

Econ 102 Week 11 Discussion Handout

Topics Covered on Second Midterm include:

Measurement of Aggregates (GDP, unemployment, and CPI); real and nominal GDP; GDP deflator; rate of inflation; growth rates; rule of 70; long-run economic growth; loanable funds market and the government deficit or government surplus; aggregate production functions; marginal product of labor; marginal product of capital; labor productivity; capital productivity.

Past Exams problems

1. Second Midterm spring 2011- Q8

Badger Motor Company (BMC) produces cars in Badgerland. Every year BMC rents land and capital and hires labor from the residents of Badgerland. BMC also has to import 100 tons of steel from Cat Island each year which is the only intermediate product it uses. Suppose last year BMC produced 100 new cars and the price of each car was \$20,000. BMC paid \$250,000 in wages and \$150,000 in rent. The import price of steel from Cat Island is \$7,000 per ton. However, due to the recession, only 60 cars were sold in Badgerland last year.

What is BMC's contribution to Badgerland GDP last year?

- a. \$1.2 million
- b. \$1.3 million
- c. \$2 million
- d. \$0.7 million

2. Second Midterm spring 2011- Q13,Q14,Q15

The following is information about Waterside.

Total population: 15,000

Full-time workers: 6,000

Part-time workers: 3,000

Discouraged workers: 1,000

Total Unemployed workers (includes all types of unemployed workers): 1,000

Cyclically unemployed workers: 500

Seasonally unemployed workers: 0

What is the natural rate of unemployment in Waterside?

- a. 3%
- b. 5%
- c. 7%
- d. 10%

Following are descriptions of four persons' situations. Who do you think is not in the labor force?

- a. After being laid off a month ago from her job, Alice has been volunteering as a babysitter for her uncle while she applies for jobs.
- b. Bob lost his full-time job six months ago and has been working only one day per week since then.
- c. Chris was frustrated and stopped looking for a job after trying to do so for a year.
- d. David just graduated from college and is looking for a job.

The government is considering several policies to reduce cyclical unemployment. Which of the following policies do you think will work?

- a. Open more job information centers
- b. Raise the minimum wage
- c. Implement an expansionary economic policy
- d. Increase spending on job training programs

3. **Second Midterm spring 2011- Q19,Q20**

The isolated island of Oliveria is a closed economy that produces only widgets and olives. In 2004, widgets cost \$5, and in 2005 they cost \$7. Olives cost \$0.35 in 2004, and the price of olives grew at the same rate as the price of widgets from 2004 to 2005.

In 2004, 46 widgets and 89 olives were produced in Oliveria. What was the GDP of Oliveria in 2004?

- a. \$461.1
- b. \$261.15

- c. \$365.61
- d. \$645.54

In 2005, Oliveria produced 53 widgets and 94 olives. What was the GDP deflator in 2005? (Set 2004 as the base year). [Hint: you might want to think about what the answer is rather than spending your time calculating the answer-the calculation is time consuming relative to just thinking about the answer.]

- a. 140
- b. 120
- c. 90
- d. 170

4. **Second Midterm spring 2012- Q20-22**

In a closed economy, the following two equations characterize the market for loanable funds:

$$\text{Investment function (demand):} \quad I = 1000 - 500r$$

$$\text{Savings function (supply):} \quad S = 700 + 1000r$$

Here, r is the real interest rate expressed as a decimal (e.g. an interest rate of 10% would be 0.1 in the equation), S is savings and I is investment. Initially the government is running a balanced budget.

What is the equilibrium real interest rate and quantity of investment in the market?

- a) The equilibrium real interest rate is 5% and the equilibrium quantity of investment is \$900.
- b) The equilibrium real interest rate is 20% and the equilibrium quantity of investment is \$900.
- c) The equilibrium real interest rate is 15% and the equilibrium quantity of investment is \$1200.
- d) The equilibrium real interest rate is 25% and the equilibrium quantity of investment is \$1200.

Now suppose the government switches from running a balanced budget to running a budget deficit and has to finance this deficit by borrowing from the loanable funds market. As a result, the demand for loanable funds changes by \$150 at each level of the real interest rate. What is the new equilibrium real interest rate?

- a) 20%
- b) 25%
- c) 30%

d) 50%

By how much is private investment spending crowded out as a result of the government deficit?

- a) \$25
- b) \$50
- c) \$75
- d) \$100

5. Second Midterm spring 2012- Q25-26

The market basket in country C consists of 5 units of good X and 10 units of good Y. In the year 2050, the price of good X is \$10 and the price of good Y is \$5. In the year 2100, the price of good X is \$50 and the price of good Y is \$10.

What is the CPI in 2100 taking 2050 as the base year (using a scale factor of 100)?

- a) 150
- b) 350
- c) 200
- d) 120

What is the inflation rate from 2050 to 2100?

- a) There is no base year given, so inflation cannot be determined with this information.
- b) 250%
- c) 150%
- d) 50%

6. Second Midterm spring 2012- Q26-28

Consider an aggregate production function: $Y=30(K)^{1/2} (L)^{1/2}$, where Y is real GDP, K is the capital stock level, and L is the total number of workers in the economy. The number of workers is constant and equal to 100.

In Economics 101 you studied returns to scale which considers what happens to output when all inputs (in this case, labor and capital) are increased proportionately. Recall that constant returns to scale occurs when output increases by the same proportion as the increase in inputs (e.g., if inputs double, then output doubles); increasing returns to scale occurs when output increases by more than the proportionate increase in inputs (e.g., if inputs double, output more than doubles); and decreasing returns to scale occurs when output increases by less than the proportionate increase in inputs (e.g., if inputs double, output less than doubles). This aggregate production function exhibits

- a) decreasing returns to scale.
- b) constant returns to scale.
- c) increasing returns to scale.
- d) There is not enough information to determine returns to scale for this production function.

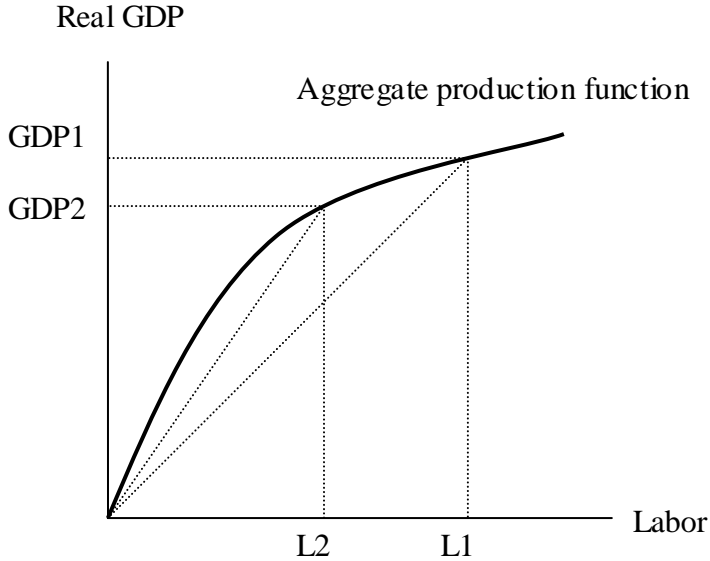
In the short-run suppose capital is fixed at 100 units. What is the value of **capital productivity** given this information?

- a) 30,000 units of output per unit of capital
- b) 3,000 units of output per unit of capital
- c) 300 units of output per unit of capital
- d) 30 units of output per unit of capital

Suppose that in the long-run the economy continues to employ 100 workers but the level of capital stock increases to 144 units. Compared with the short-run situation where there were 100 workers and 100 units of capital, we know that labor productivity

- a) has decreased.
- b) has increased.
- c) has remained constant.
- d) cannot be computed for these two scenarios without more information.

7. Second Midterm spring 2012- Q29-30



Based on this aggregate production function for an economy, which of the following statements is true?

- a) The productivity of labor at L2 is smaller than the productivity of labor at L1.
- b) The real GDP per capita at L2 is smaller than the real GDP per capita at L1.
- c) The marginal productivity of labor at L2 is greater than the marginal productivity of labor at L1.
- d) The real GDP at L2 is greater than the real GDP at L1.

Suppose in this economy there is an increase in education subsidies, so that, more people are able to attend college and improve their human capital. At the same time earthquakes destroy several hundred manufacturing facilities in the country. Given these events, how will the aggregate production function for this economy shift?

- a) It will shift up.
- b) It will shift down.
- c) It will remain the same.
- d) We do not know for sure how the aggregate production function for this economy will shift.