



EC 205 Macroeconomics I

Fall 2023

Problem Session 1

1. In a competitive market, aggregate demand for the lemonades is given by $D(Y, P) = 10 + 5Y - 3P$

and the aggregate supply is given by $S(P, P_{lemons}) = 20 + 3P - 2P_{lemons}$

- a. Draw the demand and supply curves and show the equilibrium. (Assume $P_{lemons}=4$ and $Y=16$)
- b. Assume that the price of lemons has increased. How would the supply of lemonades change? How about the new quantity and price? Show on the graph.
- c. Assume that the aggregate income has doubled. Also, the price of lemons has tripled due to high inflation. Decide whether the demand for lemonades increases or not.

2. Identify whether the examples given below are stock or flow variables.

- a. Population
- b. CO2 in atmosphere
- c. water pouring in
- d. total money supply
- e. number of persons employed
- f. gross profit
- g. unemployment rate

3. Suppose people in Bengonia only produce and consume 3 different goods. The following table shows the prices and quantities of each good consumed in 2018, 2019, and 2020.

YEAR	Price of cherry	Quantity of cherry	Price of cherry	Quantity of berry	Price of melon	Quantity of melon
2018	\$8	400	\$12	300	\$10	150
2019	\$9	500	\$15	400	\$12	200
2020	\$14	550	\$16	500	\$10	225

- Calculate the nominal GDP in each of the three years.
- Calculate the real GDP in each of the three years, using 2018 as the base year.
- Calculate the GDP deflator for each of the three years.
- Calculate the rate of inflation for 2019 and 2020 using the GDP deflator.

- e. Suppose the consumer basket comprises 10 Cherries, 15 Berries and 8 Melons. Regarding the answer you found in d, do the inflation rates for 2019 and 2020 change when CPI is used? Show your calculations.
- f. What are the main differences between CPI and GDP deflator?

4. Which of the following are included in GDP, and which are not?

- a) The sale of a used car
- b) The iron that goes into the steel that goes into a refrigerator bought by a consumer
- c) Childcare provided by a grandmother
- d) The cost of hospital stays
- e) Sales from inventories of goods that were produced in previous years
- f) A French singer holds a concert in Turkey
- g) A domestic business purchases a domestically produced computer to use in a business office.
- h) A domestic business produces a computer that is sold to a foreign company.
- i) The federal government purchases a domestically produced computer to use in a courthouse.
- j) A domestic household purchases a domestically produced computer to use in a home.
- k) A domestic household purchases a computer produced in a foreign country to use in a home.

5. Explain the limitations of GDP.

6. Below is the labor market data for a hypothetical country.

Category	Number (in millions)
Employed	102.3
Unemployed	16.1
Other	41.5

Using the data above

- a) What is the size of the labor force?
- b) Calculate the labor force participation rate.
- c) Calculate the unemployment rate.