

Class 5
Introduction to Supply and Demand

Concepts

The **Demand Schedule** shows the quantity of a well-defined good that buyers are willing and able to buy during a specified period at each possible price.

The **Supply Schedule** shows the quantity of a well-defined good that sellers are willing and able to sell during a specified period at each possible price.

The **Buyer's Reservation Price** is the largest dollar amount an individual buyer would be willing and able to pay for a unit of a well-defined good.

The **Seller's Reservation Price** is the smallest dollar amount for which a seller would be willing and able to sell a unit of a well-defined good.

Market Equilibrium occurs when all buyers and sellers are satisfied with the quantities they can buy and sell at the market price. The price at which market equilibrium occurs is the price such that the quantity demanded equals the quantity supplied.

The **Economic Surplus** of an action is the benefit of the action minus the cost of the action.

Exercises

1. Second Price Auction

This exercise involves a real economic transaction with Professor Salemi. Someone in the class will exchange money for goods.

Professor Salemi will auction a cup of coffee and a cinnamon roll. The coffee is 12 oz. of the Daily Grind house blend. The cinnamon roll is also from the Daily Grind. The right to consume the coffee and roll during class is part of the good.

The auction will be a silent. Each class member will enter a single bid on the 3x5 card provided. Bids should be multiples of ten cents (for example, \$2.10 but not \$2.15). Bids are binding offers to pay. Professor Salemi will accept cash either today or on Thursday.

The winner of the auction is the highest bidder. The winner will pay Professor Salemi an amount equal to the second highest bid. It is optimal in this case for every bidder to bid his or her reservation price.

Enter Your Bid

2. Derive the Demand Schedule

After the auction is over, Professor Salemi will list the bids on the black board. Work in groups to derive the class demand for the good defined as “a 12 ounce coffee plus cinnamon roll at and the right to consume both in class at 9:40 in Gardner 9 on September 8, 2009.”

Use the grid below to graph the demand schedule you have derived.

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3. Discussion of the auction results.

Suppose the price at the Daily Grind for a coffee and cinnamon roll is \$3.60.

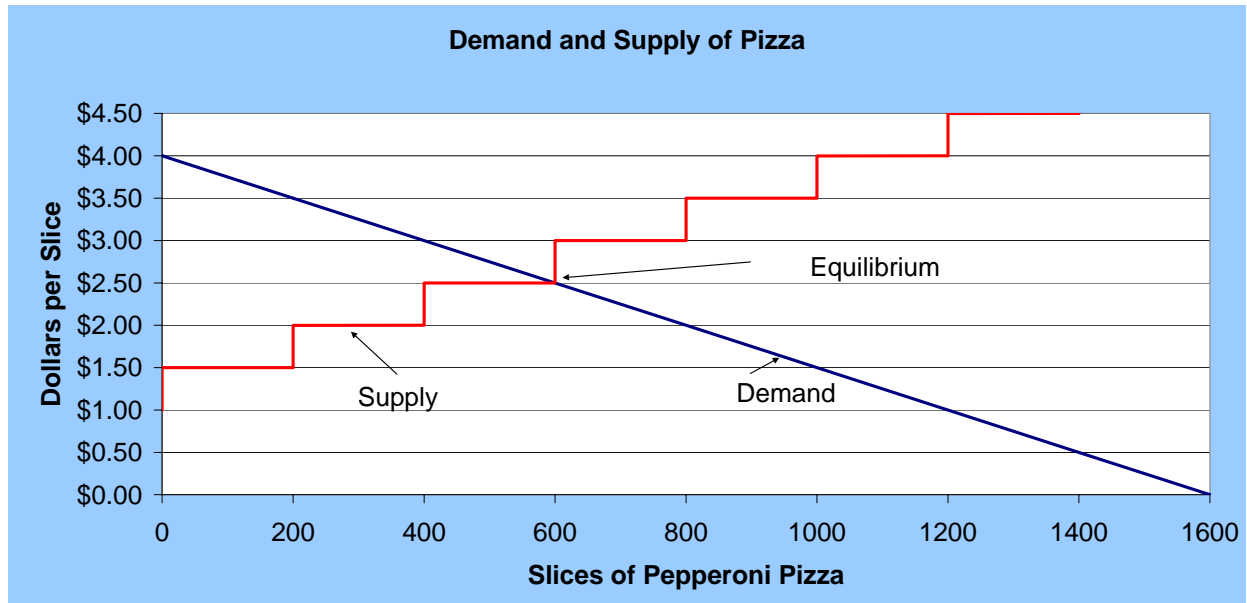
- a. Did Professor Salemi rip off the winner of the auction? Why or why not?

- b. How much surplus did the class derive from the auction? How do you know?

- c. How much surplus would the class have derived if Professor Salemi had served all willing customers at Daily Grind Prices? How do you know?

- d. Why did Professor Salemi use the “second price auction” rather than a first price auction in which the winner pays the amount of his or her bid?

4. The following graph gives demand and supply schedules for a 12 ounce slice of pepperoni pizza at a Franklin Street restaurant during lunch hour on a Tuesday when UNC is in session.



- How would you explain the stair-step shape of the supply function?
 - What is the equilibrium quantity and price for pizza?
 - What surplus is obtained by pizza demanders given the equilibrium price?
 - What surplus is obtained by pizza suppliers at the equilibrium price?
 - What would happen if campus dining service announced a Tuesday pizza special where pizza was \$1.50 per slice?
 - Suppose the Chapel Hill Town Council introduced a price ceiling of \$1.50 per slice. What would happen?
 - Suppose the Chapel Hill Town Council introduced a price floor of \$4.00 per slice. What would happen?
5. Attached to this handout is “As Gas Costs Soar, Buyers Flock to Small Cars,” a news article from the New York Times dated May 2, 2008. Suppose there are only two types of automobile—small cars and big cars.
- Use the concepts of demand and supply to interpret what the article has to say about the markets for small and big cars.
 - Draw the demand and supply diagrams for the large car and small car markets in a way that correctly interprets the article.

May 2, 2008

As Gas Costs Soar, Buyers Flock to Small Cars

By BILL VLASIC

DETROIT — Soaring gas prices have turned the steady migration by Americans to smaller cars into a stampede.

In what industry analysts are calling a first, about one in five vehicles sold in the United States was a compact or subcompact car during April, based on monthly sales data released Thursday. Almost a decade ago, when sport utility vehicles were at their peak of popularity, only one in every eight vehicles sold was a small car.

The switch to smaller, more fuel-efficient vehicles has been building in recent years, but has accelerated recently with the advent of \$3.50-a-gallon gas. At the same time, sales of pickup trucks and large sport utility vehicles have dropped sharply.

In another first, fuel-sipping four-cylinder engines surpassed six-cylinder models in popularity in April.

"It's easily the most dramatic segment shift I have witnessed in the market in my 31 years here," said George Pipas, chief sales analyst for the [Ford Motor Company](#).

The trend toward smaller and lighter vehicles with better mileage is a blow to Detroit automakers, which offer fewer such models than Asian carmakers like [Toyota](#) and [Honda](#). Moreover, the decline of S.U.V.'s and pickups has curtailed the biggest source of profits for [General Motors](#), Ford and [Chrysler](#).

Once considered an unattractive and cheap alternative to large cars and S.U.V.'s, compacts have become the new star of the showroom at a time when overall industry sales are falling.

Sales of Toyota's subcompact Yaris increased 46 percent, and Honda's tiny Fit had a record month. Ford's compact Focus model jumped 32 percent in April from a year earlier. All those models are rated at more than 30 miles per gallon for highway driving.

Dave Strom of South Boston, Va., recently bought a tiny Smart ForTwo Passion Coupe, made by [Daimler](#), the German automaker.

Mr. Strom also owns a pickup truck, which he uses mainly to haul his boat. When he runs errands, he drives his Smart, which he says is getting 45 miles a gallon.

"I had to smile the other day when I filled my tank for \$18 and the guy next to me had a Ford Explorer and the pump was clicking past \$80," said Mr. Strom, a 66-year-old retired manager of a Chevrolet dealership.

Previous spikes in sales of smaller cars were often a result of consumers trading down during tough economic conditions or gas-price increases. When the economy improved or fuel prices dropped again — as they did after the oil-price shocks in the 1970s eased — buyers invariably went back to bigger vehicles.

But with oil prices expected to remain high for years, auto industry executives are seeing a turning point.

"The era of the truck-based large S.U.V.'s is over," said Michael Jackson, chief executive of [AutoNation](#), the nation's largest auto retailer.

Sales of traditional S.U.V.'s are down more than 25 percent this year. In April, for example, sales of G.M.'s Chevrolet Tahoe fell 35 percent.

Full-size pickup sales have fallen more than 15 percent this year, with Ford's industry-leading F-Series pickup dropping 27

percent in April alone. Sales of pickups, though, are expected to strengthen with the economy, because of their use as commercial vehicles.

The rise in sales of more fuel-efficient vehicles occurred during one of the industry's worst months in more than a decade. For the month, G.M. sales dropped 23 percent and Ford slid 19 percent, while Toyota fell by 5 percent. The figures were adjusted for the fact that this April had two more selling days than a year ago.

Another bright spot in the numbers were sales of so-called small crossovers — which look like little S.U.V.'s and are based on car underpinnings.

Like small cars, they also accounted for about 20 percent of the total industry sales for the month, according to the research firm J. D. Power & Associates.

The analysis by J. D. Power also showed that 42 percent of all vehicles sold in April were equipped with four-cylinder engines compared with 38 percent for six-cylinder engines.

How the downsizing of America's vehicle fleet will affect fuel consumption is still largely unknown. When gas prices rise, as they are now, many drivers simply drive less to save money.

But there are some indications that the trend toward smaller vehicles will reduce the nation's fuel use. In California, motorists bought 4 percent less gasoline in January than they did the year before, a drop of more than 58 million gallons, according to the Oil Price Information Service.

"That is an incredible year-over-year drop," said Tom Kloza, the organization's chief oil analyst. "Some of it clearly has to do with changes in the vehicle fleet."

Small cars have traditionally been favorites of young, first-time buyers attracted by their low prices. But sales have been creeping up since 2005, particularly among older baby-boomers whose children have grown.

Crossover vehicles have also drawn in empty-nesters who have less need for a large car, S.U.V. or minivan.

"The first of the baby boomers turned 62 this year, and they've started downsizing," Mr. Pipas of Ford said.

The latest crop of small cars and crossovers also feature the creature comforts and safety features once found only in more expensive models.

Factor in the economic benefits of fuel-efficient engines, and small cars have not only become practical, but trendy as well.

"This shift appears to be a permanent situation," said Jesse Toprak, chief industry analyst for the auto information Web site Edmunds.com. "These new products have become more fashionable, just like small, fuel-efficient cars are in Europe."

The low prices on small cars are also luring consumers who are tightening their belts in an economic downturn.

"We wanted to have good fuel economy, but we were equally concerned about the price of the car," said John Shelby of Phoer who recently purchased a Honda Fit for \$15,600.

Smaller vehicles, though, mean smaller profit margins for automakers. The drop in pickup sales, because of the slowdown in the housing and construction industries, has been particularly painful for Detroit's Big Three.

"It's just a difficult truck market for everybody, ourselves included," said Mark LaNeve, G.M.'s head of North American sales. "By and large, people are just staying out of that market."

Automakers ignore the move to smaller vehicles at their own peril. G.M., for example, is playing catch-up by introducing a dozen new cars and crossovers in the next few model years.

With federal fuel-economy regulations increasing to 31.6 miles per gallon by 2015, car companies have another incentive to speed development of smaller vehicles.

"If you look at where the automakers are putting their resources into now, just about everything is going into small cars," said Tom Libby, senior market analyst for J. D. Power.