

Midterm Exam

Tuesday, September 26

1 hour, 15 minutes

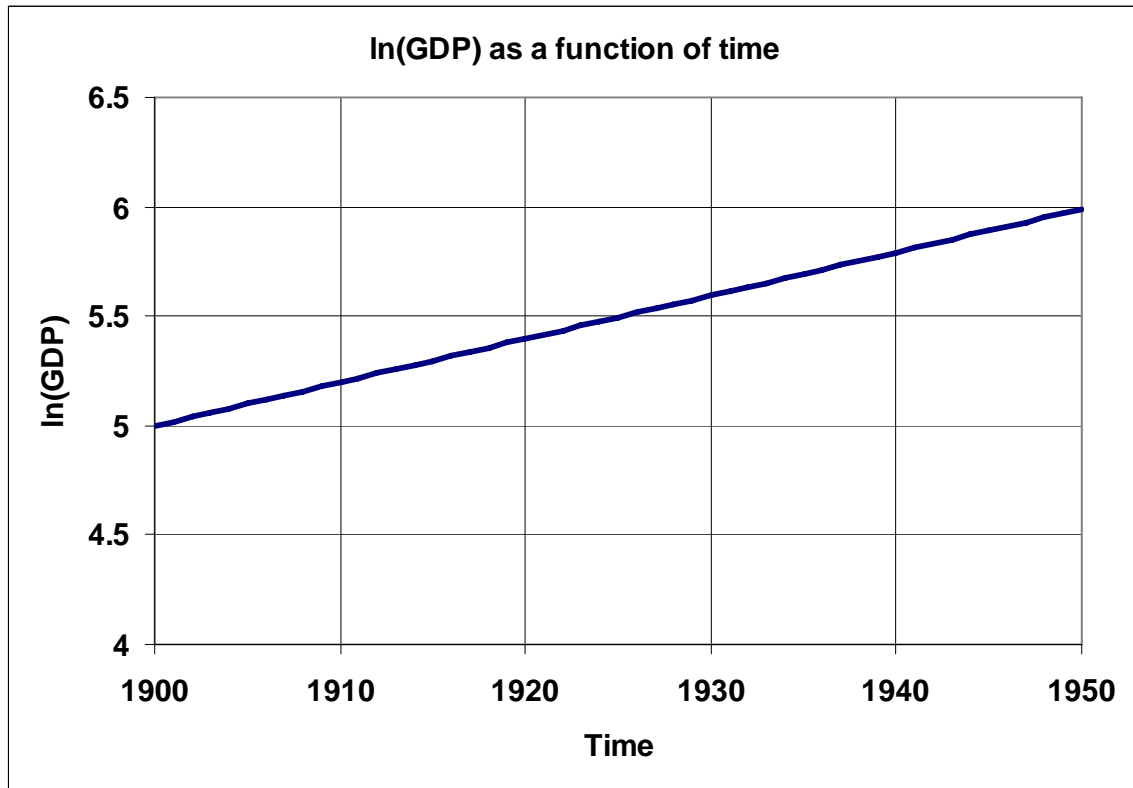
Name: _____

Instructions

1. This is closed book, closed notes exam.
2. No calculators of any kind are allowed.
3. Show all the calculations.
4. If you need more space, use the back of the page.
5. Fully label all graphs.

Good Luck ☺

1. (20 points). The next graph shows the $\ln(\text{GDP})$ of some country.



a. The GDP grows at constant rate. True/False, circle the right answer, and briefly explain why.

b. Based on the graph, the approximate growth rate of GDP is (circle one answer)

- i. 6%
- ii. 5%
- iii. 2%
- iv. 1%

2. (20 points). The next table presents actual data from the National Income and Product accounts of some country.

Personal Consumption Expenditures	6,000
Gross Investment	2,000
Government Consumption Expenditures	1,500
Net Exports	500
Compensation of Employees	5,000
Net Interest	1,000
Rental Income	500
Proprietors' income	800
Corporate profits	1200
Indirect business tax net of subsidies	500
Consumption of fixed capital	1000
Statistical Discrepancy	0

- a. Based on the above data calculate the GDP using the expenditure approach.
- b. Calculate the GDP using the Income approach. (Self check: I provided the number for the statistical discrepancy so you can check that your calculations are correct. The statistical discrepancy is the difference between the GDP calculated by expenditure approach and the GDP calculated by the income approach).

3. (20 points). The next table provides data on prices and output in some artificial economy for the years 2000 – 2002. The goods are labeled 1 and 2, so that P_1, P_2, Q_1, Q_2 are prices and quantities of the two goods respectively.

Year	P_1	Q_1	P_2	Q_2
2000	2	60	8	20
2001	2.5	65	9	25
2002	3	80	8	30

- a. Calculate the nominal GDP in 2002.
- b. Calculate the real GDP in 2002 using the year 2000 as the base year.
- c. Calculate the inflation rate between the years 2000 – 2002 using 2000 as the base year.

5. (20 points) Suppose that a firm produces output using the production function:

$$Y = AK^\theta L^{1-\theta}.$$

- a. Write the firm's profit maximization problem (in real terms).

- b. Write the first order conditions for maximum profit.

- c. Show that a fraction θ of the firm's output is paid to capital.