Cauliflower

Basic Economics of Food Market

Cargill Global Food Challenge
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Part One: Price Determination
ACTIVITY 1

Consider the diagram to the right in answering the questions below.

1. What is the quantity demanded by buyers and quantity supplied by sellers at each of the prices below?

<table>
<thead>
<tr>
<th>Quantity Demanded</th>
<th>Quantity Supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>$12</td>
<td>2,000</td>
</tr>
<tr>
<td>$10</td>
<td>3,000</td>
</tr>
<tr>
<td>$8</td>
<td>4,000</td>
</tr>
<tr>
<td>$6</td>
<td>5,000</td>
</tr>
<tr>
<td>$4</td>
<td>6,000</td>
</tr>
</tbody>
</table>

2. What is the equilibrium price and quantity in this market? $8 per pound; 4,000 pounds of pork bellies

Given this price and quantity, what would be the total amount of money earned by the pork belly sellers? $32,000 (This is called total revenues or total sales.)

3. Give an example of a price that would result in a surplus. $12 per pound

What is the amount of the surplus at this price? 4,000 pounds of pork bellies

4. Describe what would happen in the market if the price were $4 per pound, and discuss how this would likely affect the price.

There would be a shortage, more than likely making the price of each pound go up.
The cauliflower, or “cabbage flower,” originated over 2,000 years ago in the Mediterranean and Asia Minor region. It is now produced and widely available in the United States. Cauliflower belongs to the same family (Brassicaceae) of cruciferous vegetables as cabbage, broccoli, Brussels sprouts, kale and bok choy. It is a cool-season crop that thrives in a moist atmosphere. It is available year-round, although especially plentiful in the spring and fall. Cauliflower is a low-calorie vegetable, high in fiber, folacin, potassium and vitamin C.

The price of cauliflower depends on the freshness of the plant and location of the marketplace. In 2010, the price per unit was $41.80, and a year later in 2011, it was $46.80 per unit. Last year it dropped a significant amount to $36.00 per unit. The United States calculates this by:

1/ United States average prices per unit computed by weighting State prices by estimated sales.
2/ Includes processing and fresh market.
3/ Estimates include both fresh and dry product prices combined.
4/ Price at processing plant door.

The value of production for cauliflower was $291,647 in the year of 2010. The following year it was $299,164, and last year in 2012, it was $235,620. A high quality product like cauliflower sells at a premium because all buyers seek growers who produce a superior product.
Typically, it is a high priced vegetable, because it is a challenging plant to grow. It has very high production requirements, and compared to many other common vegetables, there aren’t as many farmers that will risk growing cauliflower. Cauliflower is very sensitive to temperature. Cool, humid weather (68-78) degrees is ideal. Hot summer temperatures result in poor curd quality. Another reason why most farmers choose not to plant cauliflower is because it is hand harvested with a knife. This also another reason as to why the price is so high for cauliflower.

In 2010 the price of both fresh and processed cauliflower decreased. The price of fresh cauliflower was $39.60 per cwt, and the price of cauliflower for processing was $615 per ton.

In the United States, California is the largest cauliflower-producing state, accounting for nearly 88 percent of fresh cauliflower and all processing cauliflower. Arizona produces nearly 10 percent of fresh cauliflower. New York also produces cauliflower, but in much smaller amounts.

Almost three-fourths of commercial cauliflower is grown in the coastal valleys of California. The top five country producers for this
plant are, China, India, Spain, Italy, and France. Per person consumption of cauliflower in the United States has decreased from its peak of 3.1 pounds per person in 1986 to 1.7 pounds per person in 2010. Frozen cauliflower consumption was about 0.4 pounds per person compared to fresh consumption of 1.7 pounds.

**Exports/Imports**

In 2010, the United States was a net exporter of cauliflower. Fresh cauliflower valued at $100.8 million was exported, an 18 percent increase from 2009. The leading market for fresh U.S. cauliflower was Canada, which accounted for more than 80 percent of U.S. fresh cauliflower exports. Other major markets included Japan, Taiwan and Mexico.

According to the FAS (2010), fresh cauliflower valued at more than $9.9 million was imported in 2010, a 6 percent increase from 2009. The largest suppliers were Mexico and Canada. Mexican imports of cauliflower increased at the expense of Canadian imports.

U.S. cauliflower production was 11.9 million cwt in 2010. With declining acreage, decreasing yields and lower prices, the value of cauliflower production fell to $247.5 million. Most of the value of cauliflower production came from fresh-market cauliflower, which
declined to $243.9 million in 2010. The value of cauliflower used for processing has remained much lower than that of fresh, at about $3.5 million in 2010.

In 2009 China was the world’s largest producer of cauliflower, followed by India and the United States. China produced 185.6 million cwt of cauliflower/broccoli and India produced 144 million cwt.
Part Two:
Understanding Demand
1. Suppose the price of some commodity is $5 per unit. Explain why some people might call this a “great deal” while others might say it is a “rip-off.”

Depending on the commodity, its quality, and the willingness of people to buy, some people may have different opinions. It also has to do with people’s ability to buy the commodity.

2. Each line below has a world commodity market and an event. In Column 1 you are to determine what kind of change is occurring in the market as a result of this event. Circle the number which best describes what is changing, using the following codes:

1 – Change in the number of buyers
2 – Change in buyers’ values: Change in buyers’ tastes
3 – Change in buyers’ values: Change in buyers’ income/wealth
4 – Change in buyers’ values: Change in the price of other goods
5 – Change in buyers’ values: Change in expectations

In Column 2, circle whether this change is an increase or decrease in the number of buyers or in buyers’ values and finally, in Column 3, circle whether this will shift Demand to the left (L) or to the right (R).

<table>
<thead>
<tr>
<th>MARKET</th>
<th>EVENT</th>
<th>KIND OF CHANGE</th>
<th>INCREASE OR DECREASE</th>
<th>DEMAND SHIFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>milk</td>
<td>The price of cereal rises.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>wheat</td>
<td>A new carbohydrate-free diet sweeps the world.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>potato</td>
<td>Several countries ban the importation of potatoes.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>sugar</td>
<td>Political unrest in some sugar-exporting countries threatens future supplies.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>cocoa</td>
<td>A recession hits several developed nations.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>beef</td>
<td>Cases of “mad cow” disease are reported.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>tea</td>
<td>The price of coffee rises.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>shrimp</td>
<td>Income tax rates are lowered in the U.S.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>soybean</td>
<td>World population rises.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
</tbody>
</table>
Dear Cauliflower Growers Association,

Many of you may know and love the vegetable cauliflower, but do you know all of the wonderful things that it can do for your body? It has vitamin C, potassium, fiber, manganese, protein, magnesium, vitamin B2, vitamin B1, vitamin B3, iron, and only contains twenty six calories in one cup! Cauliflower is a richly flavored, tasty treat that detoxifies the body, discourages cancer and offers a big immunity boost.

"Cauliflower will make ya holla!" With all of the health benefits that come along with eating this wondrous vegetable, you may think that just the so called "Health Nuts" buy it, but that is definitely not that case. Many people throughout the United States and other countries tend to buy and grow cauliflower also. Not only do they buy it for the healthiness of the vegetable, but it tastes delicious too. If I were to advertise cauliflower to the general public, I would focus on these great qualities of this white bland looking vegetable.

As for competition for the cauliflower plant, there are multiple substitutes if you are looking for a healthy meal. The closest would more than likely be broccoli, or carrots, or any other common vegetable.

Cauliflower is produced mainly in California, due to the year round, almost perfect climate conditions. It is one of the trickier foods to transport, and has to be picked at just the right time. Workers usually
pick cauliflower when the heads are still white. They then have to keep them cold and moist, so the plants do not get dried out, or become unsellable. This is the reason you may see some grocery stores that “water” their vegetables with a slight mist every so often. If kept in the right conditions, cauliflower will not spoil until after about three weeks. Farmers have to protect cauliflower from brown spots by tying the leaves of the plant over the head. This keeps from the sun’s rays affecting the plants, and keeps the cauliflower nice and white. Because of the consumer’s desire for white cauliflower, farmers have to spend more time in the field protecting cauliflower in this way, which is why it’s more expensive than broccoli or cabbage.

As for final sales, the majority of the plant goes right to the consumers. Farmers will sometimes break off any spots or damages if they think the plant is still salvageable. With all of the health benefits and extra care that go into a cauliflower plant, who wouldn’t want to take a big bite of a delicious chunk of it? Afterall, “Cauliflower will make ya holla!”

Sincerely,

Jade Jampsa
Part Three:
Understanding
Supply
ACTIVITY 3

1. Most production processes are subject to the “law of diminishing returns.” Basically this means that the productivity of resources used in production tends to fall as more is produced. What would this imply about the cost of producing additional units?

Producing products is cheaper when set at a certain amount, but as soon as you start producing more, each unit brings up the price of production.

2. Each line below has a world commodity market and an event. In Column 1 you are to determine what kind of change is occurring in the market as a result of this event. Circle the number which best describes what is changing, using the following codes:

   1 – Change in the number of sellers
   2 – Change in sellers’ costs: Change in productivity
   3 – Change in sellers’ costs: Change in the price of resources
   4 – Change in sellers’ costs: Change in government policies
   5 – Change in sellers’ costs: Change in expectations

In Column 2, circle whether this change is an increase or decrease in the number of sellers or in sellers’ costs, and, finally, in Column 3, circle whether this will shift Supply to the left (L) or to the right (R).

<table>
<thead>
<tr>
<th>MARKET</th>
<th>EVENT</th>
<th>KIND OF CHANGE</th>
<th>INCREASE OR DECREASE</th>
<th>SUPPLY SHIFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>rice</td>
<td>A faster-growing variety of rice is developed.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>hog</td>
<td>Stricter odor controls are imposed on hog feedlots.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>corn</td>
<td>A major drought occurs.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>chicken</td>
<td>The price of chicken feed falls.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>cherry</td>
<td>Losses lead producers to turn orchards to other uses.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>oats</td>
<td>Special tax breaks are given on farm equipment.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>cheese</td>
<td>Milk prices are expected to rise in two months.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>lettuce</td>
<td>The price of irrigation water increases.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
<tr>
<td>tuna</td>
<td>A new detection system makes tuna easier to locate.</td>
<td>1 2 3 4 5</td>
<td>↑ ↓</td>
<td>L R</td>
</tr>
</tbody>
</table>
When most people think of the production of cauliflower, they may think of big fields full of little white headed vegetables. Although, in reality, it is an extremely difficult plant to successfully grow. Cauliflower is one of those extra picky plants where growing conditions have to be just right. Cauliflower prefers full sunlight, well-drained soil with high organic matter, and a 6-7 soil pH level. It is an annual plant that prefers cool growing temperatures, between 60 and 65° F. Cauliflower has a shallow, fibrous root system, so farmers have to cultivate carefully when needed for weed control. After weeding around the plants, they then apply an organic mulch around the plants to help better protect them. Then they provide an even amount of moisture to each plant, especially during the maturation of the heads. To keep the heads of the cauliflower white, farmers have to tie up the leaves of the plant around the white head of it. As for harvesting, farmers pick the cauliflower when the heads are full, but before the curds begin to separate. They start by cutting through the stem under the head, leaving a few "wrapper" leaves for protection. The curds of cauliflower bruise easily, so they have to handle with care. China, India, Spain, Italy, and France are the largest producers of cauliflower in the world. As for the U.S, the majority of the crops are produced in California, where the climate produces the best conditions.
Farmers’ top priorities are to grow a quality crop of cauliflower for us, and the government has set rules for these farmers to ensure this. The government makes sure they are using safe disease and pest controls, make sure they are up to grading standards, and that they meet production and handling standards. California produce growers, packers, and shippers requested that the USDA provide more flexibility regarding the minimum size of cauliflower heads.
Currently, curds are required to be not less than 4 inches in diameter. They are working to change government restrictions on the production of cauliflower and plants similar to it.

Now, as you bite down on the crunchy, hearty piece of cauliflower, you know the majority of the many steps it takes to go from seed to your fingers. Even though cauliflower may be a pricey vegetable and a challenging plant to grow, it is truly a delectable healthy treat that all of us can enjoy!
Part Four:

Price Changes
ACTIVITY 4

1. Shown below are the four graphs (A through D) that represent the four possible cases that can result from a Demand or Supply shift. Given the events below, circle the letter which best represents what would be happening in the primary market indicated, as well as the secondary impacts in the other markets listed.

![Graphs A to D]

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PRIMARY MARKET</th>
<th>OTHER MARKETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A pest infestation kills a large number of orange trees.</td>
<td>Orange A B C D</td>
<td>Orange juice A B C D</td>
</tr>
<tr>
<td>A new machine lowers the cost of harvesting potatoes.</td>
<td>Potatoes A B C D</td>
<td>French fries A B C D</td>
</tr>
<tr>
<td>Due to good profits, many farms are converted from other uses to hog production.</td>
<td>Hog A B C D</td>
<td>Chicken A B C D</td>
</tr>
<tr>
<td>Drinking hot chocolate becomes a worldwide fad.</td>
<td>Hot chocolate A B C D</td>
<td>Cocoa A B C D</td>
</tr>
</tbody>
</table>

2. Suppose events were happening that increased both the Demand and Supply of a commodity. Explain how this could lead to a rise, a fall, or no change in the equilibrium price of the commodity. What would happen to the equilibrium quantity?

*It depends on which one increases the most. When demand rises more than supply, the equilibrium price will rise. When demand increases less than supply, the equilibrium price will fall.*
With the weather across the United States still reminding us of the dreadful winter months, farmers are far behind in production, especially when it comes to cauliflower. With the ground still thawing in some places, and the weather being especially cold on the West Coast and in the Southwestern U.S., the cauliflower marketplace is seeing price spikes for their crops. According to "Good Morning America," Americans are already paying more for other vegetables, and the prices for broccoli and cauliflower are also expected to rise. They are predicting the price of these delicious vegetables to go up 10 to 20 percent in the next couple of weeks. Compared to past years temperatures, this year they have hit a record-low. Some secondary effects might be a change to people’s or animal’s diets, because they are no longer able to afford the pricey vegetables. This may also affect the farmers, because without anyone buying their crops, they are not able to make enough money. Although, with this colder weather, it could be keeping many of the insects and diseases that affect the growth of the cauliflower plant away.
As we move even more into the hot days of summer, I believe the prices will soon go back to around where they were last year. Throughout this week, temperatures in the Salinas Valley region, California's agricultural hub, are predicted to be in the forties. As for the next ten years or so, I predict the price of cauliflower will continue to rise, along with many of the other common vegetables known to Americans. If the weather continues to take longer to warm up every year, I think that the price of cauliflower will continue to rise annually. Although, if we start to see the weather getting warmer in states that have perfect growing conditions, like California, in good timing for planting, we could see a price drop.

In conclusion, the weather across the United States is affecting the planting and growing of many vegetables, including cauliflower. As soon as
the weather starts to warm up, I believe that the cauliflower market will have a great season, and we will soon be able to have them back on our plates again.
Bibliography


<http://smallfarms.ifas.ufl.edu/crops/vegetables/cole_crops.html>.


