

How to Study for Chapter 5: The Determinants of Demand

Chapter 5 introduces the factors that will shift the shift plus two new elasticity concepts.

1. Begin by looking over the Objectives listed below. This will tell you the main points you should be looking for as you read the chapter.
2. New words or definitions are highlighted in italics and in red color. Other key points are highlighted in bold type and in blue color. Answer the questions in the text as they are asked. Then, check your answer by reading further in the text. Be sure to answer the Test Your Understanding questions.
3. You have more work with the demand graph in this chapter. In particular, **you need to differentiate a movement along the demand curve and a shift in the demand curve**. Be sure to go over every point so that you can see how they are derived.
4. You will be given an In Class Assignment and a Homework assignment to illustrate the main concepts of this chapter. When you have finished the text, the Test Your Understanding questions, and the assignments, go back to the Objectives below. See if you can answer the questions without looking back at the text. If not, go back and re-read that part of the text. Then, try the Practice Quiz at the end of Chapter 5.

Objectives for Chapter 5: The Determinants of Demand

At the end of Chapter 5, you will be able to **define the following terms**:

1. Normal Good
2. Inferior Good
3. Income Elasticity of Demand
4. Necessity
5. Luxury
6. Complement
7. Substitute
8. Cross Elasticity of Demand
9. Industry
10. Shift In Demand
11. Movement Along the Demand Curve

At the end of Chapter 5, you will also be able to **explain**

1. what would cause the demand curve to **shift to the right**
2. what would cause the demand curve to **shift to the left**
3. what would cause a **movement along** the demand curve

Chapter 5 Determinants Of Demand (Most recent revision June 2004)

In the last chapter, we focused on only one of the factors that affect the demand for a product --- **the price of that product**. There are certainly other factors. In fact, there are **six** other factors. These are called the *determinants of demand*. Let us examine them one at a time.

To prepare your thinking, consider how many units are you taking at your college this semester? _____ This is your demand for college classes. In Chapter 4, you considered the way that your demand would be affected by changes in the price (fees) of the college. What other factors were involved in your decision to take the number of units you are taking? (That is, why did you take this number and not more nor less? Why did you take the classes at this College and not somewhere else?) Try to think of as many factors as you can. Then, compare your answer to the example of new homes considered in this chapter.

The Determinants of Demand

(1) Income

Consider the demand for new homes. You want a new home and choose one you like. The price is \$1,000,000. You don't buy. One reason is that your income is not large enough to be able to afford this amount. Therefore, **income** must be one of the factors that affect the demand for a given product. Normally, we expect that *as one's income rises (falls), the demand for a product will rise (fall)*. Because we normally expect this to be true, a good for which this statement is true is called a **normal good**. Occasionally, we shall encounter a good for which the statement is not true. These are called *inferior goods; for these goods, as income rises (falls), the demand for the product falls (rises)*. One example of an inferior good might be black and white television sets. People buy them only because they cannot afford a color television set. As income rises, people buy fewer black and white television sets. Another example of an inferior good might be riding the bus. As income rises, people are less likely to use the bus and more likely to own an automobile. Tailoring and shoemaking services may be other examples. As income falls, people are more likely to have their clothes and shoes repaired; as income rises, they are more likely to buy new ones. Some would argue that a community college is an inferior good; as incomes fall, people are more likely to attend as a way of improving job skills. (Unless otherwise specified, you may assume that a good is a normal good).

Knowing that as income rises, the demand will rise is useful information. But, as with the price of the product, it is not enough information. A company or a government agency wants to know **how much** the demand will rise if income rises by a certain percent. In particular, they want to know the *income elasticity of demand*, given by the formula:

$$\frac{\text{percentage change in demand for a product}}{\text{percentage change in income}}$$

In this case, we are measuring how greatly buyers respond to a change in their income. *If the number is positive, we know that this is a normal good (income and demand both rose). If the number is negative, we know that this is an inferior good (income rose and demand fell).*

Again, we commonly divide at one. *If the number is less than or equal to +1, the product is called a “necessity”.* This means that if income falls, the demand falls very little --- because the product is needed. *If the number is greater than 1, the product is called a “luxury”.* This means that if income falls, the demand falls greatly --- because the product is not needed. Using this measure, do you believe that the following products are luxuries or necessities: (1) food; (2) beef; (3) automobiles; (4) baseball tickets; (5) new homes? Explain why.

(2) The Price of a Complement

Return now to your decision to buy a new home. Assume that you are willing to pay the price and have sufficient income. What other factors might enter into your decision? One factor might involve the method you will use to pay for this home --- borrowing money. The price of borrowing money is called **the interest rate**. The interest rate is one example of the *price of a complement. A complement is a different good that goes together with the one under consideration.* Homes and borrowing money tend to go together. So do bread and butter, coffee and sugar, gasoline and automobiles, homes and furniture, peanut butter and jelly, and many other examples. **What happens to the demand for new homes if the interest rate rises?** The answer, of course, is that it falls. When interest rates rise, people are less likely to borrow. If they do not borrow, they will not buy the homes. It is also likely that the demand for butter will fall if the price of bread rises, the demand for automobiles will fall if the price of gasoline rises, and so on. Therefore, our relationship is: *if the price of the complement rises (falls), the demand for the product (homes) falls (rises).*

(3) The Price of a Substitute Good

Complements are different goods that are related to the one we are considering. There is another kind of relationship: the products may be *substitutes. Substitutes are different goods that compete with the one under consideration.* Coca-Cola and Pepsi Cola are substitutes, as are butter and margarine, American cars and Japanese cars, Wendys and Burger King, baseball and football (in the fall) and many other examples. In our example, the main substitute for homes is apartments. **What happens to the demand for homes if the price of apartments falls?** If apartments rented for \$100 per month, more people would want to live in apartments and fewer in homes. It is also likely that the demand for Coca Cola would rise (fall) if the price of Pepsi Cola rises (falls), the demand for American cars would rise (fall) if the price of Japanese cars rises (falls), the demand for Wendys burgers would rise (fall) if the price of Burger King burgers rises (falls), and so on. Therefore, *our relationship is: as the price of the substitute (apartments) rises (falls), the demand for the product (homes) rises (falls).*

Again, knowing these relationships is important information. But again, it is not enough. We want to know **how much** the demand for a product will change if there is a given percentage change in the price of another product. This is called the *cross elasticity of demand* and is given by the formula:

$$\frac{\text{Percentage Change in the Demand for a Product}}{\text{Percentage Change in the Price of a Different Product}}$$

Notice that this number measures how much the **demand** for one product responds to a change in the **price** of a different product. *If the number is positive, the products are substitutes* (if the price of the other product rises, the demand for this product also rises). The larger the number, the closer the products are as substitutes. *If the number is negative, the products are complements* (if the price of the other product rises, the demand for this product falls). *If the number is zero, the products are totally unrelated.*

One use for the cross elasticity of demand will be important later. *An industry is a group of companies that sell a similar product.* We speak of the automobile industry or the computer industry. Notice that the products are similar but not exactly the same. A Honda Civic is very different from a Lexus and a PC is different from a Macintosh computer. So how do we know which companies are in the same industry? Are Coca-Cola and Pepsi Cola in the same industry? Most would say so. Are Coca-Cola and Orange Juice in the same industry? Both are drinks and neither has alcohol. Are Coca-Cola and beer in the same industry? Both are drinks and both are carbonated. Are Coca-Cola and coffee in the same industry? Both are drinks and both have caffeine. The definition of an industry would seem quite arbitrary. To get more precision, we will use the cross elasticity of demand. *One possible definition is: companies are in the same industry if the cross elasticity of demand is +1.0 or greater.* This means that a 10% increase in the price of one product would cause the demand for the other product to rise by 10% or more. (The courts have used this definition in some important court cases.) As we will see later, which particular companies are included in an industry has great implications. Coca Cola was not allowed to purchase Dr. Pepper because they are in the same industry; however, it was allowed to purchase Minute Maid because, by this definition, they are not in the same industry. For the same reason, Pepsi Cola was not allowed to purchase Seven-Up but was allowed to purchase Frito Lay and Taco Bell. By this definition, do you think that large business mainframe computers and smaller personal computers in the same industry? Why or why not? (This point had great implications in a long court case in which the government challenged IBM.)

(4) Tastes or Preferences

We have thus far discussed three factors affecting your decision to buy a home other than the price of the home: your income, the price of complements such as borrowing money and buying furniture, and the price of substitutes such as apartments. One obvious other factor involves the fact that you like homes. This we call **tastes or preferences**. It involves the fact that there are certain psychological reasons for liking or disliking a particular good. Our principle is: *the more (less) we like a good or service, the greater (less) is our demand for it.* So what do you think happened to the demand for red wine when the television show 60 Minutes reported that drinking red wine moderately every day lowered cholesterol and therefore lowered the risk of having a heart attack?

(5) Expectations

In the case of homes, we have often observed people buying not just one home but five or six. This does not mean buying one in Beverly Hills, another in Aspen Colorado for skiing, and another in Hawaii for surfing. It means several homes in the same area. Why would one do this? **One answer is that the buyer expects the price to rise in the near future.** Of course, the buyer does not know that the price will rise. So, there is a gamble here; the buyer expects the

price to rise. These expectations affect our demand for many products. For example, people commonly buy stock or foreign monies because they expect the prices of the stock or of the foreign money to rise soon. (Do not confuse this with the last section where we considered how buyers respond when the price actually does change. Here, the price has not changed; buyers simply expect that it will change soon.) Our principle here is: *if buyers expect the price to rise (fall), the demand rises (falls) today.*

There are other kinds of expectations one might have that will affect the demand for products. *If one expects that the product will soon be unavailable, the demand will rise today.* This was the case for gasoline in the early 1970s and again in September of 2001. Expecting that gas stations would soon be out of gasoline, buyers rushed to stock-up. *Also, if one expects that one's income will fall, the demand for most products will fall.* During recessions, other people are losing their jobs or otherwise having their incomes reduced. Even though this has not yet happened to you, you may be worried that it will. As a result, you may reduce your buying of many products. As we shall see later, expectations often become *self-fulfilling prophecies.*

(6) Population

The last of the factors affecting demand is the **population (number of buyers)**. The market demand is simply the sum of the individual demands. If, at the price of \$1.99, Bill wants to buy 2 six packs of Coca Cola, Jose wants to buy 3 six packs of Coca Cola, and Mary wants to buy 1 six pack of Coca Cola, then, of course, the market demand is 6 six packs. If Jordan becomes a buyer and wishes to buy 4 six packs, the market demand rises to 10 six packs. *Therefore, if there are more buyers, there must be more market demand.*

Let us summarize. The demand for a given product will rise if:

- 1. incomes rise for a normal good or fall for an inferior good*
- 2. the price of a complement falls*
- 3. the price of a substitute rises*
- 4. people like the product better*
- 5. people expect the price to rise soon*
- 6. people expect the product not to be available soon*
- 7. people expect their incomes to rise in the near future*
- 8. there are more buyers.*

The opposite will cause the demand for the product to fall.

***Test Your Understanding*.**

1. State in your own words what each of the following phrases means:
 - a. The **income elasticity of demand** for automobiles is +3. What does the number +3 tell you About automobiles?
 - b. The **cross elasticity of demand** between automobiles and gasoline is -3. What does the number -3 tell you about automobiles and gasoline?
2. Name a product other than the ones mentioned in this chapter that you might consider an **inferior good**. Then, explain why you think this product might be an inferior good.
3. Review the definition of “**necessity**” and “**luxury**” from this chapter. Based on these definitions, name a product other than those mentioned in the chapter that would be a necessity. Why do you think it would be a necessity? Then, name a different product that you think would be a luxury (also not mentioned in the chapter). Why do you think it would be a luxury?

The Demand Graph

Let us now return to the graph. Remember that the demand curve is a downward-sloping line showing that if the price of the product rises, the quantity demanded of that product will fall. How do we show these other determinants of demand on the same graph? *The answer is that we shift the demand curve. This means that we draw a new demand curve to replace to original one. At every price of the product, buyers now wish to buy a different quantity than they did before.* Review the demand curve in chapter 4. Although we did not state it at the time, let us assume that this represented the market demand for homes when the average income was \$50,000 per year. What happens if the average income rises to \$100,000 per year? The answer is, of course, that the demand for homes will increase because more people will want to buy homes. This is shown in the following table.

If the price is:	The quantity demanded is:	
	Income = \$50,000	Income = \$100,000
A \$340,000	0	2000
B \$320,000	1000	3000
C \$300,000	2000	4000
D \$280,000	3000	5000
E \$260,000	4000	6000
F \$240,000	5000	7000
G \$220,000	6000	8000
H \$200,000	7000	9000
I \$180,000	8000	10000
J \$160,000	9000	11000
K \$140,000	10000	12000
L \$120,000	11000	13000

If we plot the first two columns, we have the same demand curve as we drew in chapter 4. If we plot column 1 and column 3, we have a new demand curve (Demand₂). The new demand curve has completely replaced the original one because income has risen. *We say that the demand curve has shifted to the right. See the graph on the next page.*

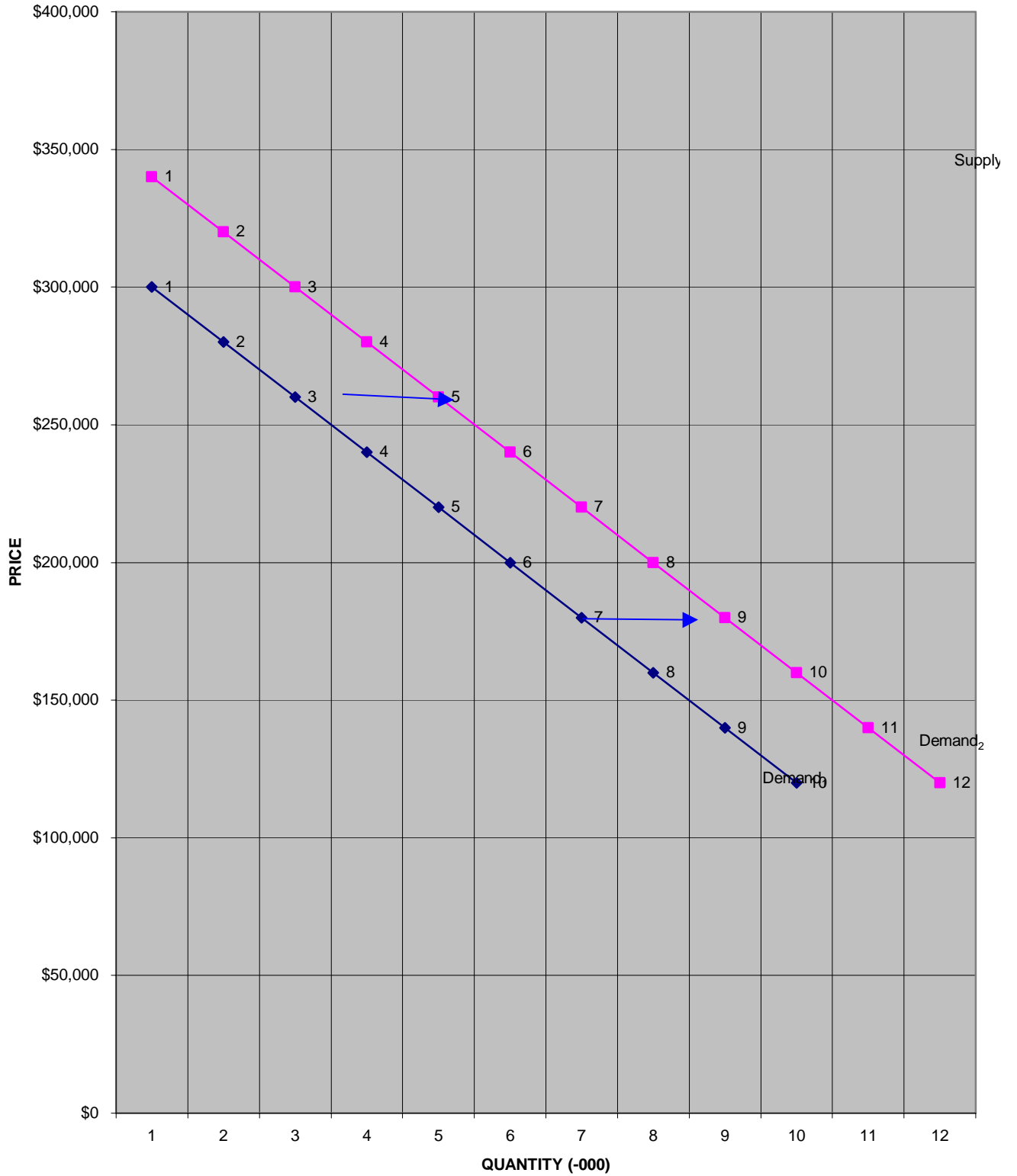
To summarize the way the graph works: we move along the demand curve from one point to another on the same line if the price of the product changes. We shift the line if anything else (the determinants of demand) changes. If demand increases, the shift is to the right; if demand decreases, the shift is to the left.

Test Your Understanding

In each of the following cases, state whether (1) there is a **movement along** the demand curve for American automobiles, (2) the demand curve for American automobiles will **shift to the right**, or (3) the demand curve for American automobiles will **shift to the left**:

- The price of gasoline rises _____
- The price of American automobiles rises _____
- The price of Japanese automobiles rises _____
- Buyers' incomes fall _____
- Buyers find that American automobiles are of higher quality _____
- Mexican automobile buyers are now able to buy American automobiles _____
- Buyers expect that the price of American automobiles will rise next year _____

DEMAND SHIFTS TO THE RIGHT



Internet Assignment

This chapter has considered factors that affect the demand for homes. Consider the demand for homes in California. Go to the site for the **Statistical Abstract of California** under Links to the Internet on my web site.

In each of the following cases, **first describe what the data say has been happening over time** (use only the data you find in these tables). **Then, explain how these changes would affect the demand for homes in California.**

1. The **population** of California (Table B1)
2. The **per capita income** of California (You can get the income data in Table D4. You then have to divide by the population from question 1 to have the per capita income.)
3. The **prices of homes** in California (Table I11) The table gives only the prices of existing homes. But the prices of new homes have been changing in the same direction.
4. **Rents** on Apartments (Table I2)
5. **Mortgage Interest Rates**. (Interest rates in California are basically the same as in the rest of the country.) For this, you need to the link to Interest Rates on my web site. (You may use more recent information from the newspaper if you wish.)
5. Finally, write a **brief conclusion**. What has been happening to the demand for homes in California (see Table I3)? Based on your answers above, **why** might this have been happening?

Practice Quiz on Chapter 5

1. If the price of DVRs fell and, as a result, the demand for VHS recorders fell, we could conclude that VHS recorders and DVRs are
 - a. normal goods
 - b. substitutes
 - c. complements
 - d. unrelated
2. Which of the following would cause the demand for gasoline to **shift to the right**?
 - a. an increase in the price of automobiles by \$1000
 - b. the price of gasoline falls by \$0.10 per gallon
 - c. buyers buy SUVs that are larger and obtain fewer miles per gallon
 - d. for health reasons, people desire to bicycle more
 - a. all of the above
3. The percentage change in the quantity demanded of a product that results because of a percentage change in **income** is called the:
 - a. price elasticity of demand
 - b. cross elasticity of demand
 - c. income elasticity of demand
 - d. demand elasticity of different price
4. The percentage change in the quantity demanded of a product that results because of a percentage change in the **price of a different product** is called the:
 - a. price elasticity of demand
 - b. cross elasticity of demand
 - c. income elasticity of demand
 - d. demand elasticity of different price
5. The **cross elasticity of demand** is most likely to be a **positive** number for which of the following:
 - a. American cars and gasoline
 - b. Hamburger and hamburger buns
 - c. Palomar College and Mira Costa College
 - d. Coca Cola and Wine
6. The **income elasticity of demand** is **negative** for a:
 - a. positive good
 - b. elastic good
 - c. normal good
 - d. inferior good

7. If the income elasticity of demand is **greater than 1**, the good is a
a. necessity b. luxury c. substitute d. complement
8. To find the quantity people will buy, we **move along** the demand line if what changes?
a. price of the product b. income c. price of a substitute d. price of a complement
9. If people's tastes change so that they like the product better, the demand for the product will
a. shift to the right b. shift to the left c. move along
10. If buyers expect the price of a product to rise greatly very soon, the demand for that product will
a. shift to the right b. shift to the left c. move along

Chapter 5 1. B 2. C 3. C 4. B 5. C 6. D 7. B 8. A 9. A 10. A