Elements of Macroeconomics: Homework #2

Name:_____

Section:_____

Due 9/23 or 9/24 in assigned Section

[Part A] Short Questions (20 points, 2 points each)

Fill in the blanks

a. The inflation rate is the speed with which the overall price level is changing.

b. Weimar Germany experienced a period of hyperinflation in 1918-1923. In the Great Depression, the US experienced a period of deflation. Most economist agree that both are destabilizing.

c. Core inflation excludes food and energy from the underlying basket of goods.

d. Nominal GDP is the sum of the money value of the final output of all goods and services in the domestic economy.

e. GDP is adjusted for recurring seasonal patterns. We call this being seasonally adjusted.

f. The Bureau of Economic Analysis (BEA) estimated real GDP to be $18.638 trillion in 2019.

g. Final sales is equal to GDP minus Inventory Investment.

h. Check the good/goods that will be included in US GDP :

   ○ An Iphone made in China
   ○ Steel used in car manufacturing
   ⬤ A Samsung smartphone made in US
   ○ Dr. Barbera's used computer sold on ebay

i. GDP and GNP are different in that GDP is based on location while GNP is based on ownership.

j. In economics, an externality is the cost or benefit that affects a party who did not choose to incur that cost or benefit. (hint: the word is in the first three slides from lecture 5)

[Part B] Nominal and Real GDP (20 points, 4 points each)

Suppose there is a country X that only produces bread and wine. The following is a table of the price and quantity of goods produced in country X for the years 2015 and 2018.

Year	Bread	Price of Bread	Wine	Price of Wine
2015	100	$5	50	$20
2018	90	$7	40	$25

    a. What is nominal GDP in both 2015 and 2018?

2015: 100*5 + 50*20 = 1500

2018: 90*7 + 40*25 = 1630

    b. Calculate real GDP in country X for both years with 2015 prices as the base price.

2015: 100*5 + 50*20 = 1500

2018: 90*5 + 40*20 = 1250

    c. What is the percentage change in real GDP from 2015 to 2018?

[1250/1500 – 1]*100 = -16.67%

    d. What is the annualized growth rate of real GDP from 2015 to 2018?

[(1250/1500)^(1/3) – 1]* 100 = -5.9%

    e. Notice that nominal GDP has increased while real GDP has decreased. Explain in 1 or 2 sentences why this is so and also what this tells us about nominal GDP.

The increase in price is bigger than the decrease in quantity produced, so nominal GDP increased while real GDP decreased. This shows that nominal GDP is highly sensitive to inflation or movements in price.

[Part C] Flows, Measurements, and Growth Rates (20 points, 10 points each)

The table below depicts the US's quarterly GDP flows for selected quarters. The measured flow of US's GDP in 2017 was equal to $20 trillion. For the purpose of this question, assume that the data is seasonally adjusted real GDP. (Data is from federal reserve economic data (FRED))

US	2015: Q4	2016: Q1	2018: Q4	2019: Q2
Quarterly real output flows (in trillion $ units)	4.7	4.5	5.3	5.4
Adjusted real output flows				

a. Notice in 2017 GDP was $20 trillion, but in Q4 of 2018 GDP was $5.3 trillion. Did US's real output flow collapse in 2018? If not, adjust the quarterly flows to reconcile them with the 2017 annual data and fill them into the chart.
   (hint: this question is asking you to think about how one should compare quarterly data to yearly data)

No. The quarterly data needs to be annualized to be compared to the yearly GDP figure. They need to be multiplied by 4.

US	2015: Q4	2016: Q1	2018: Q4	2019: Q2
Quarterly real output flows (in trillion $ units)	4.7	4.5	5.3	5.4
Adjusted real output flows	18.8	18.0	21.2	21.6

b. What was the US's annualized real GDP growth rate, from 2015: Q4 through 2019: Q2? (show your work)

14 quarters from 2015Q4 to 2019Q2, or 3.5 years
Annualized growth rate = X - 1
$X^{3.5}$ = 5.4/4.7
X= $(5.4/4.7)^{(1/3.5)}$ = 1.04
Annualized growth rate = 4%

[Part D] Inflation (20 points, 5 points each)

Below is a table with the weights used by different items in the December 2018 CPI report.

| CATEGORIES	WEIGHTS
FOOD	13%
ENERGY	7%
CORE GOODS (EXCL. FOOD AND ENERGY)	20%
CORE SERVICES	36%
OWNER'S EQUIVALENT RENT	24%

a. The index can be slow to add new goods, particularly technological advancements such as new smart phones or laptops. If the price of these new goods tends to increase over time (relative to other goods), would tardiness in including them in the index tend to overstate or understate CPI inflation?

Inflation would be understated

b. Suppose the US implements tariffs on imported Chinese goods. Assuming the weight of the CPI basket does not change, will CPI inflation be lower or higher after the tariffs are introduced compared to before?

CPI inflation will be higher after the tariffs are introduced since tariffs increase the price of the good.

c. In September 2019, two oil refineries were damaged in Saudi Arabia. Suppose this event caused problems in the production of oil in Saudi Arabia. Using the graph below, show what will happen to the demand and supply curves in the market for oil.

Oil Market
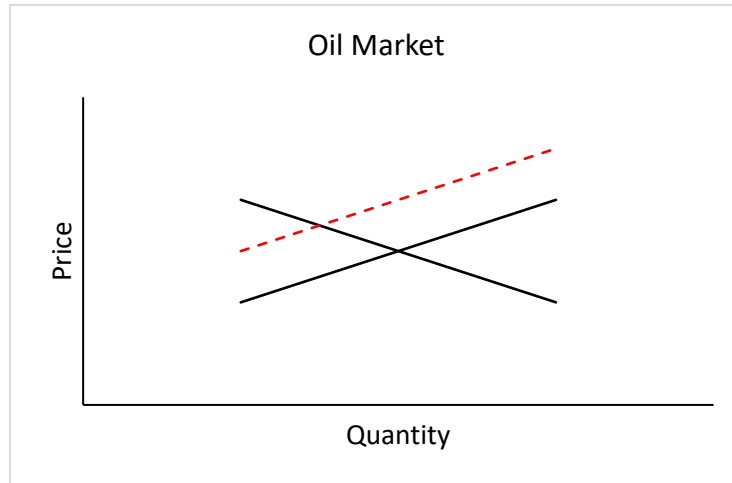
d. Suppose that the result of the event described in the previous problem increases the price of oil by 10%. At the same time, the price of all foods decreased by 10%. Will the CPI inflation increase or decrease?

Decrease since the weight of food is higher.

[Part E] Labor Market Review (20 points, 5 points each)

Circle True or False. If it is false, state which part of the statement should be changed to make it true.

a. The labor force participation rate is calculated as the fraction of the labor force over the entire population.
(True / False)
Over working age population

b. (Take the following as true) In the 1950s due to the baby boom generation, school enrollment dramatically increased. Due to this increase in number of enrollments, the number of teachers and teacher salaries increased.

This event is explained by the shift in the supply curve of teachers.
(True/False)
It is the shift in the demand curve

c. Students are counted as unemployed workers.
(True/False)
No, they are not in the labor force

d. If Nominal GDP rises by 4.2% and overall prices rise by 2%, roughly speaking, real GDP rises by 2.2%.
(True/False)

e. The U6 unemployment rate is always higher than or equal to the U3 unemployment rate.
(True/False)