Econ 222 Midterm exam
Spring 2011
Group A

Answers

May 2011

1 Short answer questions (36 marks)

Answer SIX out of SEVEN questions.

1. An increase in expected future output while holding today's output constant would

   (a) decrease today's desired consumption and increase desired national saving.

   (b) increase today's desired consumption and decrease desired national saving.

   (c) increase today's desired consumption and increase desired national saving.

   (d) decrease today's desired consumption and decrease desired national saving.

   - Answer: **(b)**

2. Assume that the municipal government of Winnipeg, Manitoba, has taxes of $1000, transfer payments of $400, and interest payments on the government debt of $100. If government purchases of goods and services are $300, compute government saving.

   - Answer: $S_{govt} = (T - TR - INT) - G = 200$

3. An economy has full-employment output of 5000. Government purchases are 1000. Desired consumption and desired investment are given by

$$C^d = 3000 - 2000r + 0.1Y$$

$$I^d = 1000 - 4000r$$

   where Y is output and r is the real interest rate. Compute the real interest rate that clears the good market.

   - Answer: $S^d = I^d \quad \rightarrow \quad r = 8.33\%$

4. If a Japanese company sells 200 VCRs to a French company and uses the money to buy U.S. government bonds, the Japanese merchandise trade balance ——, and the Japanese capital and financial account balance ——.

   (a) rises; rises
   (b) falls; rises
   (c) rises; falls
   (d) falls; falls

   - Answer: **(c)**

5. If Ricardian equivalence proposition is true, a budget deficit resulting from a tax cut will have

   (a) no effect on current account, because it does not affect national saving.
   (b) no effect on current account, because people expect to increase their consumption.
   (c) no effect on current account, because people expect to pay lower taxes in the future.
   (d) no effect on government expenditures.

   - Answer: **(a)**

6. A small open economy has a current account balance of zero. A rise in the world real interest rate causes

   (a) net borrowing from abroad.
   (b) a capital account surplus.
   (c) absorption to exceed income.
   (d) a current account surplus.

   - Answer: **(d)**

7. From 1982 to 1992 North Samaria's economy grew at an annual rate of 3.5%, but from 1992 to 2002 North Samaria's economy grew by only 1% per year. In 1992 Samaria's per capita income was $8000. How much higher would North Samaria's per capita income have been in 2002 if growth from 1992 to 2002 had been 3.5% rather than 1%?

- $8000(1.035)^{10} - 8000(1.01)^{10} = 2447.8$

2 Long answer questions (64 marks)

Answer ALL of the questions.

1. Discuss the major difference between classical and Keynesian economists. Be sure to explain how they differ with regard to how quickly equilibrium is restored in the economy as well as what role they see for government action in restoring equilibrium. (14 marks)

   - Answer: Classical and Keynesian economists differ most with regard to how quickly they see wages and prices adjusting to restore equilibrium in the economy. Classical economists think that when the economy is out of equilibrium, wages and prices adjust quickly to restore equilibrium. As a result, there shouldn't be long periods of abnormally high unemployment. The quick return to equilibrium means there is no reason for government action. Keynesians, on the other hand, think wages and prices are slow to adjust. As a result, the economy may be out of equilibrium for some time, perhaps with high unemployment. To restore equilibrium quickly may necessitate some government action, such as increasing the government's demand for goods and services.

2. Consider a closed economy with a single production sector given by:

$$Y = AK^{0.5}N^{0.5}$$

   Assume that the productivity level is $A = 2$, the real interest rate is $r = 0.1$, the depreciation rate on capital is $d = 0.1$, the price of a unit of capital is 1 and the effective tax rate on capital $\tau = 0.2$. (32 marks)

   (a) If equilibrium employment in the labour market is $N^* = 4$, determine the equilibrium stock of capital K^*. (8 marks)

   - Answer: Setting MPK equal to the tax-adjusted user cost of capital gives $0.8 \times 0.5AK^{-0.5}N^{0.5} = 0.2 \quad \rightarrow \quad K^* = 64$

   (b) Suppose that labour supply is given by $N^s = zw$, where z is some unknown positive number. Given that $N^* = 4$, use your answer in part (a) to determine the value of z. What is the equilibrium wage in the labour market? (8 marks)

   - Answer: Substituting $K^* = 64$ into the production function, we can find the MPN:
     $MPN = 0.5AK^{0.5}N^{-0.5} = 8N^{-0.5}$
     $MPN = w \quad \rightarrow \quad N^d = \frac{64}{w^2} = 4$
     $w^2 = 16 \quad \rightarrow \quad w = 4$
     $N^* = zw \quad \rightarrow \quad z = 1$

   (c) Suppose that there is an increase in the effective tax rate on capital ($\tau > 0.2$). Use an appropriate set of diagrams to explain how this tax increase leads to a lower equilibrium wage and lower equilibrium employment in the labour market. (8 marks)

- Answer: If τ rises, then the user cost of capital will rise. This will lead to a lower level of capital K^* which will in turn lower the MPN. A fall in MPN causes labour demand N^d to fall, leading to a lower equilibrium wage and employment level in the labour market.

(d) Now suppose that workers always save a fixed fraction s of their wage income. Use an appropriate set of diagrams to explain how an increase in s affects the equilibrium level of capital stock K^*. (Hint: consider possible effects in the goods market.) (8 marks)

- Answer: An increase in s increases total savings, which shifts the S^d curve to the right (in the goods market) and lowers the real interest rate in a closed economy. A lower real interest rate lowers the user cost of capital, which will lead to a higher level of capital K^*.

Year	Y	K	N
2009	2000	1700	70
2010	2100	1785	75

3. Suppose the country of Prescott has the following production function

$$Y = AK^{0.25}N^{0.75}$$

The above table shows Prescott's macroeconomic data for 2009 and 2010:

(a) By how much did productivity grow between 2009 and 2010? (9 marks)

- Answer: Calculate A in each year as $A = \frac{Y}{K^{0.25}N^{0.75}}$.
  So A is $\frac{2000}{1700^{0.25}70^{0.75}} = 12.8704$ in 2009 and $\frac{2100}{1785^{0.25}75^{0.75}} = 12.6769$ in 2010. The growth rate of productivity is -1.5%.

(b) If productivity remains constant from 2010 to 2011 and the labour force increases from 75 to 80, how large will the capital stock need to be to produce output of 2200 in 2011? (9 marks)

- Answer: In 2011, $A = 12.6769$, $N = 80$, so $K^{0.25} = \frac{Y}{AN^{0.75}} = 6.4877$. Then $K = 1771.61$. So we need a reduction of the capital stock.