Economics 102
Fall 2017
Answers to Homework #3
Due 10/31/2017

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered,** because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

Please remember to

- Staple your homework before submitting it.
- Do work that is at a professional level: you are creating your "brand" when you submit this homework!
- Do not submit messy, illegible, sloppy work.
- Show your work to get full credit.

1. The table below describes a variety of cases which can possibly affect US GDP. Please fill in the blanks.

Scenario	Component of GDP affected: C, I, G, X-IM, or NC (not counted)	Effect on GDP (increase, decrease, or no change)
1. A farmer purchases a new tractor.		
2. Businesses increase their current inventories.		
3. You spend $7 to attend a movie.		
4. Worried about consumer confidence, Ford purchases less sheet metal for cars.		
5. A retired man cashes his social security check from the government.		
6. A French company purchases a one-year membership to PartyPeople.com, a U.S.-based company.		
7. A person pays $450 a month to rent an apartment.		
8. Worried about a recession, people begin saving more money.		
9. The U.S. government hires more workers for constructing a bridge.		
10. Government closes school for the month of March.		

2. Suppose nominal GDP in 2012 increased by 7% (over its level in 2011). Based on this information, what happened to the rate of inflation (as measured by the GDP deflator) and real GDP between 2011 and 2012? Provide a full analysis given this information and holding everything else constant.

3. National income accounting deals with the aggregate measure of the outcome of economic activities. The most common measure of the aggregate production in an economy is Gross Domestic Product (GDP). In this problem consider a nation known as "Cocoland." The table below provides Cocoland's national income accounting. Use this data to answer the following questions.

Transfer Payments	$ 54
Interest Income	$ 186
Depreciation	$ 36
Wages	$ 67
Gross Private Investment	$ 124
Business Profits	$ 274
Indirect Business Taxes	$ 74
Rental Income	$ 75
Net Exports	$ 18
Net Foreign Factor Income	$ 12
Government Purchases	$ 156
Household Consumption	$ 304

a. Calculate the GDP using the expenditure approach (Method 2 in your class notes). Show your work and explain your work.

b. Calculate GDP using the factor payment approach (Method 3 from your class notes) or the income approach. Show your work and explain your work.

4. Suppose you are provided with the following information about an economy comprised of just two firms, a shrimp farm that produces raw shrimp and a seafood restaurant:

SHRIMP FARM		SEAFOOD RESTAURANT	
Revenues (shrimp)		Revenues (fried shrimp)	
Sales to Households	$ 10,000	Sales to Household	$ 50,000
Sales to Foreigners	$ 10,000		
Sales to Seafood Restaurant	$ 10,000		
Expenses		Expenses	
Wages	$ 10,000	Wages	$ 15,000
		Shrimp	$ 10,000
Profits	$ 20,000	Profits	$ 25,000

a. Calculate GDP using the final goods approach. Show work.

b. Calculate GDP using the value-added approach. Show each step of your calculations.

c. Calculate GDP using the factor payment approach. Show each step of your calculations.

5. The table below gives some labor statistics (from the Bureau of Labor Statistics) for years 1995, 2000 and 2005. Use these data to answer the following questions. Express your answers in percentage terms to ***two*** places past the decimal.

Variable	1995	2000	2005
Population	26,000,000	27,000,000	28,000,000
Adult population	18,000,000	19,000,000	20,500,000
Adult population able to work	17,900,000	18,800,000	20,000,000
Adult population able and wanting to work	15,700,000	16,500,000	18,000,000
Number employed	14,000,000	14,500,000	15,000,000
Number unemployed	1,000,000	1,500,000	2,500,000

a. Define labor force. For each year find the labor force.

b. Define the term "discouraged workers". For each year find the number of discouraged workers.

c. Define the labor-force participation rate. Calculate it for each year.

d. Calculate the unemployment rate for each year.

6. Which of the following people is considered unemployed by the Bureau of Labor Statistics? Explain your answer in each case.

a. A housewife or househusband.
b. An inmate in the state prison.
c. A college student who is not looking for work.
d. A college student who has just graduated and is looking for a job.
e. A person who was fired 3 months ago and has been looking for a job ever since.
f. A person who was fired 3 months ago and unsuccessfully looked for a job for 1 month, but has not looked for a job recently.

7. Suppose that Wisconsin economy produces just one kind of output, a bubbler. The table below gives the economy's output of bubblers and the corresponding prices for 2014, 2015, and 2016. Use these data to answer the questions below. For parts b. through d., show the details of your calculations and express your answers in percentage terms to ***two*** places past the decimal.

Year	Units of Bubblers Produced	Price of a Bubbler
2014	500	$ 20
2015	520	$ 21
2016	560	$ 24

a. Calculate nominal GDP for each year. Because the structure of this economy is so simple, it is easy to calculate the GDP deflator. Calculate the GDP deflator (a type of price index) on a 100 point scale for each year *using 2015 as the base year*. Then, calculate real GDP for each year.

b. What is the growth rate in nominal GDP between 2015 and 2016?

c. What is the inflation rate between 2014 and 2015 based upon the GDP deflator?

8. Suppose that Mr. Badger spends his money just for buying pizzas, cellphones, turkeys, and cheese. The table below shows Mr. Badger's spending on each commodity for 2010 and 2011. Use this data to answer the following question. What is the inflation rate between 2010 and 2011? Express your answers in percentage terms to ***two*** places past the decimal. Assume that 2010 is the base year and that you are using a CPI to compute the rate of inflation. Also, assume that for purposes of this CPI the market basket is defined as the amounts of the goods consumed in the base year.

Good	Year 2010		Year 2011	
	Quantity Consumed	Price	Quantity Consumed	Price
Pizzas	20	$10	30	$11
Cellphones	1	$600	2	$640
Turkeys	1	$100	4	$120
Cheese	1	$50	0.5	$40

9. Suppose people consume 3 different goods. The following table shows the prices and quantities of each good consumed in 2006, 2007, and 2008. Express your answers in percentage terms to ***one*** place past the decimal.

Year	Price of Fish	Quantity of Fish	Price of Pork	Quantity of Pork	Price of Beef	Quantity of Beef
2006	$ 7/fish	400 fish	$ 8/pound	225 pounds	$ 10/pound	175 pounds
2007	$ 8/fish	550 fish	$ 7/pound	250 pounds	$ 12/pound	275 pounds
2008	$ 9/fish	900 fish	$ 6/pound	275 pounds	$ 15/pound	275 pounds

a. Calculate nominal GDP in each of the three years.

b. Calculate Real GDP in each of the three years, using 2006 as the base year.

c. Calculate the GDP deflator for each of the three years.

d. Calculate the rate of inflation for 2007 and 2008 using the GDP deflator as your price index. Assume that 2006 is still the base year.

e. Using the quantities from 2006 for your market basket, and 2006 as your base year, calculate the CPI for 2006, 2007 and 2008.

f. Using the CPI calculate the rate of inflation.

g. Recalculate CPI and inflation using the 2006 quantities for your market basket but with 2008 as your base year.

h. Now calculate CPI and inflation using 2008 quantities as your market basket and 2006 as your base year.

i. Does which year you choose as a base year matter when using the CPI to compute the rate of inflation? Does your choice of quantities for the market basket used to compute the CPI impact the rate of inflation?

j. Compare your answers from part d. with your answers from part f. If they are the same, why are they the same? If they are different, why are they different?

10. The World Bank and the International Monetary Fund provide a lot of data that is readily available for us to use. Go to the following website to get the data this question calls for:

https://data.worldbank.org/indicator/FP.CPI.TOTL?locations=US&name_desc=false

At this link you can see time-series data for the U.S. CPI from 1960 to 2016 where the base year is 2010. This means that in 2010 the CPI for the U.S. is equal to 100. This data set also provides CPI data for many countries (see the list below the graph at this website) and for each country the CPI base year is 2010. This means that the CPI in 2010 for every single country is going to be 100.

a. The G20 (or G-20 or Group of Twenty) is an international forum for the governments as well as the central bank governors from 20 major economies. Currently, these major economies in alphabetic order are: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, United Kingdom, United States, and the European Union. Founded in 1999, the G20 aims to discuss policy issues pertaining to the promotion of international financial stability. Except for Argentina and European Union, construct a summary table of the CPI in 2005 and the CPI 2015 for each country in the G20. Express your answers in percentage terms to ***one*** place past the decimal. This implies that you will need to go to this website and collect the available CPI data for each country listed in the table below and for the two dates in the table.

	CPI (2005) with base year 2010	CPI (2015) with base year 2010
Australia		
Brazil		
Canada		
China		
France		
Germany		
India		
Indonesia		
Italy		
Japan		
Mexico		
Russia		
Saudi Arabia		
South Africa		
South Korea		
Turkey		
United Kingdom		
United States		

b. Let's suppose that 2005 is the base year instead of 2010: this means that you will need to compute new CPI values for all these economies. Provide a general description of how you will calculate these new CPI values for these countries and then entered them in the table below.

	CPI (2005) with base year 2005	CPI (2015) with base year 2005
Australia		
Brazil		
Canada		
China		
France		
Germany		
India		
Indonesia		
Italy		
Japan		
Mexico		
Russia		
Saudi Arabia		
South Africa		
South Korea		
Turkey		
United Kingdom		
United States		

c. Based on your answers in part (b), which country experienced the greatest fall in the purchasing power of the dollar between 2005 and 2015?

d. Let's suppose that 2005 is the base year. Based on your answer in part (b), which country did experience the smallest fall in the purchasing power of the dollar between 2005 and 2015?

e. Suppose you can have a chance to work as an economist for a multinational giant firm. This firm has economic research centers in all of the countries we have considered in this question. You have nominal monthly payroll information for 2015 which are described in the table below and you know that the purchasing power of the dollar is same among countries in 2005 (that is the CPI in all of the countries in 2005 is equal to 100).

	Nominal Monthly Payment in 2015 Dollars
Australia	$ 9,700
Brazil	$ 8,700
Canada	$ 8,850
China	$ 5,300
France	$ 5,700
Germany	$ 7,000
India	$ 9,000
Indonesia	$ 12,500
Italy	$ 6,500
Japan	$ 6,200
Mexico	$ 7,450
Russia	$ 12,000
Saudi Arabia	$ 10,000
South Africa	$ 8,200
South Korea	$ 9,000
Turkey	$ 11,000
United Kingdom	$ 9,000
United States	$ 9,500

Suppose your only criteria for where you work is having the largest real monthly salary. Given the above information and your information on the CPI calculate which country has the highest real monthly salary. Explain how you did this calculation.