}\right) + \left(\frac{k}{h}\right)Y$$ <LM curve>

1.1 (4 minutes) Draw the equilibrium, indicating equilibrium levels of output and interest rate, the slopes, and the vertical intercepts. You should assume that no curve slopes are infinite or zero. And you can also assume the equilibrium interest rate is above zero.
1.2 (4 minutes) Show the impact of a decrease in the money supply, Δ(M/P), on the equilibrium output and interest rate (indicating algebraically the extent of the increase in GDP). Be sure to show what is the initial and final curve positions.
1.3 (4 minutes) *Explain*, using economic intuition, why GDP changes due to the increase in money supply.

2. Suppose the price level of GDP is measured quarterly, and is 2 in 2009Q1, and 2.2 in 2010Q1 (with a base in 2000=1).
2.1 (4 minutes) What is the annual rate of inflation as of 2010Q1? Show your calculations in full.
2.2 (4 minutes) Suppose nominal GDP is $6600 in 2010Q1, at an annual rate. What is GDP expressed in 2000$. Show all your work.

PART III: Derivation (30 minutes total)

Suppose the real side of a closed economy was described by the following equations:

$Y = AD$	Equilibrium condition
$AD \equiv C + I + G + X$	Definition of aggregate demand
$C = a_0 + bY_d$	Consumption function
$Y_d \equiv Y - T$	Def'n of disposable income
$T = TA_0 + tY$	Tax function
$I = e_0 + \lambda Y$	Investment function
$G = GO_0$	Government purchases spending
$X = g_0 - mY$	Net exports spending

Answer the following questions, showing your work, and "boxing in" your answers.

1. (5 points) Solve for equilibrium income.

2. (5 points) Calculate the government spending multiplier is in this economy.

3. (5 points) What is the lump sum tax multiplier? Be sure to show your work.

4. (5 points) Is fiscal policy more, or less, effective in this model as compared to the model with a standard investment function. Be sure to *explain* the economics of your answer, using equations or diagrams if necessary.

5. (5 points) If government spending increases, what happens to the trade balance?

6. (5 points) Let $BuS \equiv T\text{-}G$. What is the impact of an increase in government spending on the budget balance.

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