



commerce
undergraduate
society

COMM 295 MIDTERM REVIEW SESSION

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INTRODUCTION, SUPPLY AND DEMAND, ELASTICITY

Positive (Descriptive) Statement	Normative (Prescriptive) Statement
<ul style="list-style-type: none">▪ A statement made based on facts▪ Could be tested or proved▪ Could be true or false—does not necessarily have to be a true fact!	<ul style="list-style-type: none">▪ A statement made based on subjective opinion▪ Debatable and persuasive

Market Equilibrium is the point where the demand curve intersects with the supply curve; this point is also called the market-clearing pricing.

The price elasticity of demand

Arc Elasticity

$$E_p = \frac{\frac{Q_2 - Q_1}{(Q_1 + Q_2)/2}}{\frac{P_2 - P_1}{(P_1 + P_2)/2}}$$

Point Elasticity

$$E_p = \frac{\Delta Q / Q}{\Delta P / P} = \frac{\Delta Q}{\Delta P} \frac{P}{Q}$$

1. Identify the following statements as either positive or normative. Justify.
 - a. Trump is going to be the best president for the Americans.
 - b. More people buy from Walmart because its merchandises are relative cheaper.
 - c. Samsung will go out of business by the time Apple releases iPhone 7.



2. The demand function for the elementary band concert ticket is $Q_d=4P-10$, where Q_d is the number of tickets and P is the price per ticket. The supply is represented by $Q_s=7P-40$, where Q_s is the number of tickets supplied. What is the price and quantity of tickets sold at equilibrium?

3. Weekly demand for NuNunemon leggings is expressed as $P=50-Q$. Determine the price elasticity of demand at a price of \$25 per pair of leggings.



ESTIMATION

Ordinary Least Squares draws a line across all data points such that the sum of squared residuals is as small as possible.

Goodness of Fit (R^2) suggests how well the relationship is explained by the function.

1. The regression for kale chips estimates a demand of $Q_d=24-8P$. The regression model has R^2 statistic of 0.83. You find out that one of the data points used to derive the demand function was incorrect. The actual price is \$3.29 rather than \$2.19 so the residual of that point should actually be smaller. What happens to R^2 ?

2. The demand function for diamond ring is $Q_d=9000-8P$ where P is the price of the diamond ring. The standard error is 24.6. Given that P is \$900, find the t-statistic for the price coefficient and interpret your t-statistic.

3. The number of thunderstorms in a week is positively correlated with midterm class average. It's tempting to conclude that higher midterm class average is caused by more thunderstorms in a week, but it's incorrect! What explains the relationship here?



COMPETITION, CONSUMER AND PRODUCER SURPLUS

Perfect Competition

- Firms are price takers—price of good is determined by the market; cannot set price themselves
- There are many sellers and buyers
- Products are identical; no differentiation
- Buyers and sellers have full information of products
- Easy entry and exit in the long run
- Low transaction costs

Consumer surplus is the area under the demand curve but above the market price; it is the difference between what consumers are willing to pay for relative to the market price.

Producer surplus is the area under the market price and above the supply curve; it is the difference between the market price and the minimum amount that induces producers to produce.

1. The market demand for muffin tin is $Q_d=84-6P$. There are currently 20 firms in the market, each with a supply function of $Q_s=2P-4$.
 - a. If the minimum average cost is \$8, explain using a graph whether the firms will enter or exit the market in a short run.
 - b. Derive a long run market supply curve.



2. A steel market has a demand of $Q_d=110-3P$. If price is \$20 for each unit of steel, what is the consumer surplus?
3. The demand for the aluminum market is $Q_d=400-3P$. Market equilibrium is at $Q=40$. Suppose the government has placed a price ceiling at \$130. What is the loss in consumer surplus? Show calculation and explain with a graph.



MONOPOLY

Monopoly

- Price setter—company sets the price at which to sell the product
 - Only one firm in the market with no other substitutes
1. A monopolistic electricity provider faces a market demand curve of $Q_d=40-2P$. The cost of generating the electricity is expressed by $C=890+8Q$. At what price and quantity should the firm produce to maximize profit?
 2. Given that $P=500-2Q$ and that $C=40Q$. At what quantity will a monopoly produce? What is the deadweight loss as a result?



3. Ginger Ltd. used to be a perfectly competitive firm in a large market. It has a demand curve of $Q_d=220-2P$. The market cost function is $C=2Q$. One day, a thunderstorm destroyed all its competitors and all of a sudden, Ginger Ltd. becomes the monopoly. How much consumer surplus gets transferred to the producer?



PRICE DISCRIMINATION

1. A monopoly firm has a demand function of $Q_d=900-6P$ and cost function of $C=60+20Q$. What is the profit under perfect price discrimination?
2. Magical Produce Co. is a monopoly undergoing uniform pricing. It has a price function of $P=140-2Q$ and cost function of $C=68+6Q$.
 - a. If you are the manager trying to maximize profitability, will you practice perfect price discrimination? How profitable is perfect price discrimination? Explain and justify your answer.
 - b. From the social standpoint, should Magical Produce Co. switch to perfect price discrimination? Explain and justify your answer.



- c. Assume that now Magical Produce Co. decides to go with perfect price discrimination. It has a new marginal cost function of $MC=30+7Q$. How much consumer surplus gets transferred to the producer?
3. Carcinogen Electricity Co. is a monopoly that decides to target two segments of consumer: Gen X and Gen Y. Gen X has a demand given by $P=150-2Q$ while Gen Y has a demand given by $P=60-Q/2$. Cost function is $4Q$. How should the company charge its customers to maximize profit?
4. Wow Ltd. has a monopolistic demand of $P=100-3Q$ and cost of $AC=MC=10$. The CEO of Wow Ltd. cannot decide on which pricing proposal to adopt for conference room rental (see table below).

Proposal A	Proposal B
\$70/hr for the first 10 hours \$55/hr for the first 15 hours \$40/hr for the first 20 hours	\$55/hr

- a. If you are the manager, demonstrate to your CEO which pricing strategy is superior.



b. Explain from the consumer's perspective, which pricing is better overall?

c. Explain from the social standpoint, which pricing is better overall?



STATIC GAME

Dominant strategy is a strategy that is the best response to all possible strategic choices of the rival; there can only be one dominant strategy in a game.

Nash equilibrium is a set of strategies where each player is making its best response to the other player's strategy; there can be multiple Nash equilibria in a single game.

Prisoners' Dilemma game always has a dominant strategy and will never arrive at the best outcome (highest joint profits) for both firms.

1. The software market is dominated by Company X and Company Y. Both companies are deciding whether to launch their software updates. If rival company launches, it will harm the host company by capturing the entire market. If both companies do not launch, firms do not incur the launching costs and things remain the same as they have always been.

		Company X	
		Launch	Not launch
Company Y	Launch	1	3
	Not launch	3	2

a. What is the dominant strategy?

b. What is the Nash equilibrium?



2. Both companies are deciding whether or not to pay for the improvement in supply chain. If one of them pays for the improvement, the improvement will benefit both companies but the company that pays will incur a cost while the rival company free rides.

		Company X	
		Pay	Not pay
Company Y	Pay	2	3
	Not pay	3	0

- a. What is the Nash equilibrium in this game?

- b. What is the best response of each firm?

3. Alice and Alex are deciding where to go for dinner. Both of them like pizza and sushi, but both prefer pizza over sushi.

		Alex	
		Pizza	Sushi
Alice	Sushi	-1	3
	Pizza	5	-1

- a. What is the Nash equilibrium in this game?

- b. What should Alice and Alex do?

