Fundamentals of Consumer Choice

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Fundamentals of Consumer Choice

- **Factors affecting choice:**
  - **Limited income necessitates choice.**
  - **Consumers make choices purposefully.**
  - **One good can be substituted for another.**
  - **Consumers must make decisions without perfect information, but knowledge and past experience will help.**
  - **Not all consumers want the same things. Wealth leads to increased demand for variety.**

- ***Law of diminishing marginal utility*:**
  As the rate of consumption increases, the marginal utility derived from consuming additional units of a good will decline.

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The Demand Curve

- **The height of an individual's demand curve indicates the maximum price the consumer would be willing to pay for that unit.**
- **A consumer's willingness to pay for a unit of a good is directly related to the utility derived from consumption of the unit (compared with the best available substitute).**
- **The *law of diminishing marginal utility* implies that an individual consumer's marginal benefit, and thus the height of her demand curve, falls with the rate of consumption.**

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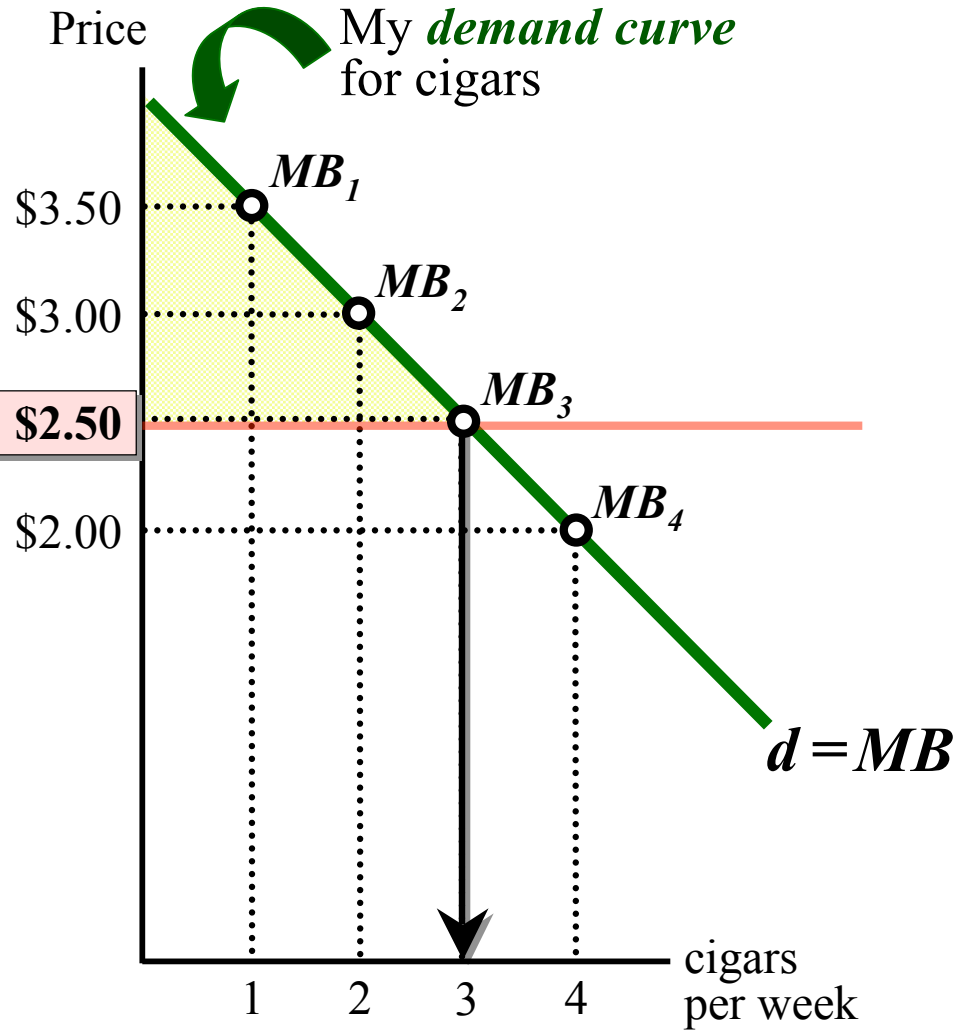
The Demand Curve

- An individual's demand curve, my demand for cigars in this case, reflects the law of diminishing marginal utility.
- Because marginal utility (***MU***) falls with increased consumption, so does my maximum willingness to pay -- marginal benefit (***MB***).
- A consumer will purchase until ***MB*** = ***Price*** . . . so at $2.50 I would purchase 3 cigars and receive a consumer surplus shown by the shaded area (above the ***price*** line and below the demand curve).



$MB_4 < MB_3 < MB_2 < MB_1$
because
$MU_4 < MU_3 < MU_2 < MU_1$

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Consumer Equilibrium With Many Goods

- **Each consumer will maximize his/her satisfaction by ensuring that the last dollar spent on each commodity yields an equal degree of marginal utility.**

$$\frac{MU_A}{P_A} = \frac{MU_B}{P_B} = \cdots = \frac{MU_N}{P_N}$$

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Price Changes and Consumer Choice

- **A demand curve (for a product or for the product of a specific firm) shows the amount of a product consumers would be willing to buy at different prices for a specific period.**

- **The law of demand states that the quantity of a product purchased is inversely related to its price.**
  - ***Substitution effect*: as a product's price falls, consumers will buy more of it . . . and less of other now relatively more expensive products.**
  - ***Income effect*: as a product's price falls, a consumer's real income rises and so induces them to buy more of both it and other goods.**

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Other Costs and Consumer Choice

- **The monetary price of a good is rarely a complete measure of its cost to the consumer.**
- **Consumption of most goods requires time as well as money. Like money, time is scarce to the consumer.**
  - **So a lower time cost, like a lower money price, will make a product more attractive.**
  - **Time costs, unlike money prices, differ among individuals.**

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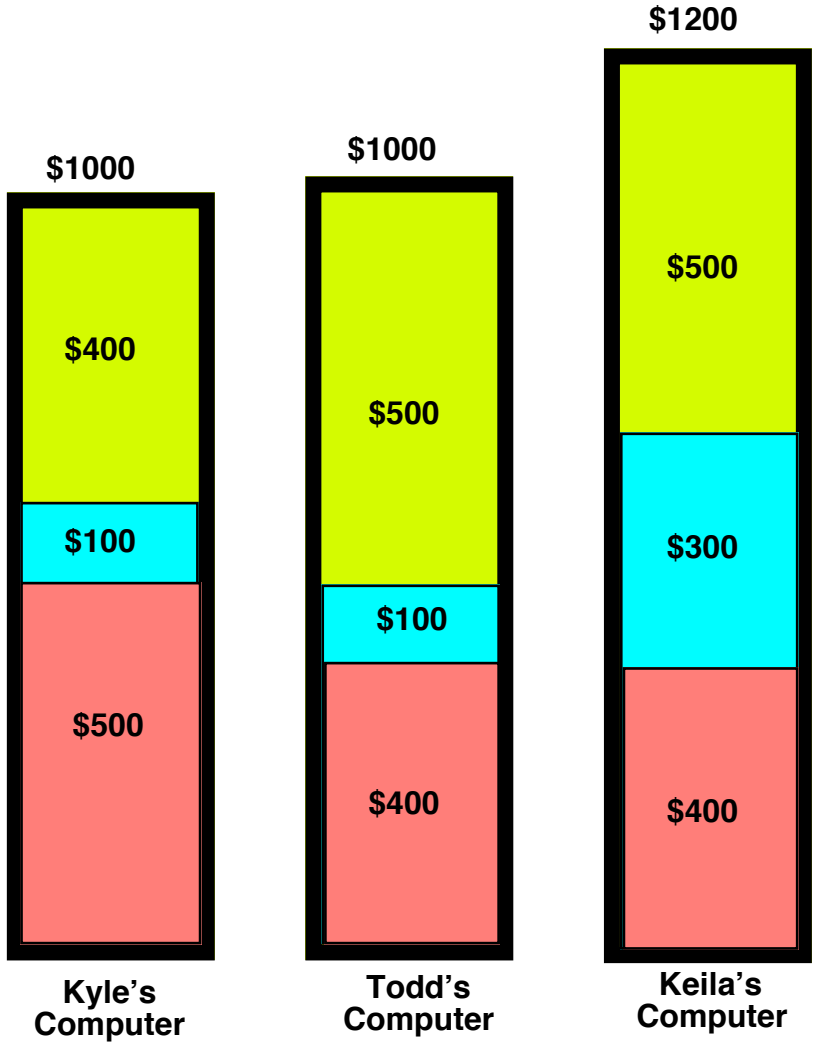
Cost to consumer I: Life-cycle cost perspective

Purchase Price

Pre- purchase costs

Post purchase Costs:
(operations, repair, & disposal)



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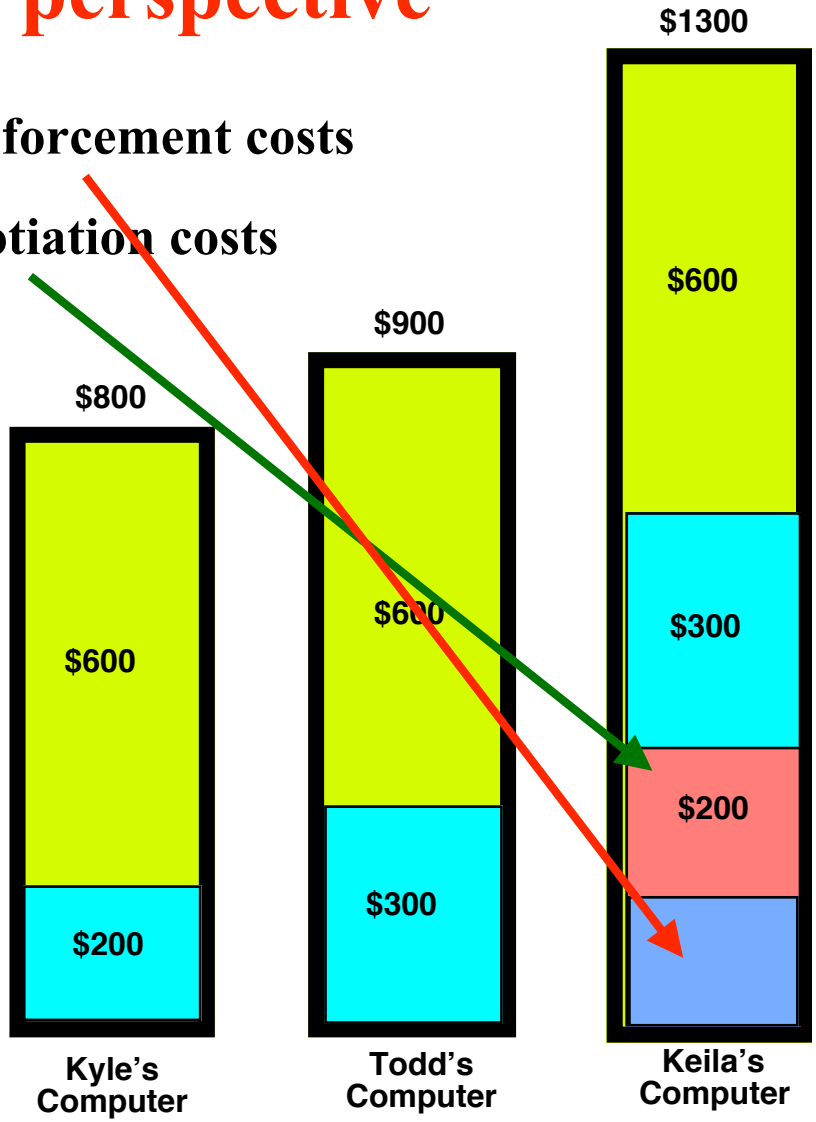
Cost to consumer II: Acquisition cost perspective

Monitoring & Enforcement costs

Bargaining and Negotiation costs

Purchase Price Plus Post-purchase costs

Search costs



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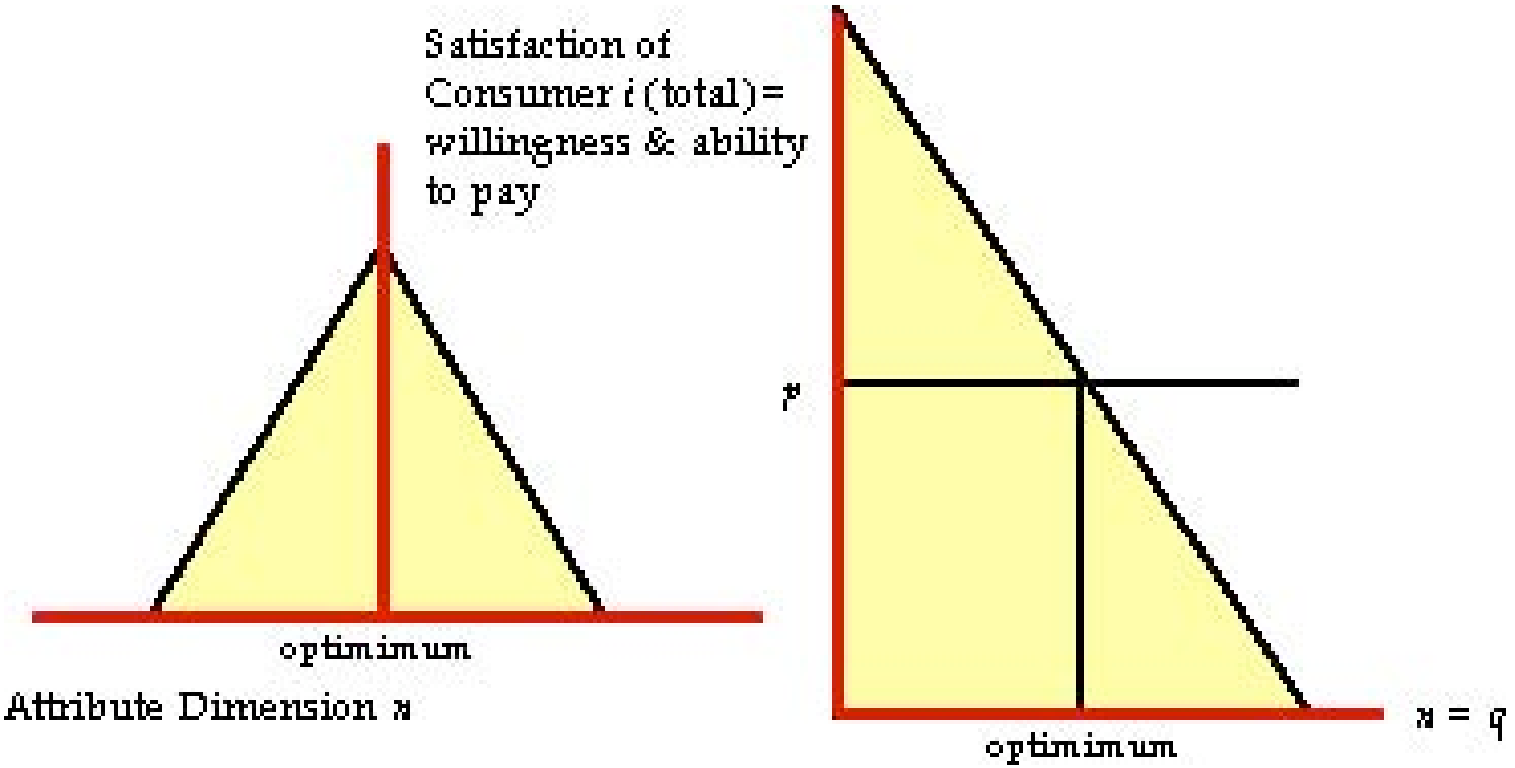
Consumer I's Satisfaction (utility) Function for Reliability (attribute dimension *n*)



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Questions for Thought:

Ken Smith currently purchases 3 pairs of jeans and 5 t-shirts per year. The price of jeans is $20, and t-shirts cost $10. At the current rate of consumption, the marginal utility of jeans is 60 and the marginal utility of t-shirts is 30. Is Ken maximizing his utility? Would you suggest he buy more jeans and fewer t-shirts, or more t-shirts and fewer jeans?

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Market Demand Reflects the Demand of Individual Consumers

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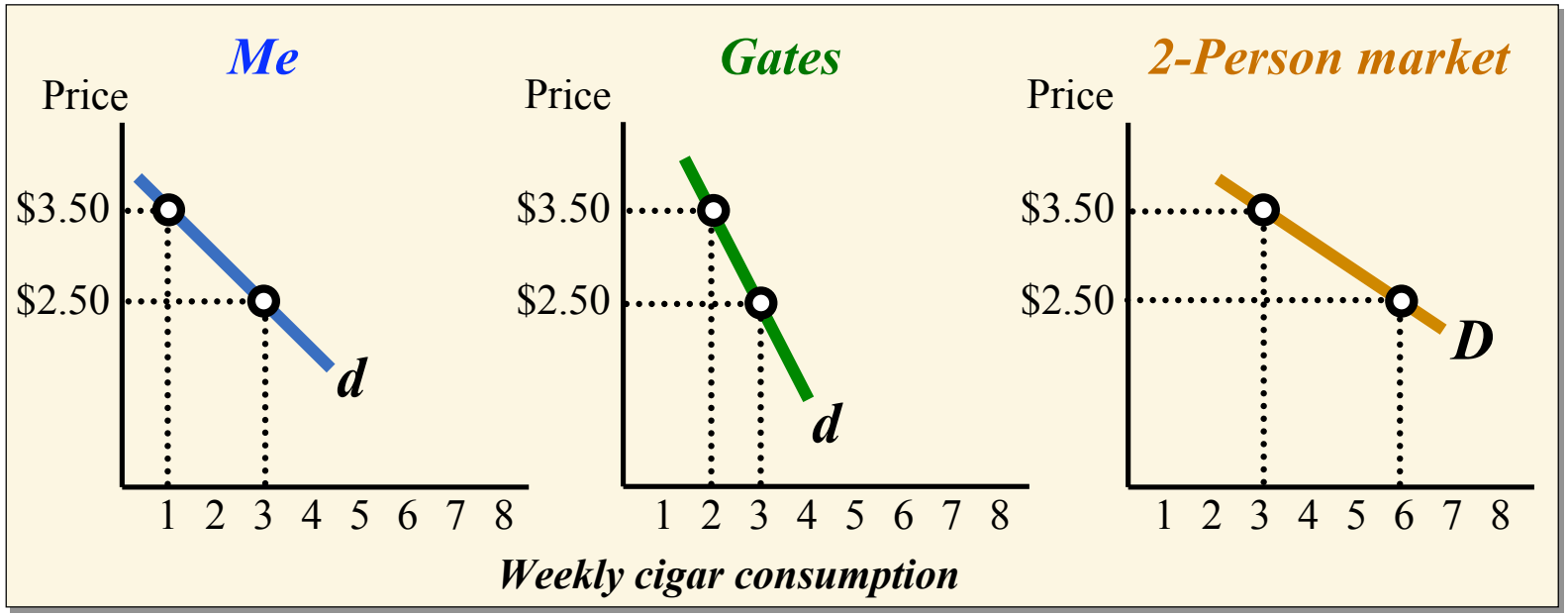
Individual and Market Demand Curves

- Consider ***my*** demand for cigars.
At $3.50 ***I demand*** 1 cigar … at $2.50 3 cigars … and so on …
- Consider ***Gates***' demand for cigars. At $3.50 ***Gates demands*** 2 cigars … at $2.50 3 cigars … and so on …
- The ***market demand curve*** is merely the horizontal sum of the individual demand curves (here ***me*** and ***Gates***).
- The ***market demand curve*** will slope downward to the right, just as the individual demand curves do.



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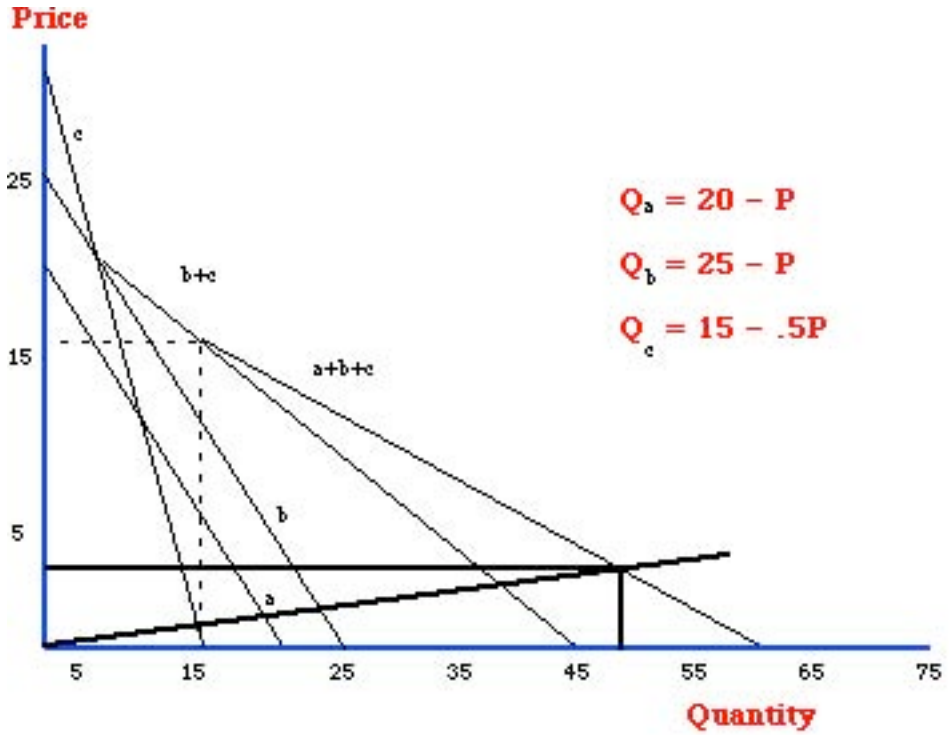
Individual and Market Demand Curves



Demand Slope:

C = -.5

B = -1

C = -1

A+B = -2

A+B+C = -2.5

Q = 60 - 2.5

Q = 12.5P

P = 4

Q = 50

Producer surplus = 100
Consumer surplus = 128 + 220.5 + 169 = 517.5
Sum PS & CS = 617.5

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Determinants of Preferences:
Why Consumers Buy
What They Buy

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Consumer Preferences

- The factors that determine consumer preferences are frequently quite complex.
- Consumer preferences are shaped by attitudes toward time and risk.
- Advertising budgets of profit-seeking firms indicate that it influences consumer choices.
- Advertising can:
  - reduce the search time of consumers
  - help them make more informed choices
  - provide assurances with regard to quality (through brand names).

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Elasticity of Demand

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Price Elasticity of Demand

- **Price elasticity reveals the responsiveness of the amount purchased to a change in price.**

$$\textit{Price Elasticity of demand} = \frac{\%\ \text{Change in quantity demanded}}{\%\ \text{Change in Price}} = \frac{\%\Delta Q}{\%\Delta P}$$

$$= \frac{(Q_0 - Q_1)}{(Q_0 + Q_1)/2} \Big/ \frac{(P_0 - P_1)}{(P_0 + P_1)/2}$$

- or put more simply -

$$= \frac{(Q_0 - Q_1)/(Q_0 + Q_1)}{(P_0 - P_1)/(P_0 + P_1)}$$

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Price Elasticity Numerical Application

- **Suppose Ken can sell 50 specialty cakes per week at $7 a cake, or 70 specialty cakes per week at $6 a cake.**
- **What is the demand elasticity for Ken's cakes?**

Percent change in quantity demanded: $\dfrac{(50 - 70)}{(50 + 70)/2} = \dfrac{-20}{60} = -33.33\%$

Percent change in price: $\dfrac{(7 - 6)}{(7 + 6)/2} = \dfrac{1}{6.5} = 15.38\%$

The price elasticity of demand equals: $\dfrac{\%\Delta Q}{\%\Delta P} = \dfrac{-33.33}{15.38} = -2.17$

- Recall -

Price Elasticity of demand $= \dfrac{(Q_0 - Q_1)}{(Q_0 + Q_1)/2} \Big/ \dfrac{(P_0 - P_1)}{(P_0 + P_1)/2}$

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Price Elasticity of Demand

- **After calculating the price elasticity of demand, you can determine whether it is elastic, inelastic, or unitary elastic with the following chart:**
  - **If the absolute value of the elasticity term < 1, then the demand is *inelastic*.**
  - **If the absolute value of the elasticity term > 1, then the demand is *elastic*.**
  - **If the absolute value of the elasticity term = 1, then the demand is *unitary elastic*.**

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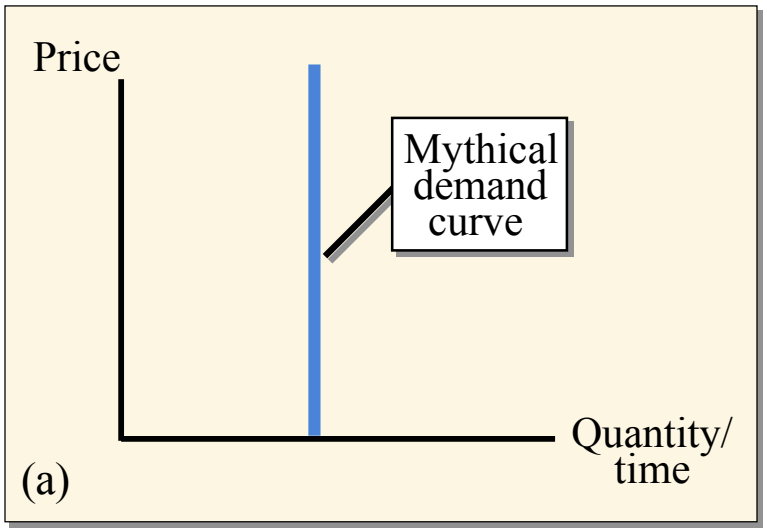
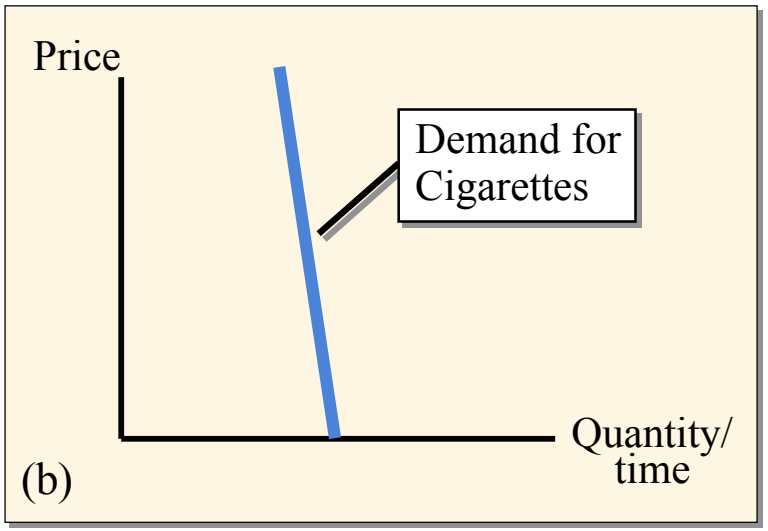
Elasticity of Demand



- ***Perfectly inelastic***:
  An increase in price results in no change in consumers purchases. The vertical demand curve is mythical as the substitution and income effects prevent this from happening in the real world.

- ***Relatively inelastic:***
  A percent increase in price results in a smaller % reduction in sales. The demand for cigarettes has been estimated to be highly inelastic.



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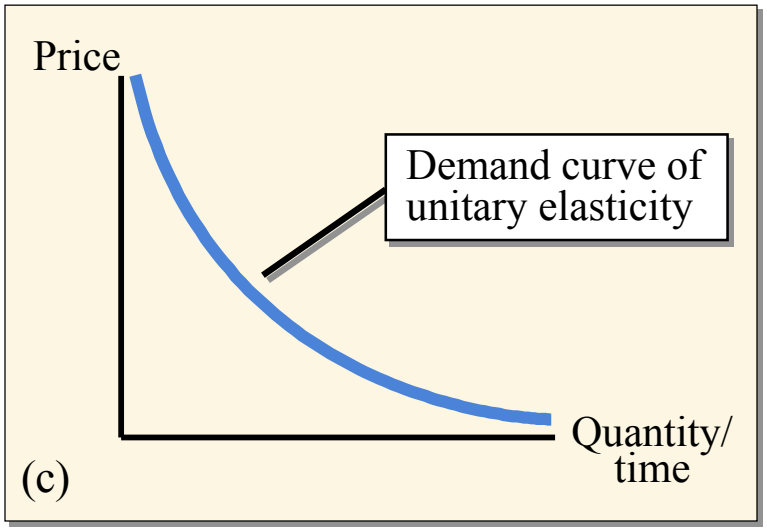
Elasticity of Demand



- ***Unitary elasticity***:
  The percent change in quantity demanded due to an increase in price is equal to the % change in price. A decreasing slope results. Sales revenue (price times quantity) is constant.

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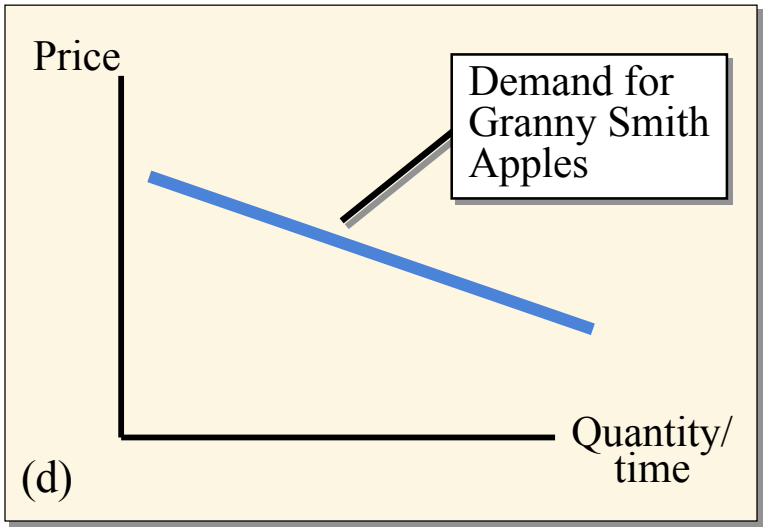
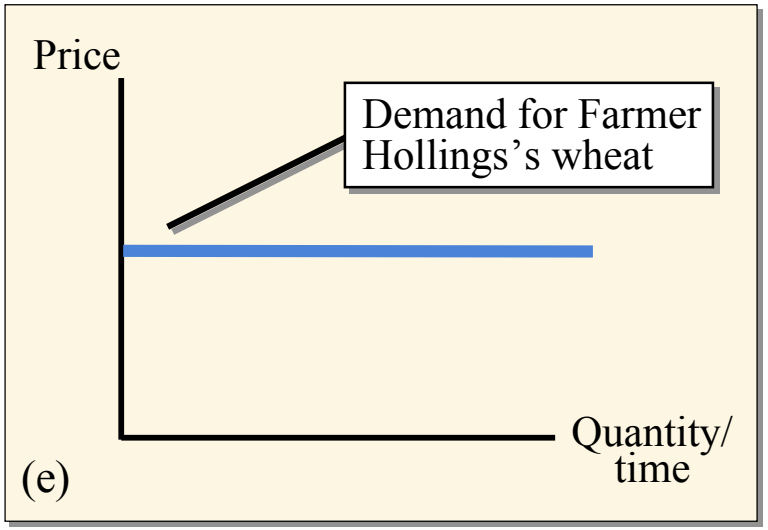
Elasticity of Demand



- ***Relatively elastic***:
  A % increase in price leads to a larger % reduction in purchases. When there are good substitutes for a product (as with Granny Smith apples), the quantity purchased will be highly sensitive to changes in price.

- ***Perfectly elastic:***
  Consumers will buy all of Farmer Hollings's wheat at the market price, but none will be sold above the market price.



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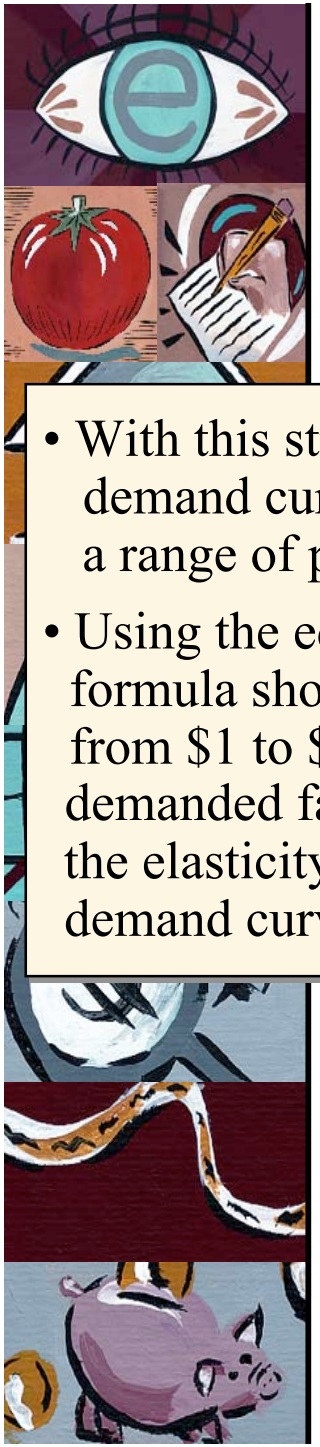


Elasticity of Demand

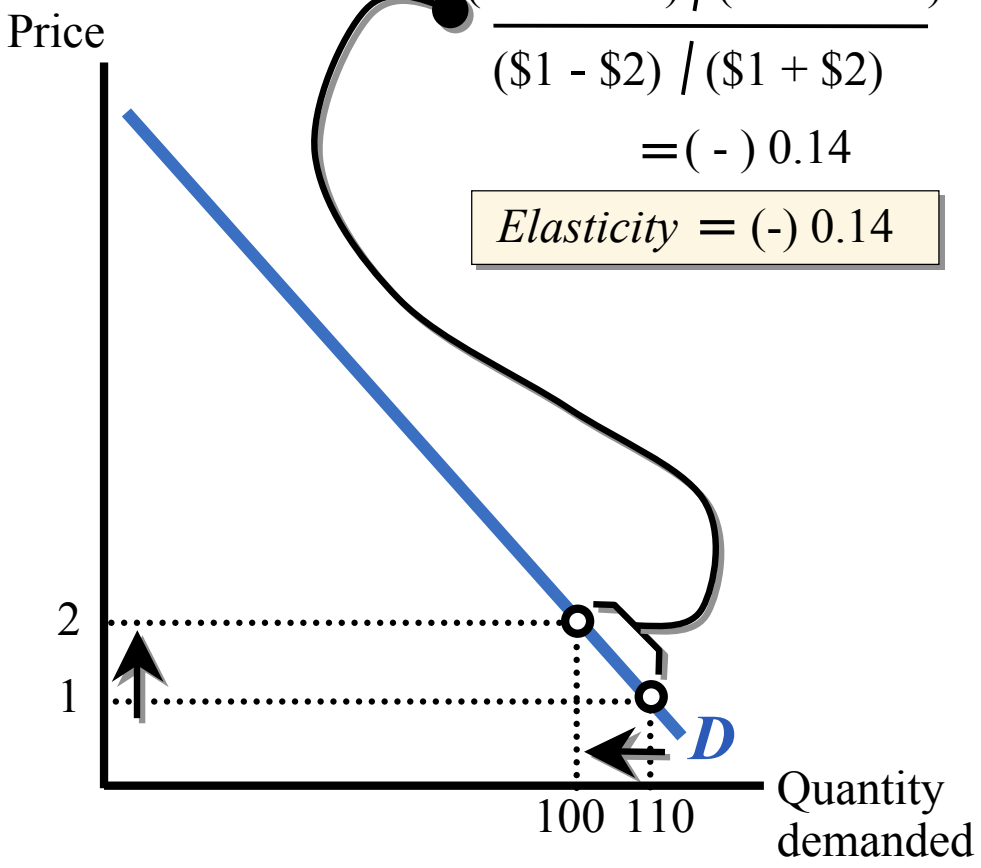
- With this straight-line (constant-slope) demand curve, demand varies across a range of prices.
- Using the equation for elasticity, the formula shows that, when price rises from $1 to $2 … while quantity demanded falls from 110 to 100 … the elasticity for that region of the demand curve is (- .14) – inelastic.

Recall - $\dfrac{(Q_0 - Q_1)/(Q_0 + Q_1)}{(P_0 - P_1)/(P_0 + P_1)}$

$$\frac{(110 - 100) \,/\, (110 + 100)}{(\$1 - \$2) \,/\, (\$1 + \$2)}$$

$$= (-)\, 0.14$$

Elasticity = (-) 0.14



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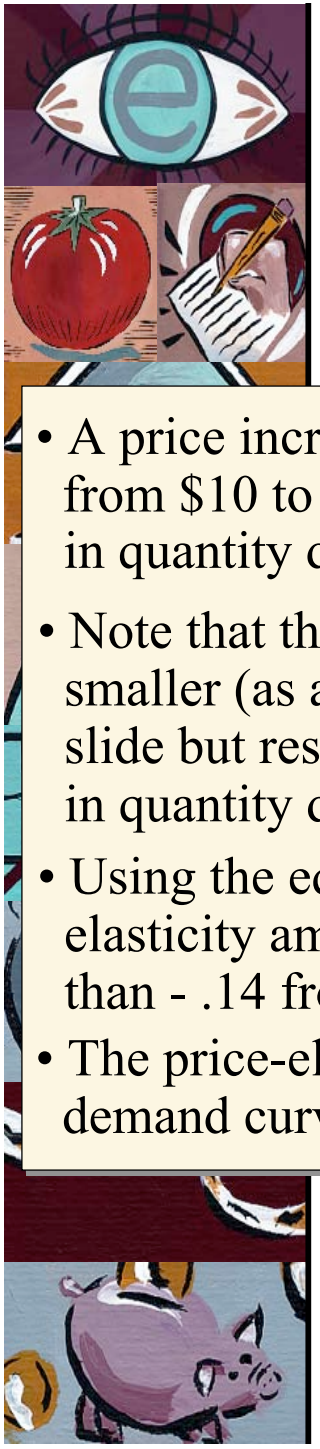


Elasticity of Demand

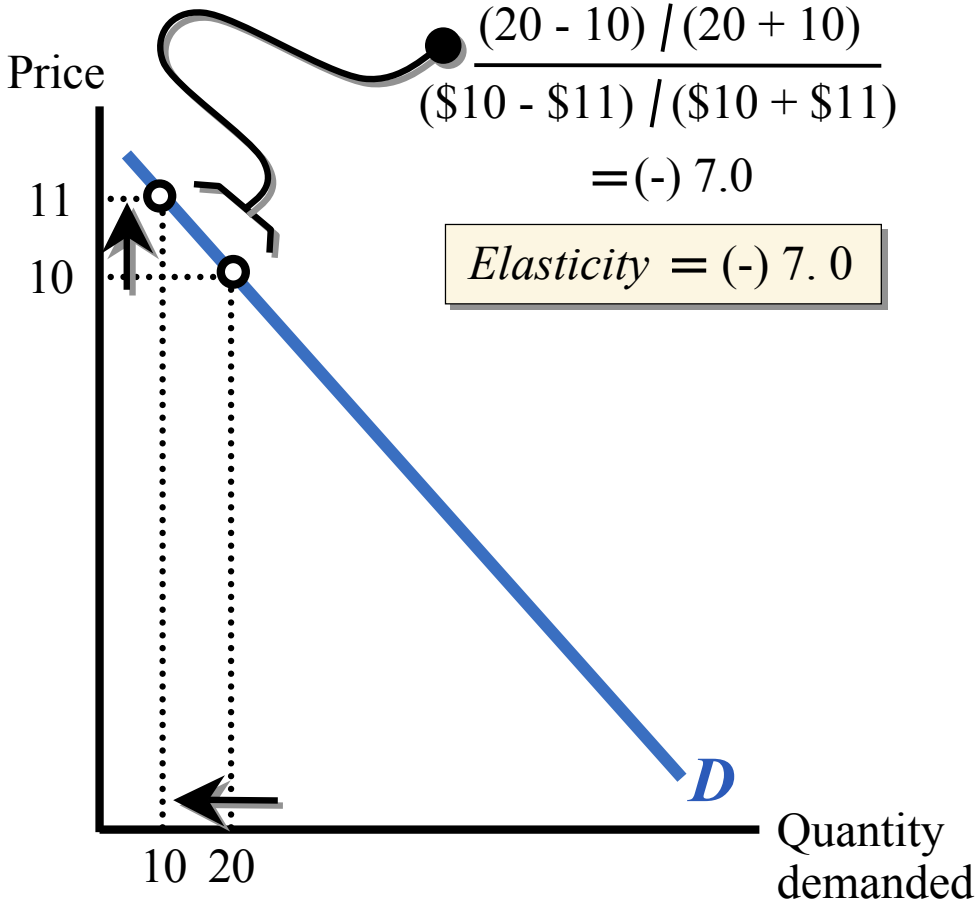
- A price increase of the same amount, from $10 to $11, . . . leads to a decline in quantity demanded from 20 to 10.
- Note that this change in price was smaller (as a %) than in the previous slide but resulted in the same change in quantity demanded.
- Using the equation for elasticity, the elasticity amounts to - 7.0 (greater than - .14 from before).
- The price-elasticity of a straight-line demand curve increases as price rises.

Recall - $\dfrac{(Q_0 - Q_1)/(Q_0 + Q_1)}{(P_0 - P_1)/(P_0 + P_1)}$

$\dfrac{(20 - 10) / (20 + 10)}{(\$10 - \$11) / (\$10 + \$11)}$

$= (-)\ 7.0$

Elasticity $= (-)\ 7.0$



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Determinants of Price Elasticity

- **Availability of *substitutes***
  - **When good substitutes for a product are available, a rise in price induces many consumers to switch to another product.**
  - **The greater the availability of substitutes, the more elastic demand will be.**

- ***Share of total budget* expended on product**
  - **As the share of the total budget expended on the product rises, demand is more elastic.**

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Time and Demand Elasticity

- **If the price of a product increases, consumers will reduce their consumption by a larger amount in the long run than in the short run.**
  - **Thus, demand for most products will be more elastic in the long run than in the short run.**
  - **This relationship is often referred to as the *second law of demand*.**

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Elasticity of Demand

Inelastic	
Salt	0.1
Matches	0.1
Toothpicks	0.1
Airline travel (short run)	0.1
Gasoline (short run)	0.2
Gasoline (long run)	0.7
Natural gas, home (short run)	0.1
Natural gas, home (long run)	0.5
Coffee	0.3
Fish (cod), at home	0.5
Tobacco products (short run)	0.5
Legal services (short run)	0.4
Physician services	0.6
Taxi (short run)	0.6
Automobiles (long run)	0.2

Approximately Unitary Elasticity	
Movies	0.9
Homes, owner occupied (long run)	1.2
Shellfish (consumed at home)	0.9
Oysters (consumed at home)	1.1
Private education	1.1
Tires (short run	0.9
Tires (long run)	1.2
Radio and television receivers	1.2

Elastic	
Restaurant meals	2.3
Foreign travel (long run)	4.0
Airline travel (long run)	2.4
Fresh green peas	2.8
Automobiles (short run	1.4
Chevrolet automobiles	4.0
Fresh tomatoes	4.6

- Can you explain why the demand for some goods is highly inelastic while that for others is elastic.

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Total Revenue, Total Expenditure, and the Price Elasticity of Demand

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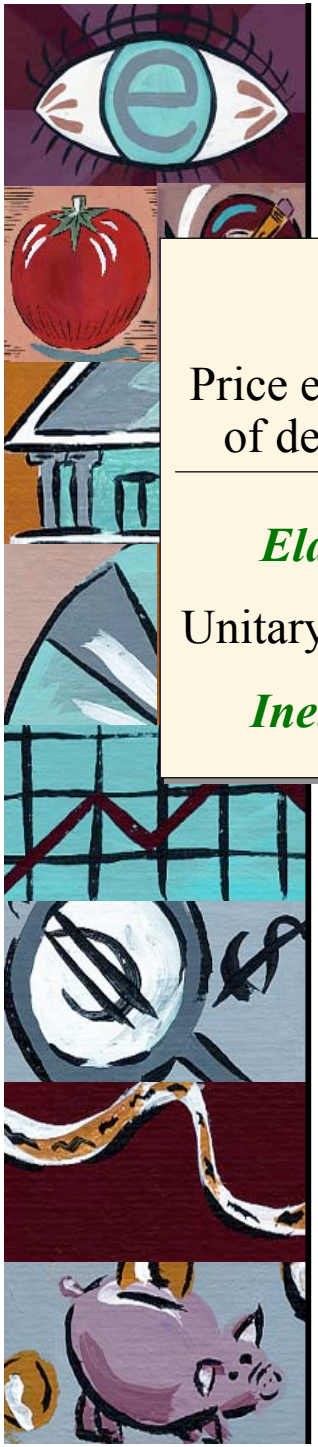

Total Expenditures and Demand Elasticity

Price elasticity of demand	Elasticity coefficient (in absolute value)	Impact of ***higher price*** on total consumer expenditures or a firm's total revenue	Impact of ***lower price*** on total consumer expenditures or a firm's total revenue
Elastic	1 to	decrease ⇩	increase ⇧
Unitary Elastic	1	-- unchanged--	-- unchanged--
Inelastic	0 to 1	increase ⇧	decrease ⇩

- The table above summarizes the relationship between changes in price and total expenditures for demand curves of varying elasticity.

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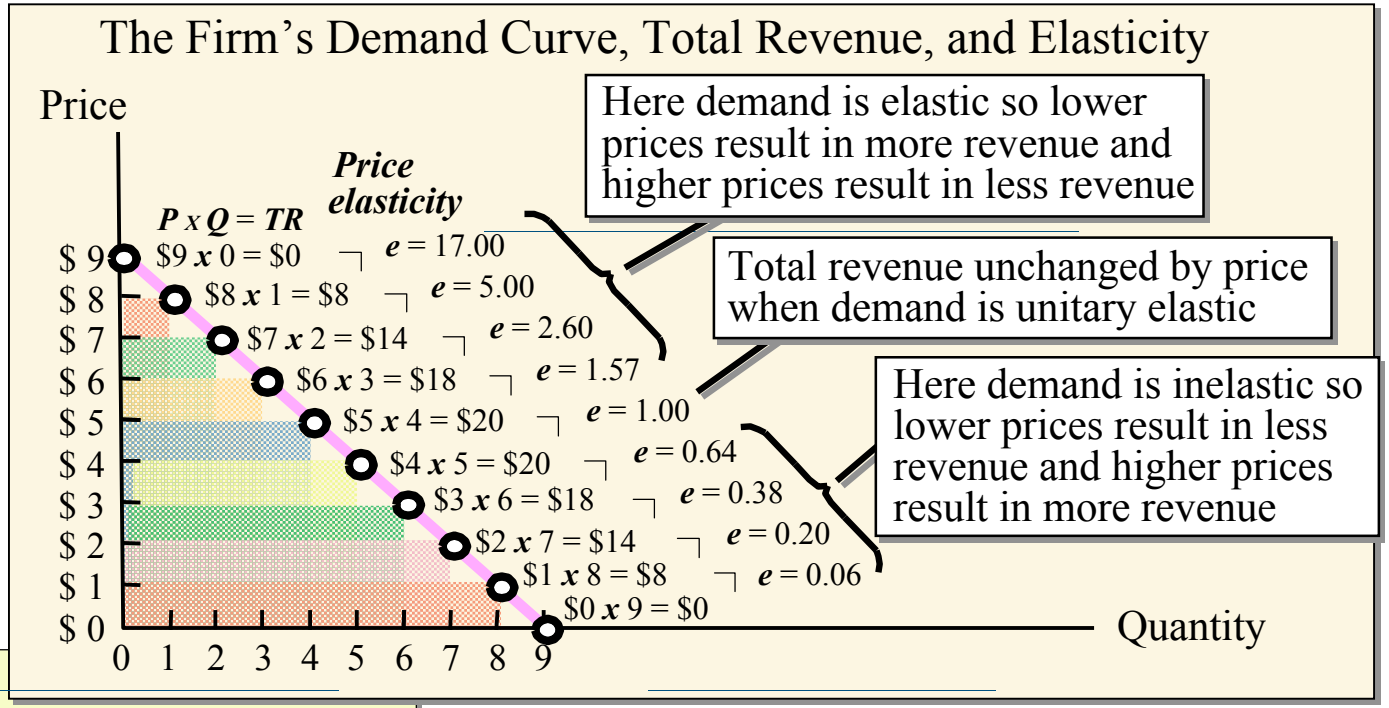
Total Revenues and Elasticity



Price		Qty sold		Total revenue	Price elasticity of demand
$9	x	0	=	$0	((0-1) / (0+1)) / ((9-8) / (9+8)) = 17.00
$8	x	1	=	$8	((1-2) / (1+2)) / ((8-7) / (8+7)) = 5.00
$7	x	2	=	$14	((2-3) / (2+3)) / ((7-6) / (7+6)) = 2.60
$6	x	3	=	$18	((3-4) / (3+4)) / ((6-5) / (6+5)) = 1.57
$5	x	4	=	$20	((4-5) / (4+5)) / ((5-4) / (5+4)) = 1.00
$4	x	5	=	$20	((5-6) / (5+6)) / ((4-3) / (4+3)) = 0.64
$3	x	6	=	$18	((6-7) / (6+7)) / ((3-2) / (3+2)) = 0.38
$2	x	7	=	$14	((7-8) / (7+8)) / ((2-1) / (2+1)) = 0.20
$1	x	8	=	$8	((8-9) / (8+9)) / ((1-0) / (1+0)) = 0.06
$0	x	9	=	$0	

- By tracing out the demand curve, one can see how changes in price (through changes in quantity demanded) change ***total revenue*** collected.
- By calculating the price elasticity of demand at different points along the demand curve, one can follow how and where ***total revenue*** is maximized.

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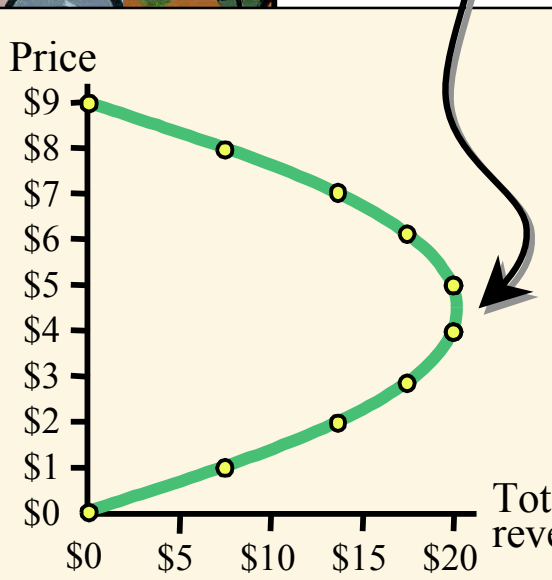
Total Revenues and Elasticity

- The firm maximizes its revenue at the price (or quantity) where demand is unitary elastic.

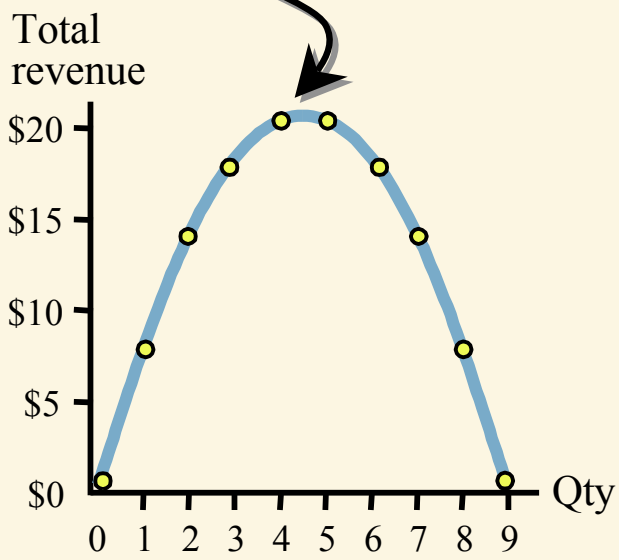
Total Revenue is maximized somewhere between $4 and $5 *(where demand is unitary elastic)*.

Total Revenue is maximized somewhere between 4 and 5 units *(again, where demand is unitary elastic)*.

Price		Quantity sold		Total revenue	Elasticity
$9	x	0	=	$0	17.00
$8	x	1	=	$8	5.00
$7	x	2	=	$14	2.60
$6	x	3	=	$18	1.57
$5	x	4	=	$20	1.00
$4	x	5	=	$20	.64
$3	x	6	=	$18	.38
$2	x	7	=	$14	.20
$1	x	8	=	$8	.06
$0	x	9	=	$0	



(c) Price versus Total Revenue



(d) Quantity versus Total Revenue

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Income Elasticity

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Income Elasticity

- *Income elasticity* **indicates responsiveness of a product's demand to a change in**

$$\textbf{Income Elasticity of demand} = \frac{\%\ \text{Change in quantity demanded}}{\%\ \text{Change in Income}}$$

- **A *normal good* is a good with a positive income elasticity of demand.**
  - **As income expands, the demand for normal goods will rise.**
- **Goods with a negative income elasticity are *inferior goods*.**
  - **As income expands, the demand for inferior goods will decline.**

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Price Elasticity of Supply

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Price Elasticity of Supply

- **The *price elasticity of supply* is the percent change in quantity supplied divided by the percent change of the price causing the supply response.**
  - **Analogous to the *price elasticity of demand*.**
  - **However, the price elasticity of supply will be positive because the quantity producers are willing to supply is directly related to price.**

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Questions for Thought:

1. (a) Studies indicate that the demand for Florida oranges, Bayer aspirin, watermelons, and airfares to Europe are price elastic. Why?

   (b) Why is the demand for salt, matches, and gasoline *(short-run)* price inelastic?

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End
Chapter 5

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