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### **Homework #2 (due by 9:00pm on Thursday, February 4)**

*Please submit your answers to this homework through the Assignment link at Blackboard. **No credit will be given for answers submitted in class or emailed to the professor, regardless of the excuse.** This includes unique excuses like my dog ate my homework or aliens showed up in my dorm and accidentally deleted my homework, as well as more traditional excuses like “I lost my Internet”. Please note that all submissions are final, again – regardless of the excuse (which includes “I accidentally hit the submit button”). When you go to Blackboard, you should see that you can save your answers, or “Save and Submit”. Use the Save and Submit button to submit your answers. If you are unfamiliar with Blackboard, then it would be a good idea to visit the class page at Blackboard and check out the homework assignments as they are posted.*

Please note that when Blackboard grades homework answers, more specifically when Blackboard grades answers to any fill-in-the-blank questions – your answer must match exactly with the answer that Blackboard is looking for. Below, you’ll find some instructions on how to properly format these answers. Reading this section is strongly recommended.

#### **Questions 4, 5, and 7**

Note that on Question #4-5, you'll answer these questions using a file for the CPI. When you record your answers to each question, be sure to record your answer such that it looks exactly the same as what was provided in the tables. E.g., if you are looking up a value and asked to record that value as part of your answer, and the value in the table is 232.100, then record your answer as 232.100, rather than as 232.1 or 232.10.

In Question #7, you’re asked to calculate a value for real income within a specific region of the country. Your answer should be expressed in terms of dollars and rounded to the nearest whole dollar. E.g., twenty dollars and 30 cents would be written as \$20, rather than \$20.30, 20.30 or 20.

If you have any questions on how to express an answer, then be sure to ask before you submit the homework for grading.

## **Homework #2 Questions**

1. We'll be using data from the Energy Information Administration website on the monthly price and quantity sold for residential electricity within Kentucky. That data is provided in the file "Residential Electricity Prices and Quantity Sold: Kentucky" within the Homework #2 material folder that's posted in Course Documents at Blackboard.

Assume that the demand and supply curves associated with this market have their "typical slope" (i.e. that the demand curve in this market has a negative slope, and the supply curve a positive slope). Assume also that the prices and quantities you observe in the tables represent the equilibrium price ( $P^*$ ) and equilibrium quantity ( $Q^*$ ) in this market.

In each problem below, you're provided with a pair of months. Your first task is to determine how the price and quantity changed between these two months. Under the assumption that the price is an equilibrium price and the quantity is an equilibrium quantity, you have information that tells you how the equilibrium changed between the two months. Given the changes that must have occurred, you must infer which shift(s) took place to give us that change in equilibrium.

Match the pair of dates (and implied change in  $P^*$  and  $Q^*$ ) on the left to the appropriate shift(s) on the right. Note that the shift(s) must always explain the result you found (i.e. it can't be correct under certain circumstances, it must always be correct in a market where the curves have their regular slopes – as assumed above). E.g., if you discover that both  $P^*$  decreases and  $Q^*$  increases between Oct 2019 and Nov 2019, and you think that this change is best explained by an increase in demand, then your answer for *part a* would be "A".

### **Change in $P^*$ and $Q^*$ :**

- a. Oct 2019 to Nov 2019
- b. Dec 2019 to Jan 2020
- c. Jan 2020 to Feb 2020
- d. June 2020 to July 2020
- e. July 2020 to Aug 2020

### **Shift in curve(s):**

- A. Increase in demand
- B. Decrease in demand
- C. Increase in supply
- D. Decrease in supply
- E. Increase in demand and increase in supply
- F. Decrease in demand and decrease in supply
- G. Increase in demand and decrease in supply
- H. Decrease in demand and increase in supply

2. Assume that Louisville (e.g. Jefferson County) has a market for retail gasoline and that similar, but alternative retail gas markets also exist in southern Indiana, and in counties adjacent to Louisville, like Oldham County and Bullitt County.

Let's analyze the **retail gasoline market in Louisville** (i.e. we will be trying to predict how the Louisville market is affected by various events). Below, you must determine how each of the five different events affect this market in terms of causing a shift or shifts in the demand and supply for retail gasoline in Louisville. Match each event below with the appropriate shift(s). E.g., if you believe that improved technology with gas pumps from "part a" causes a decrease in the Supply within the Louisville retail gasoline market, then your answer would be "D".

**Events:**

- a. Improved technology with the gas pumps that dispense gasoline to consumers
- b. Changes in state law which increase the number of drivers in cities like Louisville
- c. Changes in state law which bans consumers from pumping their own gas, a ban that raises the cost of supplying gas because gas stations must now hire additional employees to pump gas for consumers (similar to existing laws in states like Oregon and New Jersey)
- d. Increase in consumer income
- e. Increase in gas prices within counties adjacent to Louisville (e.g. Oldham and Bullitt Counties).

**Effect: Shift in Curve(s) within the Louisville gasoline market**

- A. Increase (shift right) in Demand for Louisville gasoline
- B. Decrease (shift left) in Demand for Louisville gasoline
- C. Increase (shift right) in Supply of Louisville gasoline
- D. Decrease (shift left) in Supply of Louisville gasoline
- E. Increase (shift right) in Demand for Louisville gas and Increase (shift right) in Supply of Louisville gas
- F. Decrease (shift left) in Demand for Louisville gas and Decrease (shift left) in Supply of Louisville gas
- G. Increase (shift right) in Demand for Louisville gas and Decrease (shift left) in Supply of Louisville gas
- H. Decrease (shift left) in Demand for Louisville gas and Increase (shift right) in Supply of Louisville gas

3. Continue analyzing the market from question #2, the Louisville retail gasoline market, and predict how various events will most likely affect the current equilibrium price and quantity of retail gasoline within Louisville. E.g., if you believe that the expectation of higher gas prices during Derby Week leads to an increase in the current equilibrium price and quantity of retail gasoline within the current Louisville gasoline market, then your answer would be “A”.

**Events:**

- a. Assume we are 7 days away from what would be a typical Derby Week, a week when there will be a big influx of visitors to the Louisville area which causes gas prices to significantly increase during Derby Week.
- b. Kentucky State government eliminates the tax on gasoline which they levy on the suppliers of gasoline in Kentucky.
- c. Increases in the productivity of Louisville gas stations
- d. Strict new city government health and safety regulations lead to the exit of gas stations from the Louisville market and into a neighboring market (e.g. Oldham County or Bullitt County).
- e. Indiana State government enacts a significant increase in the tax on suppliers of gasoline in that state.

**Effect:  $\Delta P^*$  and  $\Delta Q^*$  in the Louisville gas market**

- A. Increase in equilibrium price and increase in equilibrium quantity
- B. Decrease in equilibrium price and decrease in equilibrium quantity
- C. Increase in equilibrium price and decrease in equilibrium quantity
- D. Decrease in equilibrium price and increase in equilibrium quantity

4. To answer this question, you must access the *cpi.pdf* file created by the Bureau of Labor Statistics (BLS). This file is located in the Homework #2 material folder in Course Documents at Blackboard. This file shows different values for the Consumer Price Index for All Urban Consumers (CPI-U) by expenditure category.

In the first column of this table, you'll see the heading “Expenditure Category” at the top of the column. In column 2, you'll see the heading “Relative Importance, Oct 2020”, followed by a column for “unadjusted indexes” for Nov 2020.

Using the column under the heading “unadjusted indexes” for Nov 2020, answer the following question. Note that you are simply reporting the number you find in the table, and **you're not calculating anything**.

The value of the Nov 2020 CPI for “All items” is \_\_\_\_\_

*note: express the CPI value exactly as stated in the table (do not round it).*

5. To answer this question, you must access the *cpi.pdf* file used to answer question 4 above. This file is located in the Homework #2 material folder in Course Documents at Blackboard.

Note that the second column of the CPI table is the “Relative Importance, Oct 2020” for each expenditure category. These values are the CPI weights we discussed in class. Report the relative importance of each expenditure category below. Please record the value exactly as given in the table (e.g. if Commodities was a category below, the value for Commodities, is 37.439).

*Note, there is no partial credit on this question, your overall answer must be completely correct.*

Expenditure category	Relative Importance/Weight (Oct 2020)
Services	
Durables	
Nondurables	
Food and beverages	
Fuels and utilities	
Housing	
Education & Communication	
Recreation	
Medical Care	
Transportation	
Apparel	
Personal Care	

6. To answer this question, you must access the *cpi.pdf* file used to answer questions 4-5 above. This file is located in the Homework #2 material folder in Course Documents at Blackboard.

Based on the CPI table (*cpi.pdf*), select every true statement below.

*Note, multiple answers are possible and since there is no partial credit on this question, your overall answer must be completely correct.*

- a. relative to the base year, the inflation rate of Services is about 100%
- b. relative to the base year, Durables prices have remained much more constant than Nondurables prices or the price of Services
- c. relative to the base year, the price of Communication has decreased
- d. relative to the base year, the price of Recreation has decreased, while the price of Photography has increased
- e. relative to the base year, the inflation rate of Medical Care is 519.848%

The table below is used to answer questions 7-8

**Consumer Price Index for All Urban Consumers (CPI-U):  
All Items, selected regions and cities, July 2020 (1982-84=100)**

<b>Regions</b>	<b>CPI-U</b>
West	275.597
Midwest	240.430
Northeast	273.347
South	248.619
<b>Major Cities</b>	<b>CPI-U</b>
Boston-Cambridge-Newton, Ma.-N.H.	283.175
Atlanta, GA	245.184*
San Francisco, CA	300.032*
Chicago-Naperville, Elgin, IL	244.046
St Louis, MO-IL	233.518*
Los Angeles, CA	279.899
Houston-The Woodlands-Sugar Land, TX	228.898*
Seattle-Tacoma-Bellevue, WA	281.055*
Minneapolis-St. Paul-Bloomington, MN-WI	251.243

\* June 2020

7. On the CPI table above, you're provided with the July 2020 CPI for four different regions of the U.S. and then for several major U.S. city areas. Use the CPI data on regions in this table to answer the following question.

A typical resident within the Midwest US region who earns a nominal income of \$11,000 during this period would have a real income of \_\_\_\_\_

*Note: express your answer in terms of dollars, not dollars and cents, and round to the nearest whole dollar if necessary.*

8. Use the table above on the **previous page** (the table used to answer question 7) to answer this question. Although this question below asks about July 2020, you can assume that the values which are from June 2020 are the same as the values from July 2020.

Assume you are an individual with \$5,000 in nominal income during July 2020. Based upon the table above, in which major city area would you have the greatest purchasing power?

- a) Boston-Cambridge-Newton, Ma.-N.H.
- b) Atlanta, GA
- c) San Francisco, CA
- d) Chicago-Naperville, Elgin, IL
- e) St Louis, MO-IL
- f) Los Angeles, CA
- g) Houston-The Woodlands-Sugar Land, TX
- h) Seattle-Tacoma-Bellevue, WA
- i) Minneapolis-St. Paul-Bloomington, MN-WI

9. The chart below provides you with information about Presidential salaries in specific years and the CPI for each of those years. Use this information to answer the question on the next page that refers to the table.

<b>US Presidents and their (nominal) salaries</b>			
<b>Year</b>	<b>President</b>	<b>Nominal Salary</b>	<b>CPI (2010=100)</b>
1789	Washington	\$25,000	7.8
1873	Grant	\$50,000	5.5
1909	Taft	\$75,000	4.1
1949	Truman	\$100,000	10.9
1969	Nixon	\$200,000	16.8
2001	Bush	\$400,000	81.0
2011	Obama	\$400,000	100.0
2017	Trump	\$400,000	112.4

Based on the table from the previous page, which President had the greatest real salary?  
*(note: real salary is the same as real income)*

- a. George Washington
- b. Ulysses Grant
- c. Howard Taft
- d. Harry Truman
- e. Richard Nixon
- f. George W. Bush
- g. Barack Obama
- h. Donald Trump