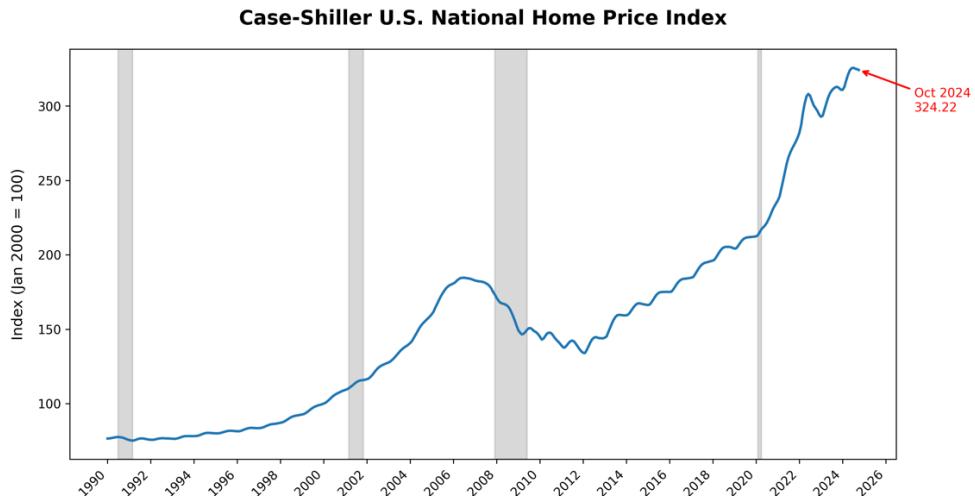


# Week 1 Review Session Questions

The first three problems will not be covered in the review session, so be sure to do these on your own. Questions 4 through 8 are scheduled to be covered. Depending on timing, uncovered questions may be discussed in the following week.

1. The housing price index from 1991 to the present is shown below:



- a. Define *independent variable* and explain why time is the independent variable in the graph.  
b. Define *dependent variable* and explain why home price index is the dependent variable in the graph.
2. You are interested in the relationship between wages and education.
  - a. Which variable is the dependent variable? Explain.
  - b. Which variable is the independent variable? Explain.
  - c. You are told that when the education level is 12 years, the average wage is \$10 and when the education level is 16 years, the average wage is \$12. Calculate the slope of the straight line that goes through these two points.
  - d. Calculate the y-intercept.
  - e. Interpret the function relating wages and education in detail.
3. Solve for x in the following equations graphically and algebraically:
  - a.  $y=3x+5$   
 $y=x+15$
  - b.  $-0.2x-y+4=0$   
 $y=x+2$
  - c.  $y=15x+9$   
 $0.5y + 2 = 4x$
  - d.  $x = 10 - 2y$   
 $x = 4 + 3y$

4. In this class we will be working with consumption functions that show how much consumers purchase (C) at different levels of income (Y) and the interest rate (r). You are told that the consumption function in an economy is:  $C = 500 + 0.75 \times Y - 10 \times r$ .
  - a. Interpret the consumption function (slopes and intercept) and note the independent and dependent variables.
  - b. Graph the consumption function when  $r = 2$ .
  - c. Graph the consumption when  $r = 3$  on the same graph.
  - d. Use your graph to show that the two lines you drew explain the attributes of the consumption function.

5. In Adam Smith's book, *The Wealth of Nations*, he wrote:

"Nothing is more useful than water: but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it."

Create graph for the market for water and the market for diamonds. Explain how it is possible for the price of water to be much lower than the price of diamonds, even though the demand for diamonds is so much less than the demand for water.

6. According to one observer of the lobster market:

"After Labor Day, when the vacationers have gone home, the lobstermen usually have a month or more of good fishing conditions, except for the occasional hurricane."

Use a demand and supply graph to explain whether lobster prices are likely to be higher or lower during the fall than during the summer.

7. **Gasoline Prices Part 1:** Prices for a gallon of gasoline change frequently. During the week of February 15<sup>th</sup>, 2016, the average price of a gallon of gas in the United States was \$1.72. By June 13<sup>th</sup>, the price had increased to \$2.40. Assume that the supply of gasoline was unchanged between February and June.
  - a. On a single supply and demand graph, show how the price of a gallon of gas could rise by more than 40% in four months.
  - b. Discuss the reasons why you drew your graph the way you did. Which of the reasons are likely to happen every year between February and June? Which reasons are isolated to 2016?
  - c. During the week of June 30<sup>th</sup>, 2014, the price of a gallon of gas was \$3.70. Assume that the demand for gas in June, 2014 and June, 2016 are the same. Graphically depict the price fall over the two-year period and discuss the possible causes of the price drop.

8. **Gasoline Prices Part 2:** Assume there are only two types of automobiles consumers can purchase: SUVs and Hybrids. In February 1997, the average gallon of gasoline was \$1.20. During February 1997, 5,000 SUVs were sold for \$50,000 and 5,000 Hybrids were sold for \$25,000.
  - a. Show the market for SUVs and Hybrids in February 1997 on two separate graphs.
  - b. By February 1999, gasoline prices had fallen to \$0.90 (90 cents!). Show how the equilibrium price and quantity of SUVs and Hybrids changed after gas prices decreased. Assume the supply of both types of automobiles remained constant.
  - c. In July, 2008, gas prices were \$4.10 per gallon. Show how the increase in gas prices between 1999 and 2008 affected the price and quantity of SUVs and Hybrids.
  - d. Discuss which companies were hurt by the changes observed in the automobile market you depicted in part (C). Did the rise in gas prices contribute to the Great Recession in the United States?
  - e. (Hard Question) Considering all the costs of owning and using a car, which type of car was cheaper to purchase and drive in 2008, SUVs or Hybrids?
9. **Housing Market:** The housing market played an important role in the Great Recession (2007-2009), the largest downturn in the economy since the Great Depression (1930s). Most households purchase a home for two reasons. One, households need a place to live. Two, households use homes as a savings and investment mechanism.

Households that rent an apartment or home instead of buying a property pay a monthly fee to a landlord. When households purchase a home or condominium, they often have to borrow money from a bank (mortgage). Households make monthly payments to the bank to reduce the principle (the amount borrowed) and pay interest (the amount the bank gets for loaning money). After every month, the household owns a larger fraction of the home. When they decide to sell the home, they owe the bank less than the original amount borrowed. Assuming they sell the property for the same amount it was bought for, the household gets any money put into the principle back and had a place to live in the meantime. If the home increases in value, the households get even more money back that can be used for new investments or home purchases.

- a. Discuss the **benefits** of owning a home versus renting a home. What are the **costs** of owning a home versus renting a home?
- b. In 2000, the average home in Riverside, CA sold for \$120,000. During 2000, there were 1,000 homes sold. Graph the housing market and show this equilibrium. Label the equilibrium point A.
- c. During 2006, the average home in Riverside sold for \$330,000 and 2,000 homes were sold. Assuming the supply of homes was relatively constant, show the new equilibrium point in 2006 and label the equilibrium point B. Discuss the possible reasons for the change in the equilibrium price and quantity. In other words, what curves shifted in order to move from point A to point B?
- d. Because home prices nearly tripled in 6 years, how would you expect home builders to react in 2007 and 2008? Show this reaction on your graph and label the new equilibrium point C. How do you expect prices and quantity to change after the home builder reaction?
- e. By the end of 2008, the equilibrium housing price decreased to \$190,000 in Riverside, CA and 2,500 homes were sold. Show this new equilibrium on your graph and label the new

equilibrium point D. Discuss the events that occurred between 2006 and 2008 that contributed to the reduction in home prices (a 42% reduction).

- f. How were homeowners hurt by the fall in housing prices? How were renters hurt by the fall in housing prices? Assuming your goal was to make the most money possible through real estate/housing purchases, what would have been your best strategy during the 2000s?