Pricing Analytics

Session 2

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Session Overview

- Review of Last Class
- Two-part Pricing
- Quantity Discounts
- Bundling for Traditional Goods
- Bundling for Information Goods

Two-part Pricing

Two-part Pricing

- Car Rental Companies
  - basic charge
  - per mile charge
- Utility Companies
  - basic fee
  - per unit charge
- Night Clubs
  - cover charge
  - per drink charge
- Professional Service Providers
  - retainer
  - per hour fee

$F = 100$ $p = 10/km$

C1 20kms $100 + 10 \times 20 = 300$

C2 10kms $100 + 10 \times 10 = 200$

C1 $\frac{300}{20} = 15$

C2 $\frac{200}{10} = 20$

Jazz Club Example

- Jazz Club: entertainment $4, liquor $2/drink
- Average customer buys 2 drinks
- Priced at $4/drink

# Drinks	Cost	Revenue
0	$4	0
1	$6	$4
2	$8	$8
3	$10	$12
4	$12	$16
10	$24	$40

Jazz Club Example

- Jazz club: entertainment $4, liquor $2/drink
- Average customer buys 2 drinks
- Priced at $4/drink
- However, a heavy drinker (user) will subsidize a light drinker with this policy!
- Two-part pricing can be used to minimize cross-subsidy

# Drinks	Cost	Revenue
0	$4	0
1	$6	$4
2	$8	$8
3	$10	$12
4	$12	$16
10	$24	$40

Two-part Pricing

- Two-part pricing requires ex-post or on-going measurement of usage
- It is assumed that how much consumers use is exogenous to this measurement!
- When might this assumption not hold true?

Xerox Problem

- Two users with different consumption rates
  - 20K and 2K
- Different willingness to pay
  - $25,800 and $6,700
- Cost per copy to Xerox = $0.03
- Cost of the machine = $1900
- NPV of getting $1 each year for five years = $3.79

Xerox Problem

- What if there were a third segment whose WTP was 15,000 and copies required were 6000?

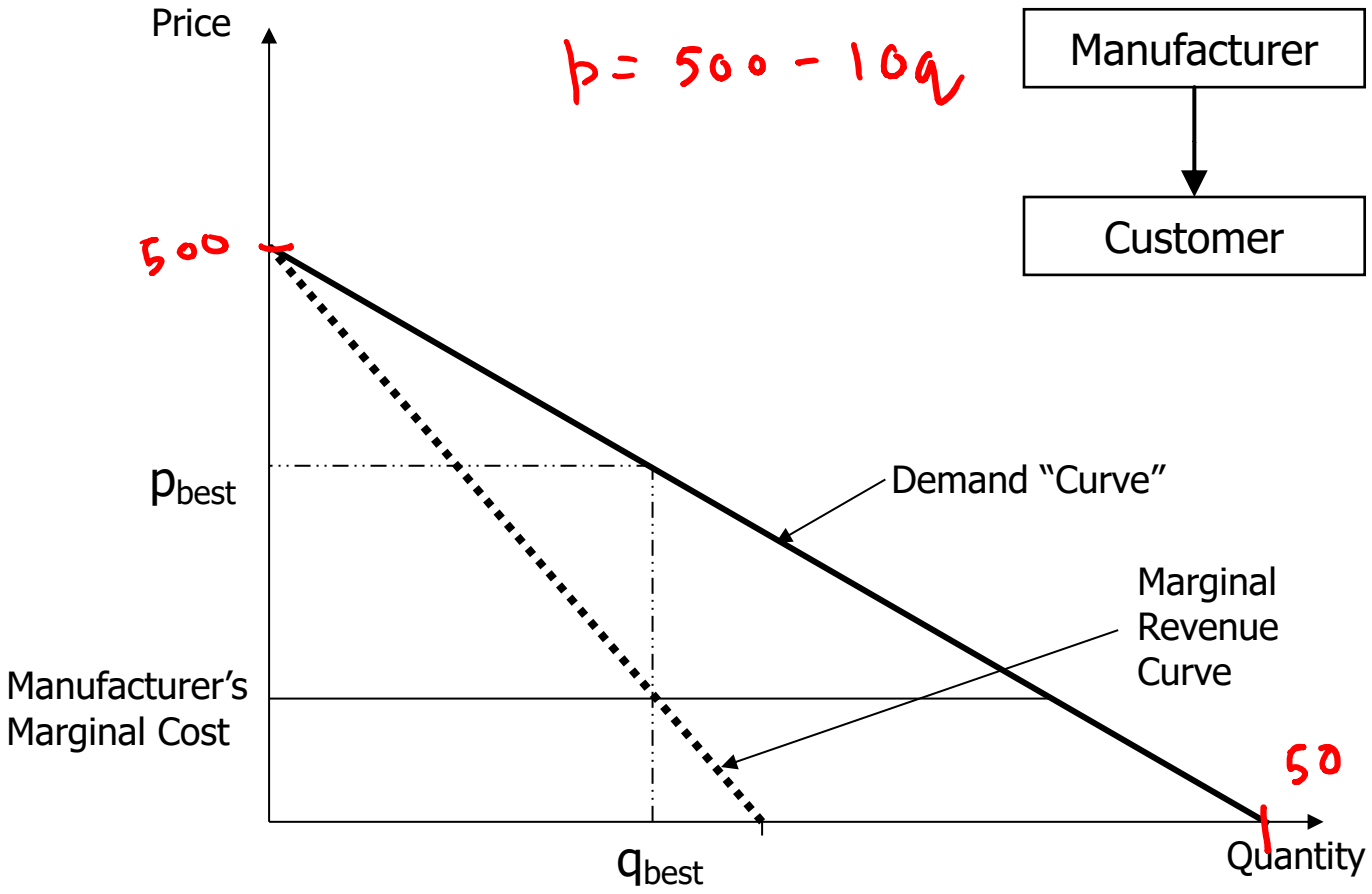
- $(F+2{,}000p)*3.79 \leq 6700$
- $(F+20{,}000p)*3.79 \leq 25{,}800$
- $(F+6{,}000p)*3.79 \leq 15{,}000$

Quantity Discounts

Quantity Discounts

- Cost Based Reasons
  - economies of scale
  - transaction costs
- Demand Based Reasons
  - in many instances, heavier users of a product are more price sensitive because they spend more on the product
  - quantity discounts is a means to lower price only to the heavier users of the product
- Strategic Reasons
  - lowers the incentives to use multiple suppliers [dual and multiple sourcing]
  - scope based quantity discounts increase switching costs
- Alignment of Incentives in a Channel

Quantity Discounts to Align Channel Incentives



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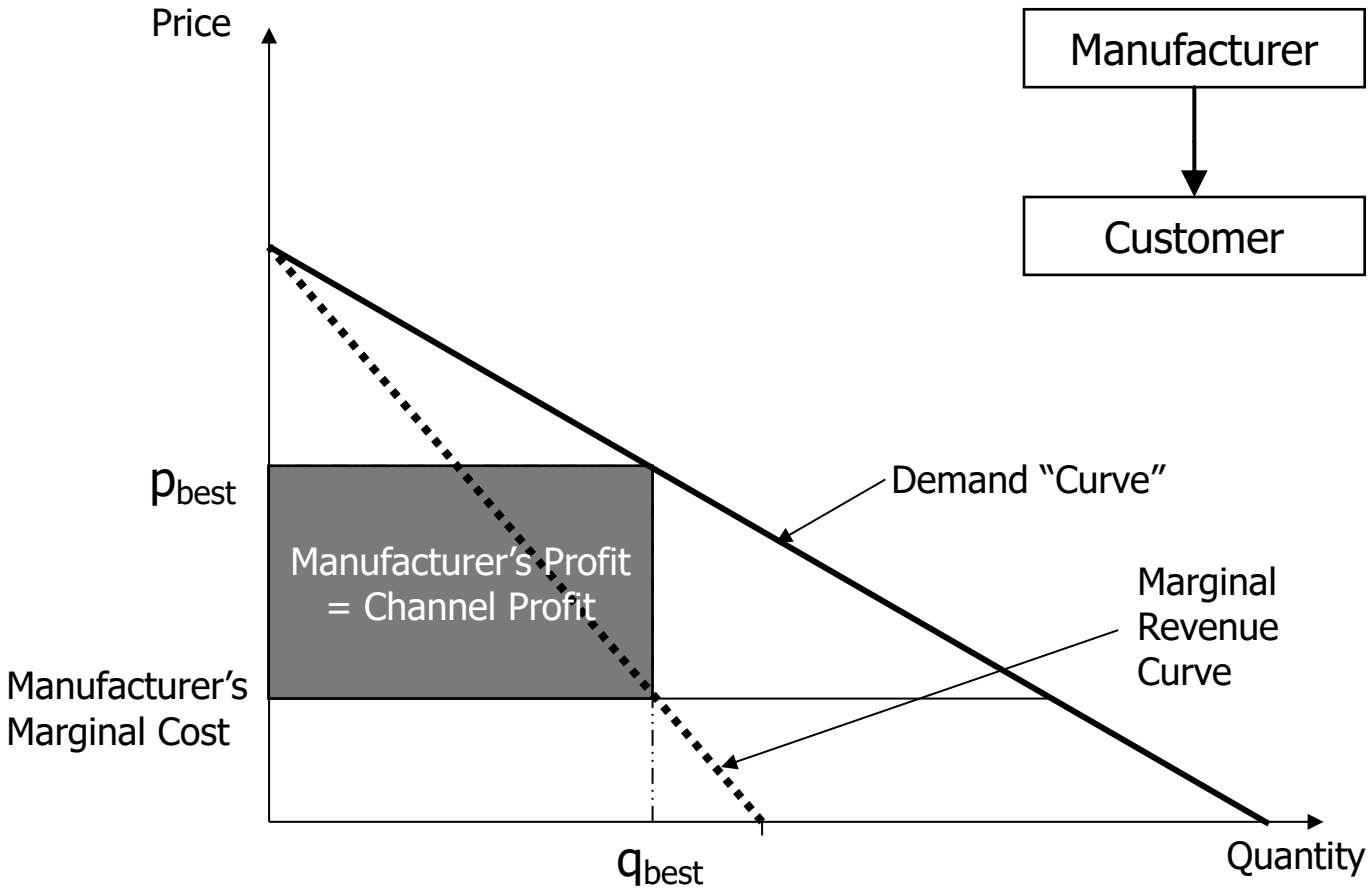

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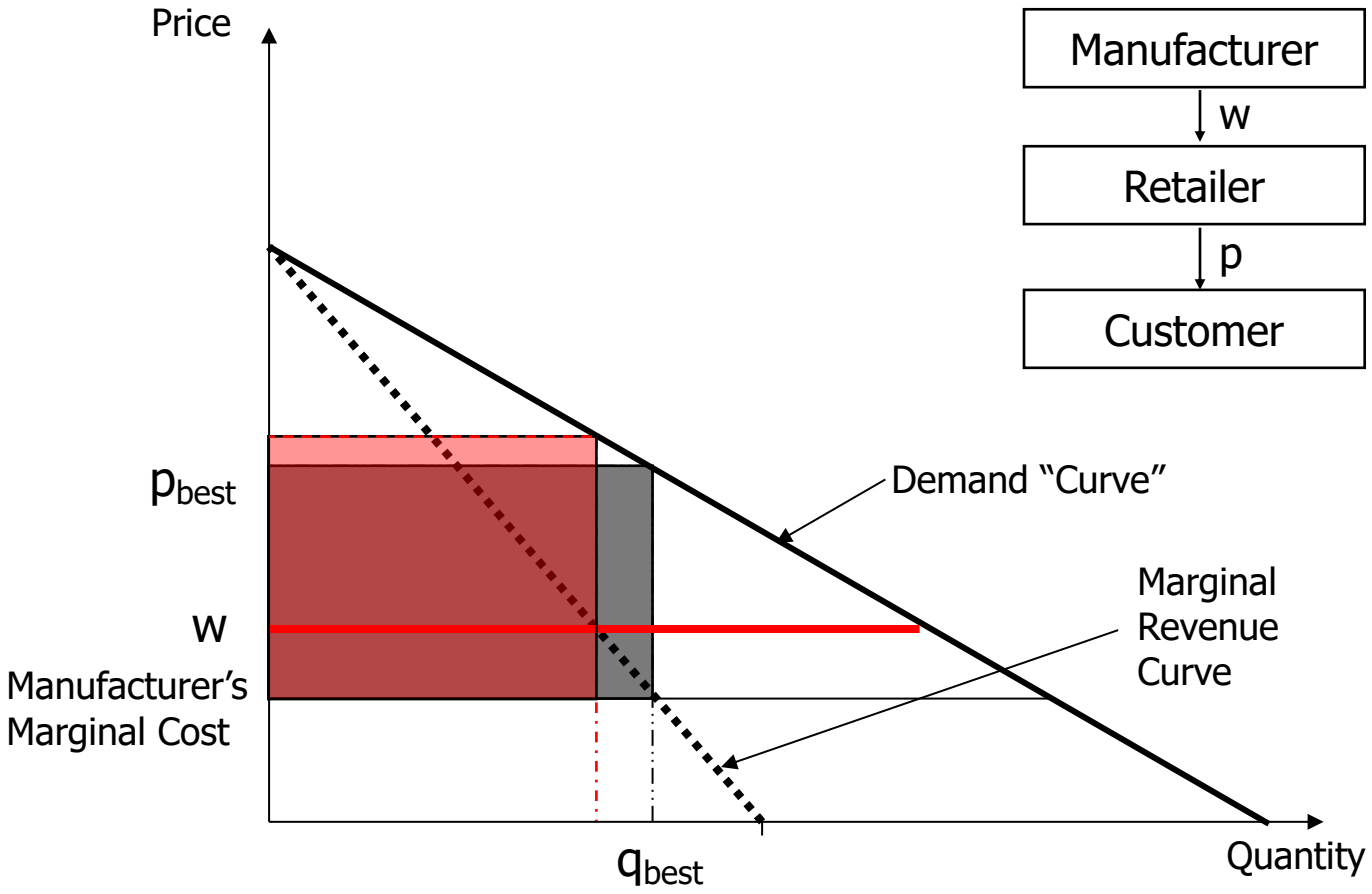

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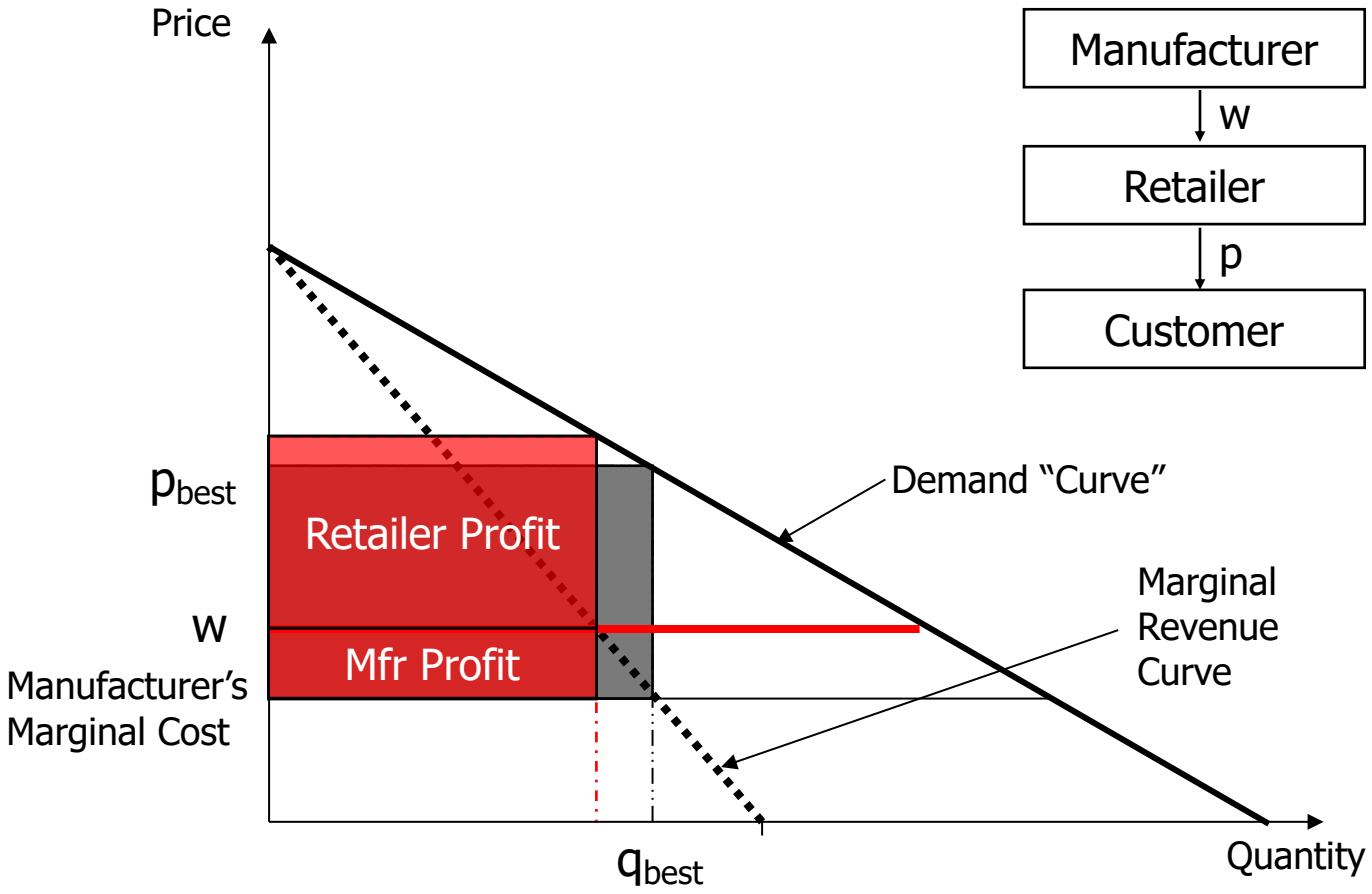

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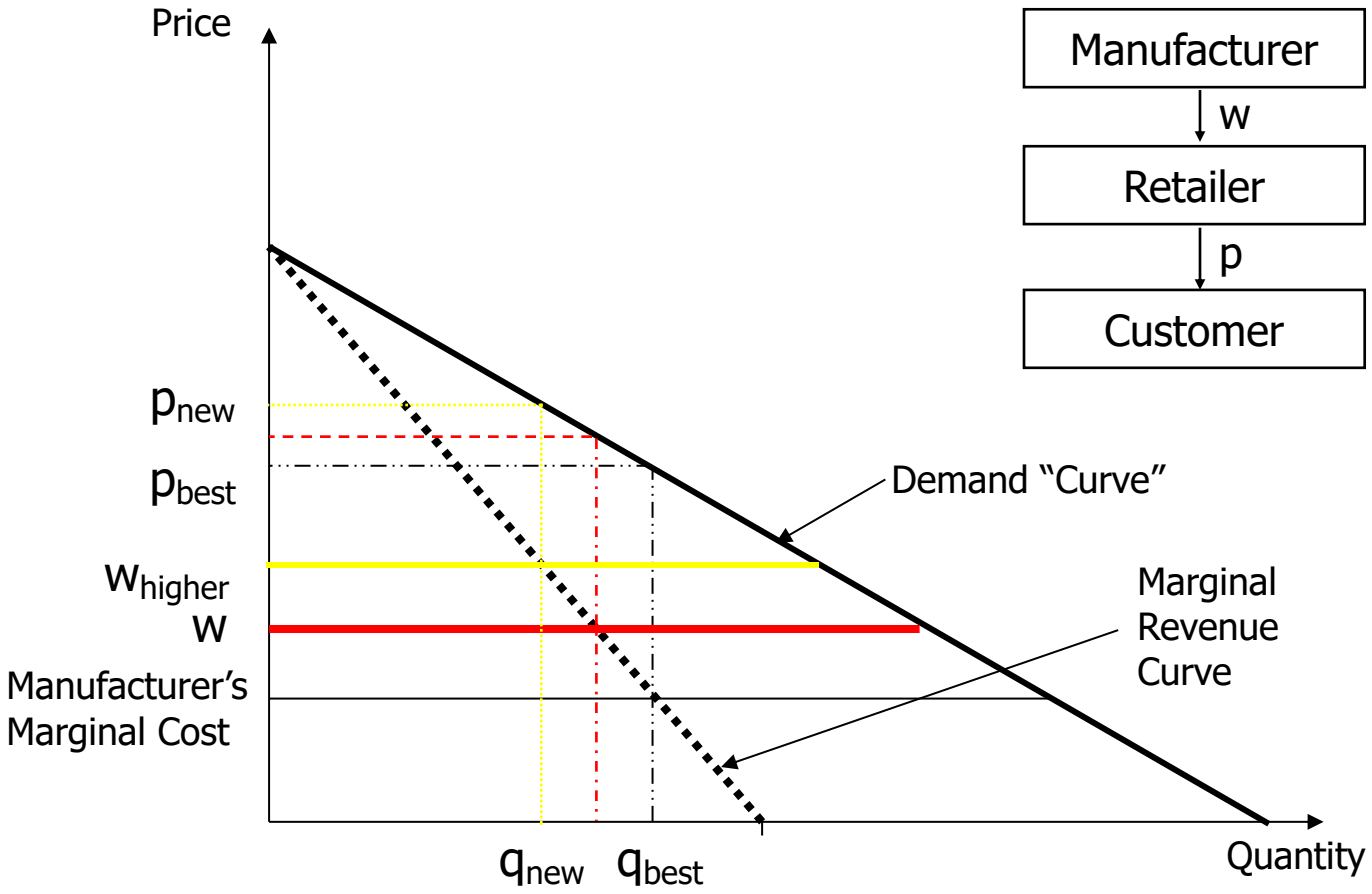

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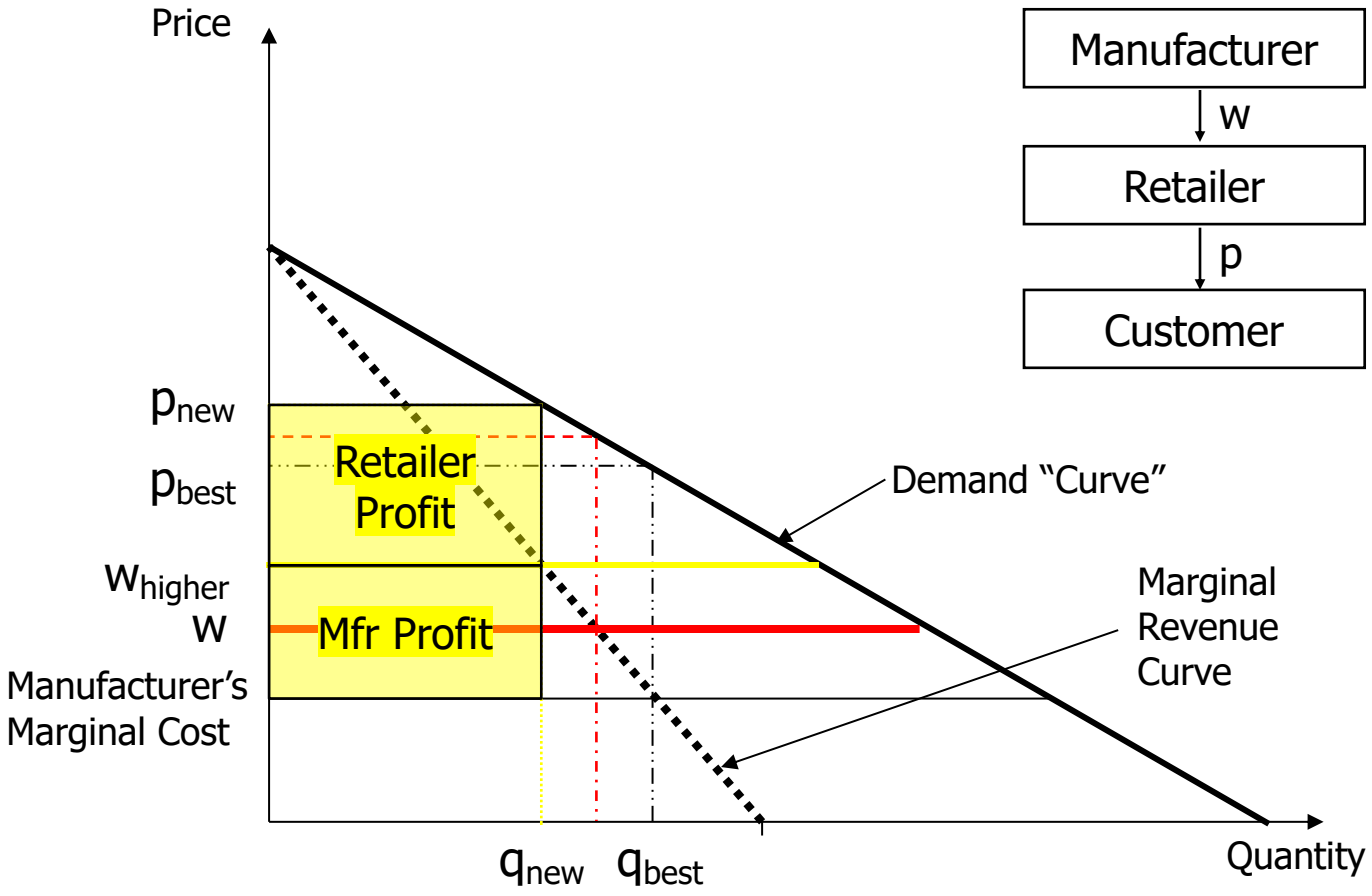

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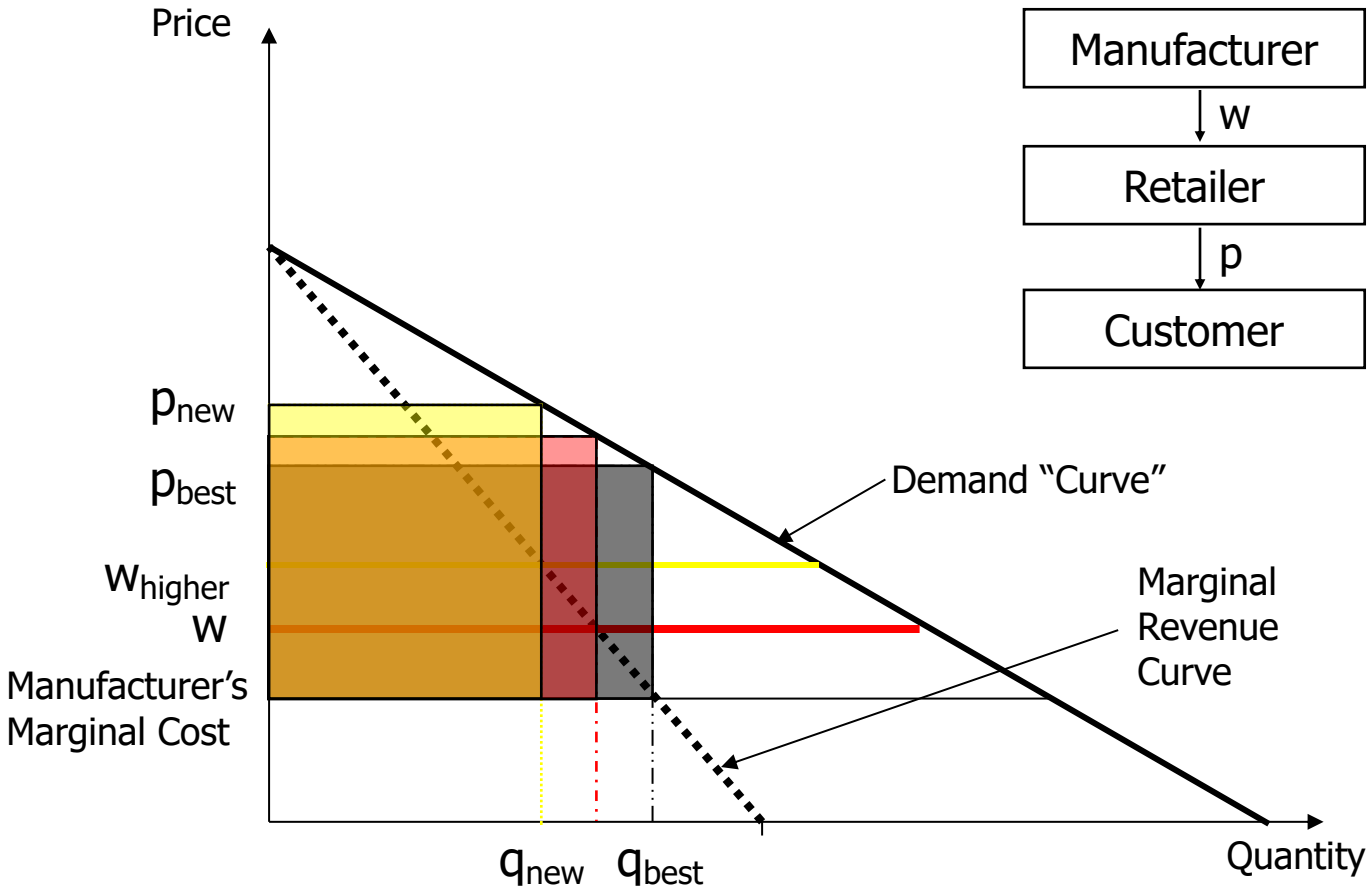

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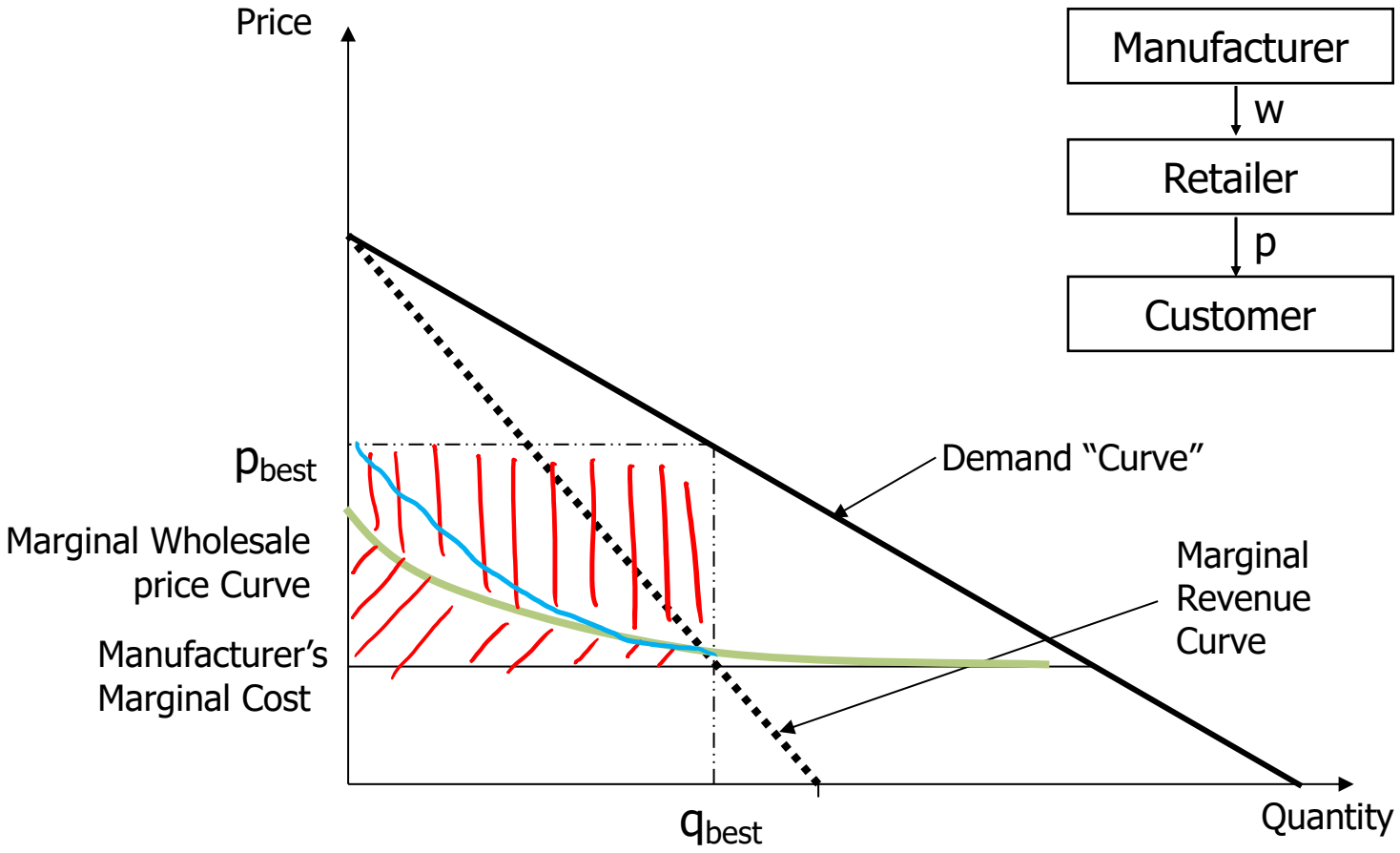


Price Engineering

- Two-part pricing and Quantity discounts
  - means to do price discrimination
- However, there can be several other reasons to implement these strategies
- Price Discrimination
  - First Degree
  - Second Degree
  - Third Degree

Bundling Traditional Products

Copy Machine Example

	Machine	3 year/parts & labor	Bundle
Home Offices	$900	$300	1200
Law Firms	$1200	$100	1300
Sep:	1800	300	2100
Bundle:	2 × 1200	=	2400

Copy Machine Example

	Machine	3 year/parts & labor	
Home Offices	$900	$300	1200
Law Firms	$1200	$200	1400
Sep:	1800	400	2200
Bundle:	1200 × 2		2400

Copy Machine Example

	Machine	3 year/parts & labor
Home Offices	$900	$100
Law Firms	$1200	$300

1000

1500

Sep: 1800 300 2100

Bundle: 1000 × 2 2000

Bundling Information Products

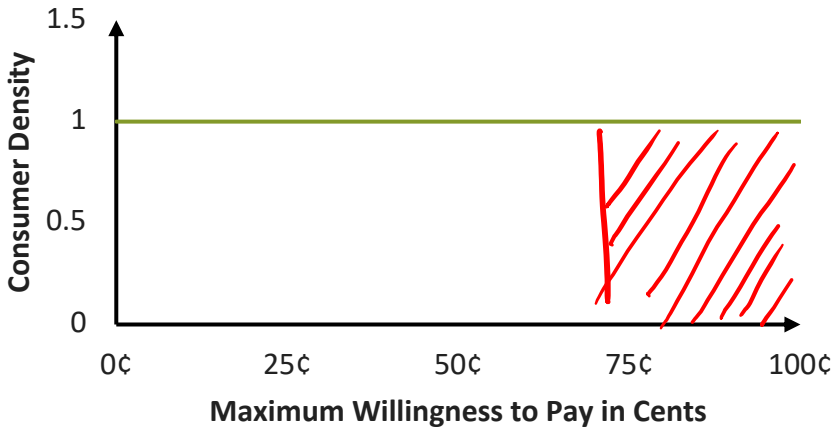
The power of bundling in low marginal cost industries

Bundling Information Products

- Pricing Models for Information Products
  - Buy a Bundle (Microsoft Office)
  - Pay as you go (Download the specific features you need)
- Information products have a unique characteristic that marginal costs are close to zero
- Bundling of information products is usually very easy
- It also imposes no additional burden on the consumer (usually)

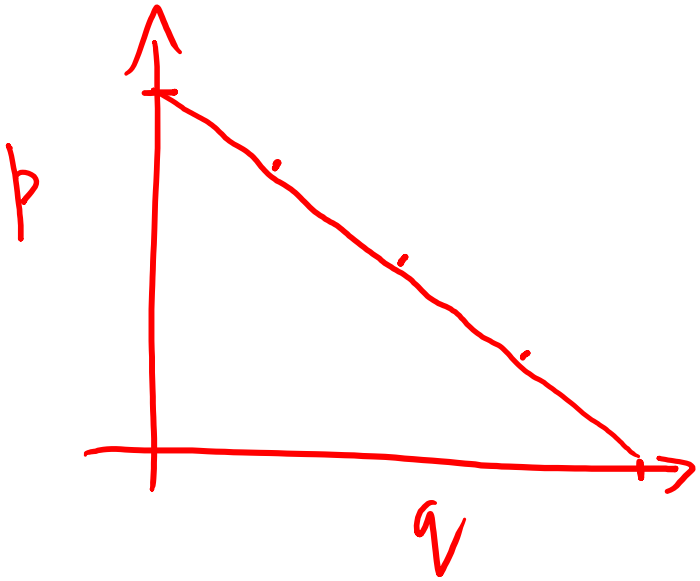
Bundling Information Products

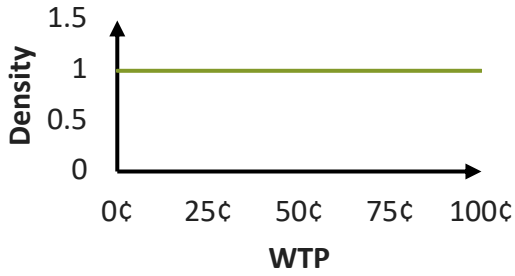
- The product we are considering has 1000 features
- Let us assume that there are 100 consumers
- For each consumer, the value (WTP) of a particular product feature is uniformly distributed between $0 and $1
- There is no correlation between a consumer's willingness to pay across features



Bundling Information Products

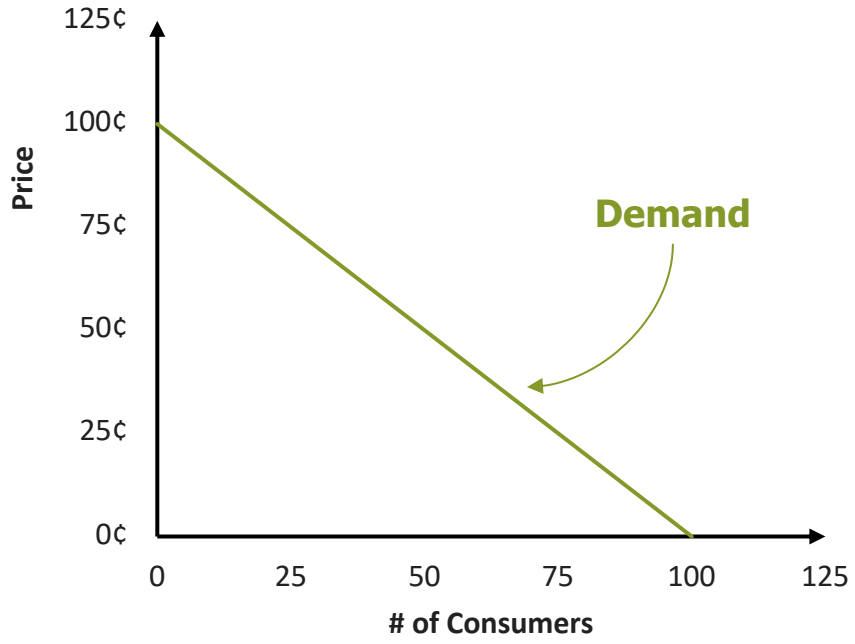
- Corresponding demand function for one feature?





Bundling Information Products

- Optimal price for one feature?



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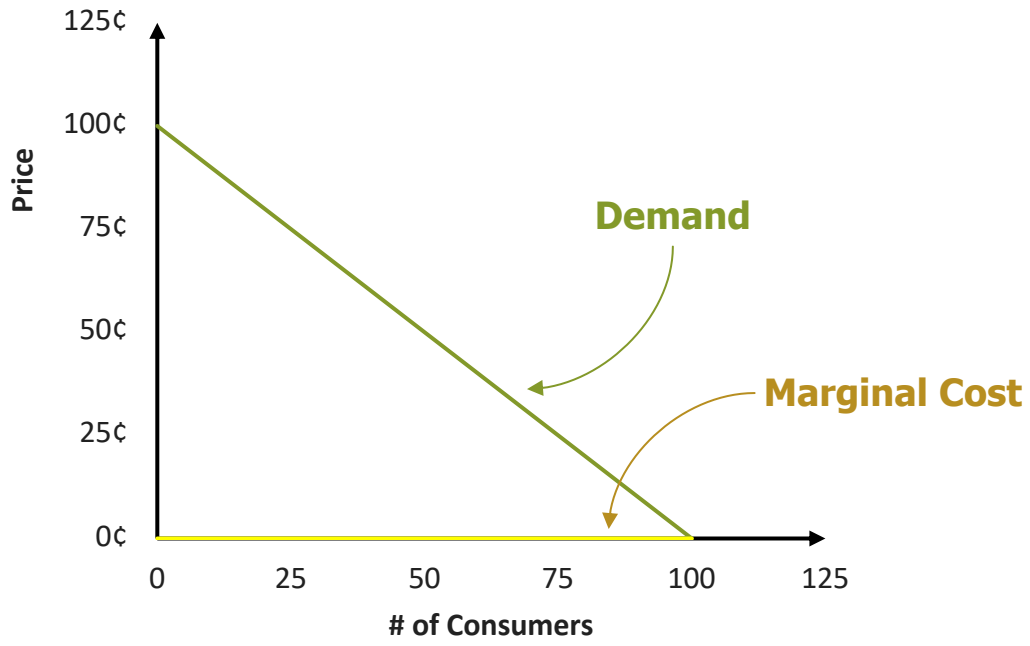

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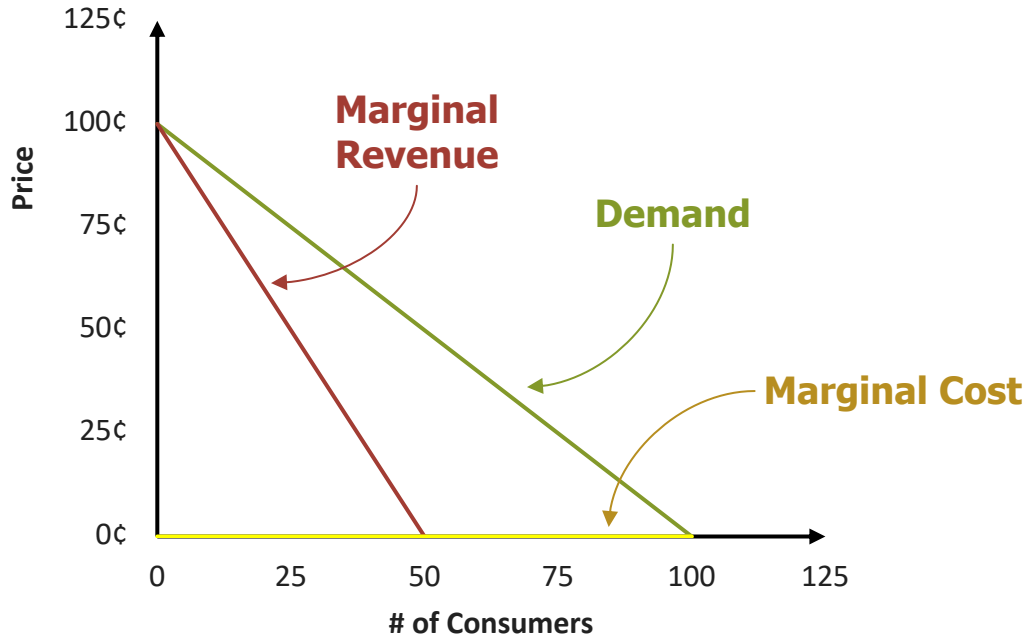

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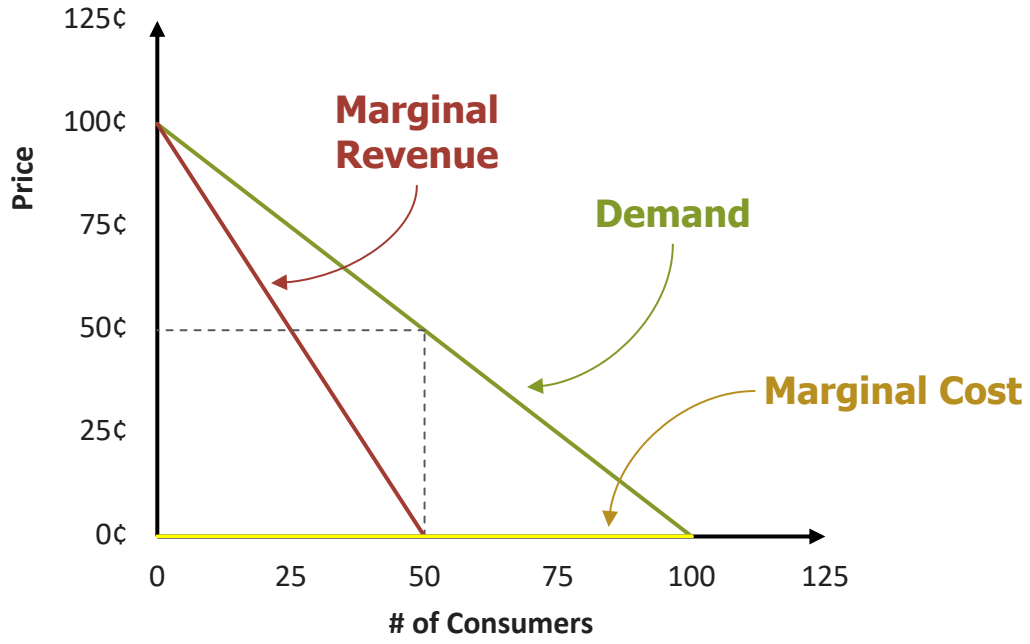

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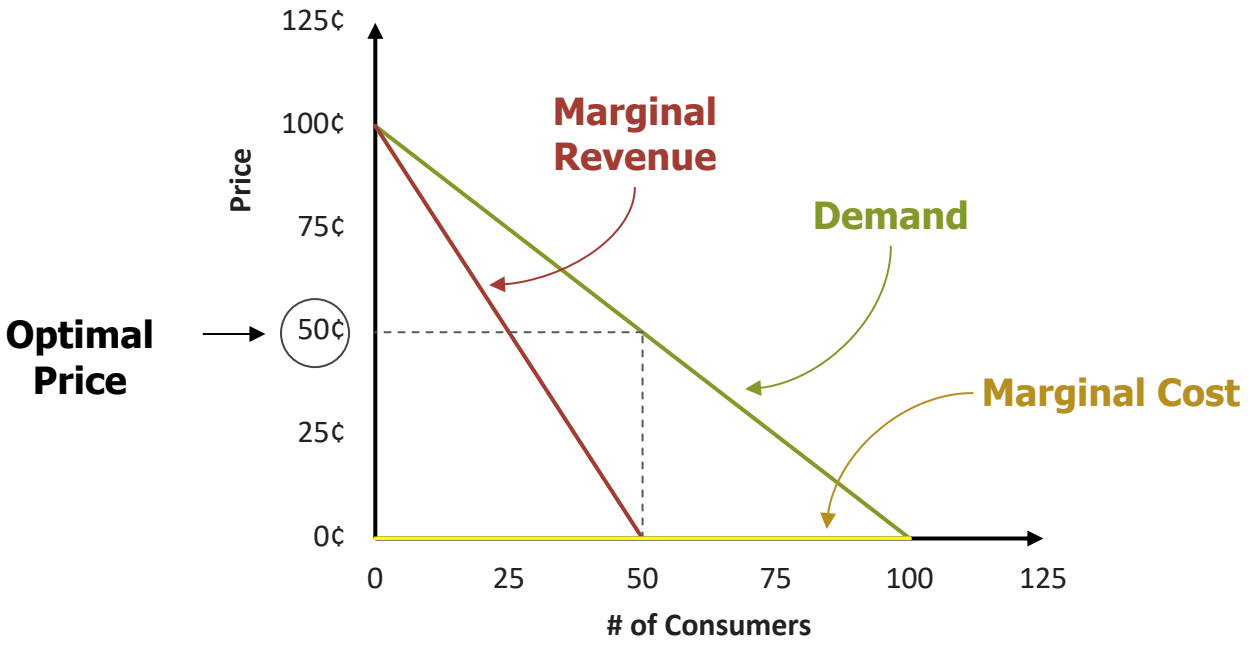


Bundling Information Products

When each feature is sold separately:

- Optimal price per feature?

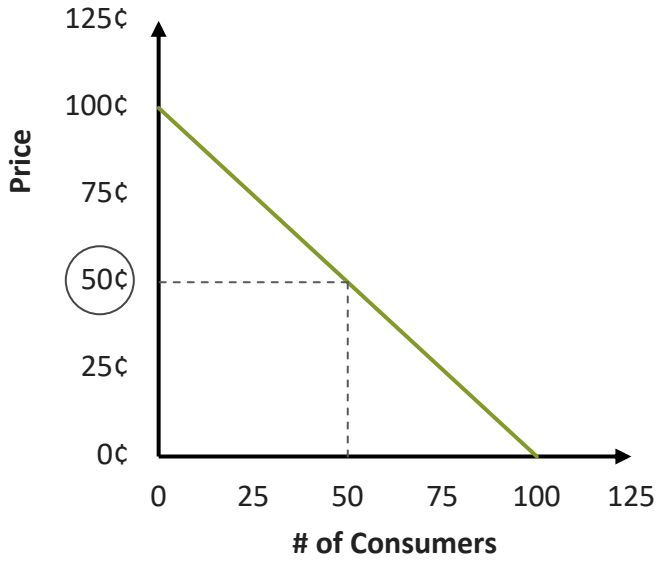
  $0.50

- Total demand per feature at 50¢?

  50

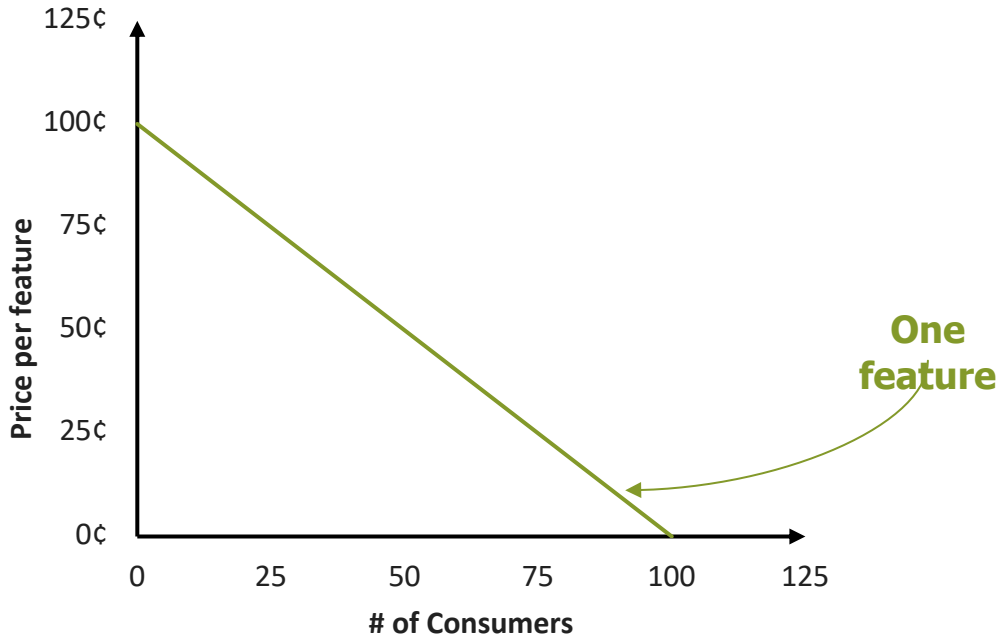
- Total Revenue?

  1000 × 50 × 0.50
  = $25,000



Bundling Information Products

- Consumer Demand for Bundled features?



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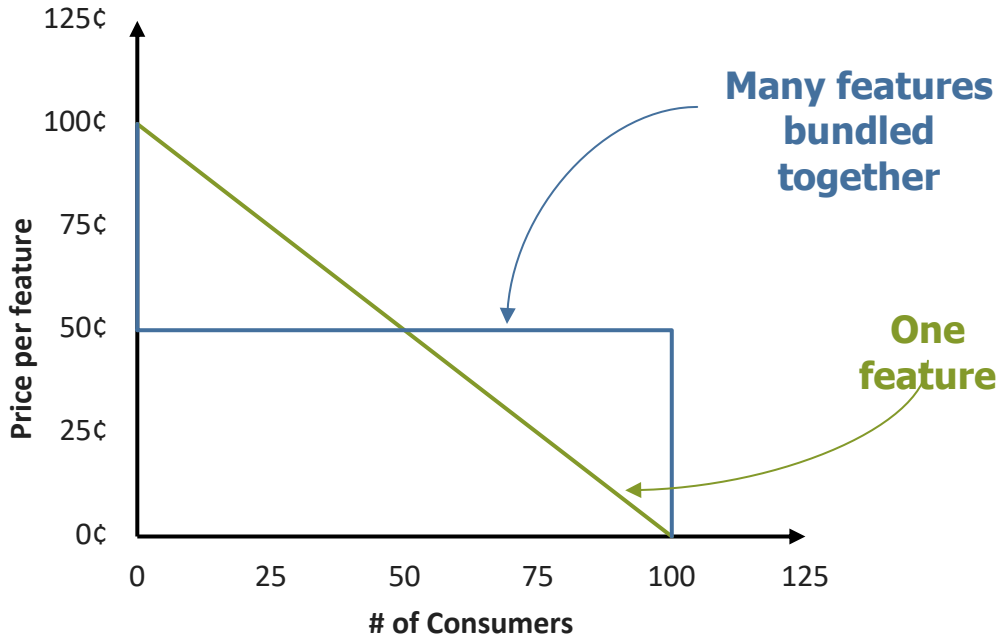


Bundling Information Products

When 1000 features are bundled:

- Optimal price?

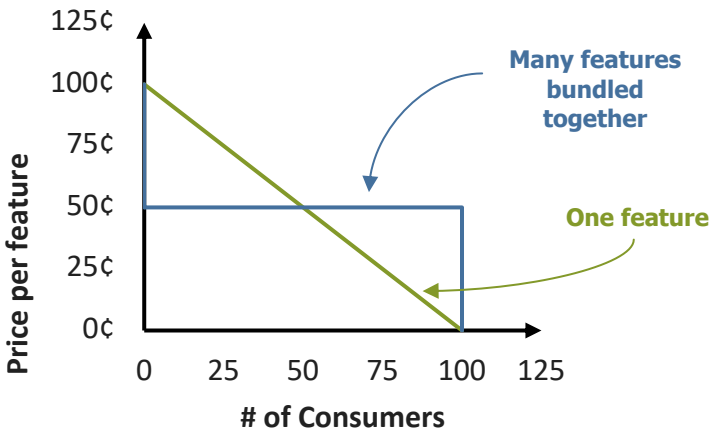
  500 $

- Total demand?

  100

- Total Revenue?

  $ 50,000



Some Questions

- What if there is some marginal cost of adding features? $0.05 * 50,000 = 2500$
- What is there is disposal cost of additional features on the part of the user? $\$20 * 100 = \$2,000$
- What if the willingness to pay is correlated across features:
  - Will the gains from bundling be higher or lower?

Bundling of Information Products

- Bundling of traditional goods relies critically on negative correlation in willingness to pay.
- For information products (zero marginal cost), this is not a necessary requirement.
- This analysis points out why the “Microsoft Office” model is superior to the “Pay for Each Feature Model.”

Next Few Classes

- Sessions 3
  - Product Line Pricing
  - Cambridge Software Case
- Session 4
  - Temporal Pricing and Temporary Price Discounts
  - Problem Set Submission