

Lab 12
Agricultural and Resource Economics
(ARE 012)

Name: _____

Section #: _____

This lab assignment is worth 100 points. Unless instructed differently, you are to complete the lab during the lab period. Late lab assignments will not be accepted without an excused absence. Please let the lab instructor know if you need any help with this lab. Good Luck!

Purpose of Lab:

This assignment will examine the production possibilities of goods and services, develop your ability at using real and relative prices in making business and personal decisions, and analyze demand schedules and curves.

Assignments:

I. Examining Production Possibilities. A *production possibility schedule* and a *production possibility curve* show some of the possible combinations of output between two different goods. For example, a production possibility curve may show the possible combinations of output between consumer goods and capital goods in the United States.

An example of a production possibility schedule is shown in Figure 1. An example of a production possibility curve is shown in Figure 2. The production possibility curve is graphed using the data in the production possibility schedule. The shape of a typical production possibility curve is as depicted in Figure 2. You should make sure that you understand how the data in the production possibility schedule are graphed before proceeding.

Production Possibility Schedule					
<i>Type of Good</i>	<i>Units of Output</i>				
Consumer Goods	0	5	8	10	11
Capital Goods	8	6	4	2	0

Figure 1: A Production Possibility Schedule

Production Possibility Curve

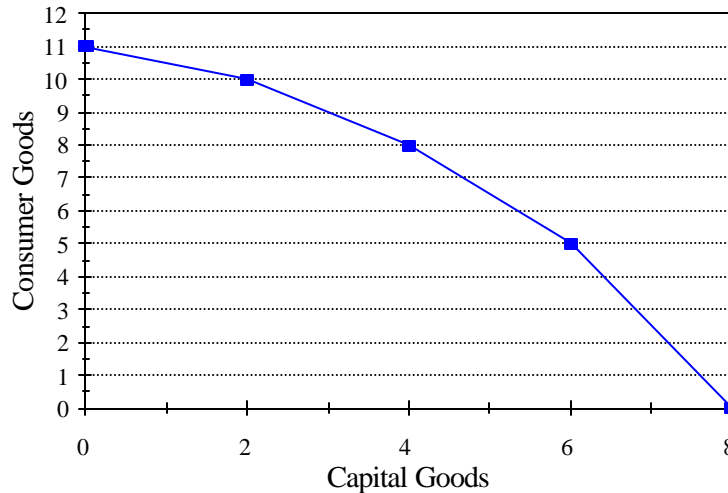


Figure 2: A Production Possibility Curve

A production possibility schedule and a production possibility curve are based on four assumptions:

1. **Two Types of Commodities.** This assumption allows us to graph a production possibility curve (i.e., it is very difficult to graph in 3-space or higher). A production possibility schedule could be based on more than two types of commodities, although a production possibility curve could not be drawn in this case. For example, a production possibility schedule may show the trade-off in a farm's production of corn and cotton, or soybeans and wheat.
2. **Common Resources.** This assumption states that the same factors of production that are used to produce one type of commodity can also be used to produce the other type of commodity in a production possibility schedule. For example, the factors of production used to make consumer goods can also be used to make capital goods. Although it is assumed that resources can shift freely from the production of one good to the other, it is not assumed that the resources are equally efficient in all uses (i.e., resources are not perfectly mobile).
3. **Fixed Conditions.** This assumption states that the factors or variables that can affect a production possibility schedule are held constant or fixed during the analysis period. While this assumption is realistic when the time period under study is short, it is not valid in long run analysis.

4. Production is Physically Efficient and Resources are Fully Utilized This assumption states that the factors of production are physically efficient and all of the factors of production are fully employed. Under these circumstances, you cannot obtain a larger quantity of one good without giving up some of the output of another good.

It is interesting to note that economic efficiency is not an assumption in constructing a production possibility schedule. Although the points on a production possibility curve are physically efficient, they are economic efficient only if the combination of goods is desired by society. You may want to see Lab 8 if you need to review the definitions and uses of physical efficiency or economic efficiency.

There are two major implications of fixed conditions, physically efficient production, and fully utilized resources. One, these assumptions imply that combinations of goods and services that fall inside a production possibility curve represent physically inefficient production or unemployed resources (i.e., you could do better). Two, these assumptions imply that combinations of goods that fall outside of a production possibility curve are not feasible.

An improvement in the physical efficiency of the factors of production can cause a production possibility curve to shift outward. A shift in a production possibility curve may not be parallel to the old curve. For example, a new production technique may favor the production of consumer goods without having any effect on the physical efficiency of producing capital goods. In this case, the shape of the new production possibility curve will not be a mirror image of the old curve.

A society that allocates more resources in the present to the production of capital goods than to consumer goods will have more of both kinds of goods in the future. This is because consumer goods are to satisfy the present wants of society while capital goods satisfy the future wants of society.

The *Law of Increasing Cost* states that society must sacrifice an increasing amount of one good for each additional unit of output of another good. In reference to Figure 1, the cost to society of increasing the output of capital goods from 2 to 4 units (i.e., a 2 unit increase) is 2 units of consumer goods (i.e., $8 - 10 = -2$). On the other hand, the cost of increasing the output of capital goods from 4 to 6 units (i.e., another 2 unit increase) is 3 units of consumer goods (i.e., $5 - 8 = -3$). The Law of Increasing Cost is due to the factors of production not being equally efficient in all uses.

Please answer the questions below. You may want to refer to your lecture notes, notebook, and textbook.

1) Graph the production possibility schedule below. Put the output of steel on the x-axis. Make sure that you label the axes and points on the production possibility curve.

Production Possibility Schedule				
<i>Type of Good</i>	<i>Units of Output</i>			
Steel	0	6	10	12
Iron	18	12	6	0

a) Explain how the production possibility schedule demonstrates the Law of Increasing Cost.

b) Let's suppose that the output of steel is increased from 6 to 10 units. What is the per unit opportunity cost of increasing the output of steel? That is, what is the cost of one unit of steel in terms of units of iron forfeited?

c) Let's suppose that the price for a unit of steel is \$75. We will assume that the opportunity cost of increasing the production of iron is \$300. Under these circumstances, the production of iron must have increased from _____ units to _____ units. Fill in the blanks.

2. Sketch a typical production possibility curve.

a) Illustrate a combination of goods on the graph that represents a physically efficient level of production. Label the point A.

b) Illustrate a combination of goods on the graph that represents an inefficient level of production. Label the point B.

c) Illustrate a combination of goods on the graph that is not feasible in the short run. Label the point C.

3. Sketch a typical production possibility curve that illustrates the production possibilities of consumer and capital goods. Put the output of capital goods on the x-axis. Label the curve PPC_1 .

a) Illustrate a combination of goods on the production possibility curve that is likely to lead to an expansion in the total output of consumer and capital goods in the future. Label the point A.

b) Illustrate a combination of goods on the production possibility curve that is likely to lead to a reduction in the total output of consumer and capital goods in the future. Label the point B.

c) Let's suppose that a technological improvement increases the physical efficiency of producing consumer goods but does not effect the physical efficiency of producing capital goods. Sketch a new production possibility curve on the graph above that illustrates this situation. Label the new curve PPC_2 .

d) What effect will the technological improvement have on the opportunity cost of producing consumer goods?

e) What effect will the technological improvement have on the opportunity cost of producing capital goods?

II. Using Real Prices in Making Business and Personal Decisions. This exercise will examine the nature and many uses of the *Consumer Price Index* (CPI). You were introduced to real prices when we used the *Purchasing Power Converters* in Chapter 1 of *Everyday Economics* to calculate the purchasing power of a dollar over time in Lab 2.

The CPI measures the average change in the prices paid for a basket of goods and services. Some of the items included in the basket of products are breakfast cereal, alcoholic beverages, rent, gasoline, clothes, toiletry goods, and schoolbooks. The purpose of the CPI is to determine the change in the cost of the basket of products over time. The "inflation rate" that is widely quoted in print and television is derived from the CPI.

We will use the CPI to determine the effects of inflation on *real* income and *real* prices. For example, we will calculate the increase in income that you would need to receive this year to have the same amount of purchasing power as you did last year. That is, your income has to increase at or above the annual rate of inflation to be able to purchase the same amount of goods and services from one year to the next.

The CPI for the years 1913 to 1997 is given in Appendix A. The base period for the CPI is the period 1982 - 1984. The CPI is a direct measurement of the inflation between a given year and the base period. You should note that the CPI in Appendix A is given on a monthly and annual basis.

The price for a good or service is said to undergo a *real increase* if its change over a period of time is greater than the inflation rate. In this case, the product becomes more expensive in comparison to other goods. There is a *real decrease* in the price for a good or service if a change in the price for the product is less than inflation. Under these circumstances, the product becomes less expensive in comparison to other goods.

Your income is said to undergo a *real increase* if its change over a period of time is greater than the inflation rate. In this case, there is an increase in your purchasing power (i.e., you can afford more goods and services). There is a *real decrease* in your income if a change in your income is less than inflation. Under these circumstances, there is a decrease in your purchasing power (i.e., you cannot afford as many goods and services).

There are two ways to determine if there is a real change in the price for a good or service. The first way that we will discuss compares the percent change in the nominal price for a product with the inflation rate over a given period of time.¹ A real increase and a real decrease in the price for a good or service is defined under this method as follows:

- % Change in the Nominal Price for a Product > Inflation Rate \Rightarrow Real Increase in Price for Product
- % Change in the Nominal Price for a Product < Inflation Rate \Rightarrow Real Decrease in Price for Product

¹ You may want to see Lab 8 to review the calculation of percent changes.

For example, there was a real increase in the price for F-150 trucks in the 1980s if the percent change in the price for trucks between 1980 and 1990 is greater than the inflation rate over this period.

The inflation rate between year X and year Y is calculated as follows:

$$\text{Inflation Rate between Year } X \text{ and Year } Y = \frac{\text{CPI in Year } Y - \text{CPI in Year } X}{\text{CPI in Year } X} \times 100$$

where,

Year X = Earliest Year For example, Year X may be 1990 while year Y is
Year Y = Latest Year 1991.

The second way to determine if there is a real change in the price for a good or service uses *relative prices*. The relative price for a good or service is the price that the product would have been during the base period of the CPI if the price for the product increased at the rate of inflation between the time that the nominal price was recorded and the base period.

The relative price for a good or service during year X is calculated as follows:

$$\text{Relative Price for Year } X = \frac{\text{Nominal Price in Year } X}{\text{CPI in Year } X} \times 100$$

For example, let's suppose that the nominal price for a pound of ground beef was \$3.50 in 1997. According to Appendix A, the CPI for 1997 is 160.5. Under these circumstances, the relative price for 1997 is \$2.18 (i.e., $(\$3.50 \div 160.5) \times 100$). If the price for ground beef increased at the rate of inflation between the base period of the CPI (i.e., 1982 - 1984) and 1997, the price for ground beef in the base period would have been \$2.18 per pound.

There is a real increase in the price for a good or service between year X and year Y if the relative price for the latest year is greater than the relative price for the earliest year. For example, there is a real increase in the price for gasoline between 1970 and 1980 if the relative gasoline price for 1980 is greater than the relative gasoline price for 1970.

There is a real decrease in the price for a good or service between year X and year Y if the relative price for the latest year is less than the relative price for the earliest year. For example, there is a real decrease in the price for milk between 1989 and 1992 if the relative milk price for 1992 is less than the relative milk price for 1989.

- c) Using your answers above, what happened to the real price for the house from 1978 to 1998? Explain your answer.
5. What is the meaning of a drop in the real price for a good or service?
6. What is the meaning of an increase in the real price for a good or service?
7. Let's suppose that the price for a one-gallon azalea was 99 cents in 1990. If the real price for a one-gallon azalea increased from 1990 to 1997, the nominal price for the azalea in 1997 could have been:
- a) \$.80
 - b) \$1.15
 - c) \$1.20
 - d) not enough information to answer question
 - e) none of the above

8. Fill in the blanks in the table.

<i>Commodity</i>	<i>1967 Price / lb. (Nominal Price)</i>	<i>1993 Price / lb. (Nominal Price)</i>	<i>1967 Relative Price</i>	<i>1993 Relative Price</i>	<i>Change in Real Price between 1967 and 1993 (i.e., - or ⁻)</i>
Hot Dogs	\$.68	\$2.41			
Bacon	\$.81	\$2.13			
Butter		\$2.18	\$2.46		
Sugar	\$.09			\$.29	
Coffee	\$.69	\$2.63			

9. Let's suppose that the price for pistachio nuts was \$2.99 per pound in 1997. What is the meaning or significance of the 1997 relative price for pistachio nuts?

10. Let's suppose that your income in 1997 was \$21,000. Your income in 1998 was \$23,000.

a) What was the percent change in your income from 1997 to 1998?

b) What the inflation rate from 1997 to 1998?

c) What happen to your real income between 1997 and 1998? Explain your answer.

d) Let's suppose that the inflation rate in 1999 is 2.75%. How much of a raise would you need to receive in 1999 for you to have the same amount of purchasing power at the beginning of 2000 as you did in 1998?

11. What is the meaning of a real decrease in your income?

12. What is the meaning of a real increase in your income?

III. Analyzing Demand Schedules and Curves. A *demand schedule* gives the number of units of a commodity that buyers would be able and willing to purchase during a given time period at different prices if there are no changes in the factors that can change or invalidate the demand schedule.

For example, a demand schedule may give the number of fish that buyers would purchase during June at different prices. The demand schedule would be valid as long as the demand for fish is unchanged. If some factor were to affect the demand for fish, the demand schedule would be invalidated. For instance, the demand schedule for fish would probably be invalidated if a *pfisteria* outbreak in North Carolina lead to a major fish kill. In this case, people would probably cut back on their consumption of fish out of a fear for their health.

The graphing of a demand schedule was covered in Lab 11. You may want to see Lab 11 to review the graphing of demand schedules.

A *change in the quantity demanded* of a commodity is said to occur when there is movement from one point on a demand curve to a different point. For example, a change in the quantity demanded of a commodity is demonstrated in Figure 3 by movement from point A to point B (i.e., movement from a quantity demanded of 4 units to a quantity demanded of 8 units).

A change in the quantity demanded of a commodity is due to a change in the price for the commodity. In reference to Figure 3, a movement along the demand curve from point A to point B would occur when the price for the commodity drops from \$10 to \$5.

The *Law of Demand* states the quantity demanded of a commodity is inversely related to the commodity's price. That is, a drop in the price for a commodity will lead to an increase in the quantity demanded of the commodity. On the other hand, an increase in the price for a commodity will lead to a decrease in the quantity demanded of the commodity.

A *change in the demand* for a commodity occurs when a demand curve shifts from one position to another position. For example, a change in the demand for a commodity is demonstrated in Figure 4 by movement from demand curve D_0 to demand curve D_1 (i.e., the demand curve shifts down).

A change in the demand for a commodity may be positive or negative. A *decrease in the demand* for a commodity occurs when buyers are not willing to pay as much money for a given quantity of the commodity as at some time in the past. A decrease in demand is demonstrated in Figure 4 by movement from demand curve D_0 to demand curve D_1 .

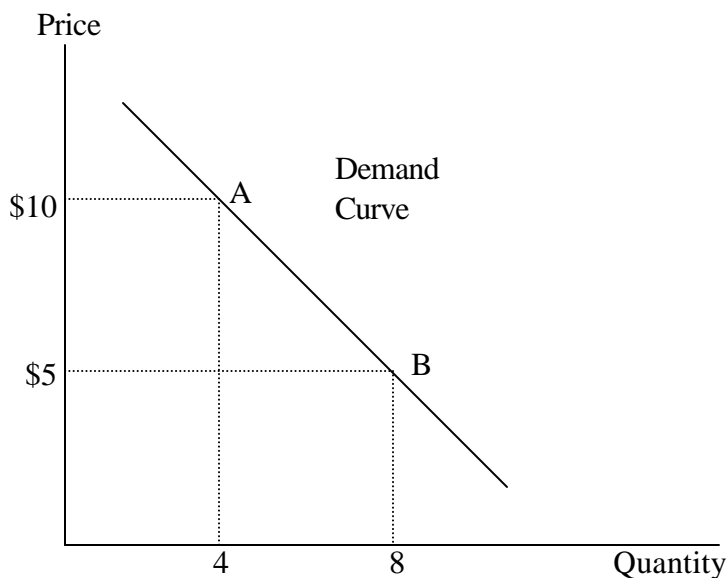


Figure 3: A Change in the Quantity Demanded of a Commodity

An *increase in the demand* for a commodity occurs when buyers are willing to buy a greater quantity of the commodity at a given price level than at some time in the past. An increase in demand is demonstrated in Figure 4 by movement from demand curve D_0 to demand curve D_2 .

A change in the demand for a commodity can be due to numerous factors. Some of these factors are as follows:

- *Income.* A change in the income of consumers will cause a change in the demand for a commodity. The relationship between a change in consumer income and a change in the demand for a commodity determines the type or classification of the commodity.

a) If the relationship between consumer income and the demand for a commodity is direct, the commodity is classified as a *normal good* (i.e., $\text{income} \uparrow \Rightarrow \text{demand} \uparrow$ or $\text{income} \downarrow \Rightarrow \text{demand} \downarrow$). An example of a normal good is prime rib.

b) If the relationship between consumer income and the demand for a commodity is inverse, the commodity is classified as an *inferior good* (i.e., $\text{income} \uparrow \Rightarrow \text{demand} \downarrow$ or $\text{income} \downarrow \Rightarrow \text{demand} \uparrow$).² An example of an inferior good is TV dinners.

- *Tastes and Preferences.* A change in the tastes or preferences of consumers for a commodity will cause a change in the demand for the commodity. If consumer preferences for a commodity increase, there will be an increase in the demand for the commodity. If consumer preferences for a commodity decrease, there will be a decrease in the demand for the commodity.

² You may want to see Lab 11 to review direct and inverse relationships.

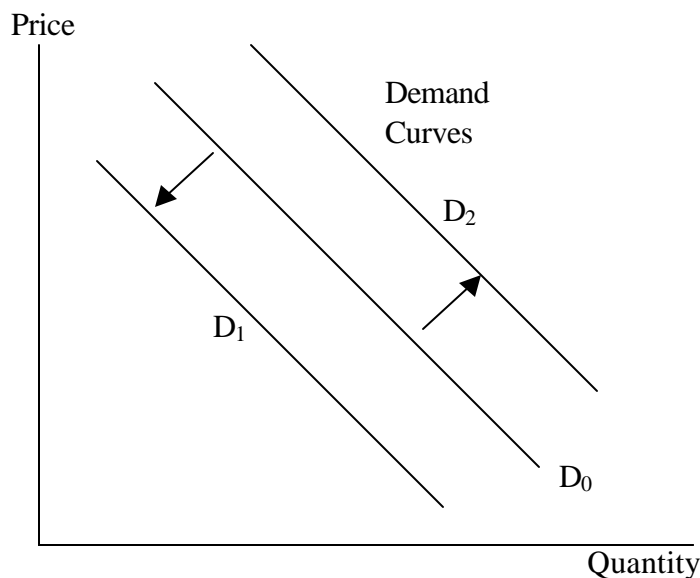


Figure 4: Change in Demand

- *Price of Substitutes and Complements.* If two goods are viewed by consumers as being roughly the same, the goods are classified as *substitutes*. That is, two goods are substitutes if consumers are basically indifferent when it comes to consuming one of the goods over the other. For example, many consumers consider butter and margarine to be substitutes.

The relationship between the demand for a commodity and the price for a substitute of the commodity is direct. For example, if butter and margarine were substitutes, an increase in the price for butter would be associated with an increase in the demand for margarine. That is, a higher price for butter will cause consumers to substitute margarine for butter.

If two goods are jointly consumed by consumers, the goods are classified as *complements*. That is, two goods are complements if consumers are not likely to consume one of the goods without consuming the other. For example, many consumers consider coffee and cream to be complements. These consumers are not likely to drink coffee without cream.

The relationship between the demand for a commodity and the price for a complement of the commodity is inverse. For example, if coffee and cream were complements, an increase in the price for cream would be associated with a decrease in the demand for coffee. That is, a higher price for cream will cause consumers to drink less coffee.

- *Population.* The demand for a commodity is directly related to the population. For example, the baby boom that followed World War II led to an increase in the demand for single-family housing.

• *Expectations about the Future.* Consumers' expectations about the future may cause a change in the demand for a commodity. For example, the demand for plywood along the coast would probably increase if consumers thought that a hurricane was in route. This is because people living along the coast will often buy plywood to board-up their windows when a hurricane warning is issued. Consumers' expectations about the future may lead to a decrease or an increase in the demand for a commodity depending upon the particular circumstances.

Please answer the questions below. You may want to refer to your notebook, lecture notes, or textbook.

1. The price for sweet corn last week was 3 ears for a dollar. A grocery store sold 20 bushels of corn at this rate. The price for sweet corn is 4 ears for a dollar this week. The grocery store sold 22 bushels of corn at this rate. This example demonstrates:
 - a) a change in quantity demanded
 - b) a change in demand
 - c) an increase in supply
 - d) a decrease in supply
 - e) none of the above

2. Movement from the point (3, 4) on a demand curve to the point (5, 4) on a demand curve could represent:
 - a) a decrease in quantity demanded
 - b) an increase in quantity demanded
 - c) a decrease in demand
 - d) an increase in demand
 - e) none of the above

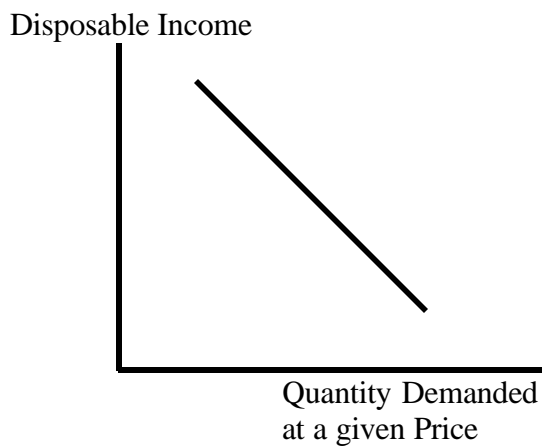
3. The Law of Demand states that:
 - a) more barbecue sandwiches will be sold at \$1.25 than at \$1.20
 - b) a reduction in the price for a commodity will probably lower the inventory of the good
 - c) a change in the quantity demanded will cause a change in demand
 - d) all of the above
 - e) none of the above

4. A demand schedule for a commodity is likely to be invalidated in the following circumstance:
 - a) the price for the commodity rises from \$1.54 to \$12.53
 - b) the Federal Reserve just sold Treasury securities to ward off high levels of inflation
 - c) the commodity is placed on clearance
 - d) all of the above
 - e) none of the above

5. When the price for a good was \$8.00 in 1972, the quantity demanded was 500 units. In 1980, the price for the good was \$6.00 and the quantity demanded was 300 units. Does this good violate the Law of Demand since the quantity demanded of the good did not increase as its nominal price decreased? Explain your answer.

6. Why is a demand curve valid only during a specified period of time?

7. What type of good is demonstrated in the graph below?



8. Let's suppose that seafood is a normal good. Which of the following statements is likely to be true:

- a) the demand for seafood is stable
- b) a drop in consumer income will increase the demand for seafood
- c) you are likely to buy more shrimp once you graduate and get a job than you are as a student
- d) all of the above
- e) none of the above

9. What are five examples of normal goods?

- a)
- b)
- c)
- d)
- e)

10. What are five examples of inferior goods?

- a)
- b)
- c)
- d)
- e)

11. What effect do you think that advertising has on the demand for a commodity? Use a graph to illustrate the intended relationship between advertising expenditures on a commodity and the demand for the commodity.

12. Let's suppose that the price for snow skis is \$200 and the price for ski binders (i.e., the things that hold your feet in the skis) is \$45. Which of the following statements is likely to be true:

- a) the price for skis rises to \$210 and the price for ski binders rises to \$50
- b) skis and ski binders are substitutes
- c) the price for skis falls to \$190 and the price for ski binders rises to \$46
- d) there is no relationship between the price for skis and the demand for ski binders
- e) none of the above

13. What are five examples of pairs of substitute goods?

- a)
- b)
- c)
- d)
- e)

14. What are five examples of pairs of complement goods?

- a)
- b)
- c)
- d)
- e)

15. What would happen to the demand for chicken if the price for pork chops increases? Explain your answer.

Appendix A
Consumer Price Index
1913 - 1998

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
1913	9.8	9.8	9.8	9.8	9.7	9.8	9.9	9.9	10	10	10.1	10	9.9
1914	10	9.9	9.9	9.8	9.9	9.9	10	10.2	10.2	10.1	10.2	10.1	10
1915	10.1	10	9.9	10	10.1	10.1	10.1	10.1	10.1	10.2	10.3	10.3	10.1
1916	10.4	10.4	10.5	10.6	10.7	10.8	10.8	10.9	11.1	11.3	11.5	11.6	10.9
1917	11.7	12	12	12.6	12.8	13	12.8	13	13.3	13.5	13.5	13.7	12.8
1918	14	14.1	14	14.2	14.5	14.7	15.1	15.4	15.7	16	16.3	16.5	15.1
1919	16.5	16.2	16.4	16.7	16.9	16.9	17.4	17.7	17.8	18.1	18.5	18.9	17.3
1920	19.3	19.5	19.7	20.3	20.6	20.9	20.8	20.3	20	19.9	19.8	19.4	20
1921	19	18.4	18.3	18.1	17.7	17.6	17.7	17.7	17.5	17.5	17.4	17.3	17.9
1922	16.9	16.9	16.7	16.7	16.7	16.7	16.8	16.6	16.6	16.7	16.8	16.9	16.8
1923	16.8	16.8	16.8	16.9	16.9	17	17.2	17.1	17.2	17.3	17.3	17.3	17.1
1924	17.3	17.2	17.1	17	17	17	17.1	17	17.1	17.2	17.2	17.3	17.1
1925	17.3	17.2	17.3	17.2	17.3	17.5	17.7	17.7	17.7	17.7	18	17.9	17.5
1926	17.9	17.9	17.8	17.9	17.8	17.7	17.5	17.4	17.5	17.6	17.7	17.7	17.7
1927	17.5	17.4	17.3	17.3	17.4	17.6	17.3	17.2	17.3	17.4	17.3	17.3	17.4
1928	17.3	17.1	17.1	17.1	17.2	17.1	17.1	17.1	17.3	17.2	17.2	17.1	17.1
1929	17.1	17.1	17	16.9	17	17.1	17.3	17.3	17.3	17.3	17.3	17.2	17.1
1930	17.1	17	16.9	17	16.9	16.8	16.6	16.5	16.6	16.5	16.4	16.1	16.7
1931	15.9	15.7	15.6	15.5	15.3	15.1	15.1	15.1	15	14.9	14.7	14.6	15.2
1932	14.3	14.1	14	13.9	13.7	13.6	13.6	13.5	13.4	13.3	13.2	13.1	13.7

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
1933	12.9	12.7	12.6	12.6	12.6	12.7	13.1	13.2	13.2	13.2	13.2	13.2	13
1934	13.2	13.3	13.3	13.3	13.3	13.4	13.4	13.4	13.6	13.5	13.5	13.4	13.4
1935	13.6	13.7	13.7	13.8	13.8	13.7	13.7	13.7	13.7	13.7	13.8	13.8	13.7
1936	13.8	13.8	13.7	13.7	13.7	13.8	13.9	14	14	14	14	14	13.9
1937	14.1	14.1	14.2	14.3	14.4	14.4	14.5	14.5	14.6	14.6	14.5	14.4	14.4
1938	14.2	14.1	14.1	14.2	14.1	14.1	14.1	14.1	14.1	14	14	14	14.1
1939	14	13.9	13.9	13.8	13.8	13.8	13.8	13.8	14.1	14	14	14	13.9
1940	13.9	14	14	14	14	14.1	14	14	14	14	14	14.1	14
1941	14.1	14.1	14.2	14.3	14.4	14.7	14.7	14.9	15.1	15.3	15.4	15.5	14.7
1942	15.7	15.8	16	16.1	16.3	16.3	16.4	16.5	16.5	16.7	16.8	16.9	16.3
1943	16.9	16.9	17.2	17.4	17.5	17.5	17.4	17.3	17.4	17.4	17.4	17.4	17.3
1944	17.4	17.4	17.4	17.5	17.5	17.6	17.7	17.7	17.7	17.7	17.7	17.8	17.6
1945	17.8	17.8	17.8	17.8	17.9	18.1	18.1	18.1	18.1	18.1	18.1	18.2	18
1946	18.2	18.1	18.3	18.4	18.5	18.7	19.8	20.2	20.4	20.8	21.3	21.5	19.5
1947	21.5	21.5	21.9	21.9	21.9	22	22.2	22.5	23	23	23.1	23.4	22.3
1948	23.7	23.5	23.4	23.8	23.9	24.1	24.4	24.5	24.5	24.4	24.2	24.1	24.1
1949	24	23.8	23.8	23.9	23.8	23.9	23.7	23.8	23.9	23.7	23.8	23.6	23.8
1950	23.5	23.5	23.6	23.6	23.7	23.8	24.1	24.3	24.4	24.6	24.7	25	24.1
1951	25.4	25.7	25.8	25.8	25.9	25.9	25.9	25.9	26.1	26.2	26.4	26.5	26
1952	26.5	26.3	26.3	26.4	26.4	26.5	26.7	26.7	26.7	26.7	26.7	26.7	26.5
1953	26.6	26.5	26.6	26.6	26.7	26.8	26.8	26.9	26.9	27	26.9	26.9	26.7
1954	26.9	26.9	26.9	26.8	26.9	26.9	26.9	26.9	26.8	26.8	26.8	26.7	26.9
1955	26.7	26.7	26.7	26.7	26.7	26.7	26.8	26.8	26.9	26.9	26.9	26.8	26.8
1956	26.8	26.8	26.8	26.9	27	27.2	27.4	27.3	27.4	27.5	27.5	27.6	27.2

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
1957	27.6	27.7	27.8	27.9	28	28.1	28.3	28.3	28.3	28.3	28.4	28.4	28.1
1958	28.6	28.6	28.8	28.9	28.9	28.9	29	28.9	28.9	28.9	29	28.9	28.9
1959	29	28.9	28.9	29	29	29.1	29.2	29.2	29.3	29.4	29.4	29.4	29.1
1960	29.3	29.4	29.4	29.5	29.5	29.6	29.6	29.6	29.6	29.8	29.8	29.8	29.6
1961	29.8	29.8	29.8	29.8	29.8	29.8	30	29.9	30	30	30	30	29.9
1962	30	30.1	30.1	30.2	30.2	30.2	30.3	30.3	30.4	30.4	30.4	30.4	30.2
1963	30.4	30.4	30.5	30.5	30.5	30.6	30.7	30.7	30.7	30.8	30.8	30.9	30.6
1964	30.9	30.9	30.9	30.9	30.9	31	31.1	31	31.1	31.1	31.2	31.2	31
1965	31.2	31.2	31.3	31.4	31.4	31.6	31.6	31.6	31.6	31.7	31.7	31.8	31.5
1966	31.8	32	32.1	32.3	32.3	32.4	32.5	32.7	32.7	32.9	32.9	32.9	32.4
1967	32.9	32.9	33	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	33.4
1968	34.1	34.2	34.3	34.4	34.5	34.7	34.9	35	35.1	35.3	35.4	35.5	34.8
1969	35.6	35.8	36.1	36.3	36.4	36.6	36.8	37	37.1	37.3	37.5	37.7	36.7
1970	37.8	38	38.2	38.5	38.6	38.8	39	39	39.2	39.4	39.6	39.8	38.8
1971	39.8	39.9	40	40.1	40.3	40.6	40.7	40.8	40.8	40.9	40.9	41.1	40.5
1972	41.1	41.3	41.4	41.5	41.6	41.7	41.9	42	42.1	42.3	42.4	42.5	41.8
1973	42.6	42.9	43.3	43.6	43.9	44.2	44.3	45.1	45.2	45.6	45.9	46.2	44.4
1974	46.6	47.2	47.8	48	48.6	49	49.4	50	50.6	51.1	51.5	51.9	49.3
1975	52.1	52.5	52.7	52.9	53.2	53.6	54.2	54.3	54.6	54.9	55.3	55.5	53.8
1976	55.6	55.8	55.9	56.1	56.5	56.8	57.1	57.4	57.6	57.9	58	58.2	56.9
1977	58.5	59.1	59.5	60	60.3	60.7	61	61.2	61.4	61.6	61.9	62.1	60.6
1978	62.5	62.9	63.4	63.9	64.5	65.2	65.7	66	66.5	67.1	67.4	67.7	65.2
1979	68.3	69.1	69.8	70.6	71.5	72.3	73.1	73.8	74.6	75.2	75.9	76.7	72.6
1980	77.8	78.9	80.1	81	81.8	82.7	82.7	83.3	84	84.8	85.5	86.3	82.4

