Information, Advertising and Disclosure

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Outline

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Information

- The five major questions addressed in this part are:
  1. What is the effect if consumers have limited information about product quality?
  2. What is the effect if consumers have limited information about prices charged by stores?
  3. If some consumers have full information and others only limited information, is the full-information equilibrium obtained?
  4. Do firms have an incentive to lower consumer information so as to price discriminate?
  5. When does providing consumers with more information lower the equilibrium price?

Why Information is Limited

- There are five reasons for this limited information:
  1. **Information varies in reliability**
     - ⋆ Not all "information" is accurate, and hence a rational consumer should not rely equally on information from all sources
  2. **There is a cost to collecting information**
     - ⋆ Consumers do not collect information beyond the point where the marginal benefit equals the marginal cost of collecting it
     - ⋆ e.g., going to several stores to determine which one has the lowest priced candy bar almost certainly does not make sense
  3. **Consumers can remember and readily recall only a limited amount of information**
  4. **It is often efficient for consumers to use simplified rules to process information**
     - ⋆ Bounded rationality: A sensible consumer processes information up to the point where the marginal benefit equals the marginal cost of processing more information
  5. **Some consumers do not have sufficient education or intelligence to process available information on all products correctly**

Limited Information about Quality

- **Asymmetric information**: One party (seller) to a transaction knows a material fact (the quality of the good) that the other party (buyer) does not
- Asymmetric information about quality can have either of two undesirable results:
  - An equilibrium may not exist
  - If the equilibrium exists, resources are used less efficiently than they would be if there were perfect, symmetric information

The Market for "Lemons"

- Probably the best-known study of the way limited information can disrupt a market
- Akerlof 's (1970) classic analysis of the market for "lemons."
  - Where sellers have perfect information and consumers have extremely limited information, a market may not exist, or only the lowest-quality product may be sold
  - e.g., in the used car market, the seller (current owner) has learned over time if the car rarely needs repairs (a good car) or frequently needs them (a "lemon") whereas, at best, a potential buyer knows the probability of getting a good car

Bad Products Drive Out Good Products

- Bad cars are overvalued and good cars are undervalued in this market
  - e.g., suppose that consumers believe that half the used cars in the market are lemons that consumers value at \$100 and the other half are good cars that they value at \$200. Consumers are risk-neutral. Then the value to a typical consumer of a randomly selected car is $\$100(\frac{1}{2}) + \$200(\frac{1}{2}) = \$150$
  - i.e. the buyer is willing to pay more than the value of a bad car ($\$150 > \$100$) because the car might be good, but the buyer is not willing to pay the full value of a good car ($\$150 < \$200$) because the car might be a lemon
  - In such a market, bad cars drive out good cars
- **Adverse selection**: As the price of an insurance policy rises, only the worst risks buy the policy. If individuals can determine their own health better than insurance companies, insurance companies sell a disproportionate number of policies to the least healthy members of society

Asymmetric Information Lowers Quality

- In markets with asymmetric information, there is always inefficiency in these markets relative to a world with perfect information: Quality levels are too low
  - due to an externality in which a firm does not completely capture the benefits from selling a higher-quality product
- When a seller provides a relatively high-quality product, the average quality in the market rises and buyers are willing to pay more for all products
  - As the price based on average quality is less than the cost of producing the higher-quality product, a firm is unwilling to produce and sell it

Solving the Problem: Equal Information

- Consumers can obtain information in the following ways:
  1. Guarantees or Warranties
  2. Liability Laws
  3. Reputation
  4. Experts
  5. Standards and Certification

Guarantees or Warranties

- By providing credible guarantees or warranties, sellers of high-quality goods credibly convey the information to consumers that their products are of high quality
- By providing consumers with information, such firms are able to charge higher prices that reflect the higher quality of their goods

Liability Laws

- If consumers know that liability laws force the manufacturer to make good on defective products, then the manufacturer need not list its obligations in a warranty
- The problem with relying on legal recourse rather than explicit warranties is that the precise obligations of the manufacturer may be ambiguous
  - As a result, the transaction costs (such as going to court) may be high

Reputation

- A store may rely on its reputation to signal that its goods are of high quality
  - A store that expects repeated purchases by a consumer has a strong incentive not to provide defective products

Experts

- A disinterested expert may be able to provide consumers with reliable information
  - e.g., if a potential purchaser of a used car can take it to a mechanic and get it appraised, then any information asymmetry may be eliminated
  - e.g., Consumers Union's Consumer Reports
- Objective information supplied by outside organizations is rare because information is a public good
  - Information is socially valuable if it is worth more to consumers than it costs to provide it

Standards and Certification

- A **standard** is a metric or scale for evaluating the quality of a particular product
- **Certification** is a report that a particular product has been found to meet or exceed a given level on a standard
  - Standard Setters
    - Government agencies may require manufacturers to disclose information about their products
    - e.g., the energy consumption of an electric appliance or the potentially harmful side-effects of certain drugs
  - Effect of Standards
    - Standards and certification may either help or hurt
    - Harmful if their information is degraded or misleading, or if they are used for anticompetitive purposes

Limited Information About Price

- Firms can obtain market power from consumers' lack of knowledge about prices and quality
- Limited information can lead to a monopolistic price
  - e.g., suppose that many stores in an area sell the same good
  - If one store raises its price above the level of others, and all consumers know it that store loses all its business
  - In contrast, if some or all customers do not know that other stores charge lower prices, a store can raise its price without losing all its sales

The Tourist-Trap Model

- A typical tourist, Lisa, arrives in a small town filled with souvenir stands. Each stand sells mugs with the town hall painted on it. Lisa wanders by one of these stands, sees some mugs, and decides to buy one. She has but a short time before her bus leaves, and she does not expect to return to this town again. Thus, she does not have time to check the prices at each souvenir stand, and she cannot use information obtained through even a limited search in the future
- If Lisa goes to two souvenir stands, her search costs are $2c$
  - If she buys a mug at the first stand at price p, her total cost is $p + c$

Assumptions

- Four assumptions are made in this case:
  1. All souvenir stands have the same costs and sell the identical product
  2. All consumers have identical demand functions
  3. A guidebook provides each consumer with the general distribution of prices, but does not give the particular price each stand charges
  4. Searching is costly: the tourist's cost of going to a stand to check the price or to buy is c, which reflects the tourist's time and expenses

Equilibrium[1]

- Assume that there are a fixed number of souvenir stands, n
- If all other stands charge the full-information, competitive price p^c, it pays for a deviant firm to set a higher price
  - The deviant firm can profitably charge $p^* = p^c + \epsilon$, where ϵ is a small, positive number
  - e.g., Lisa walks up to the stand and sees that the mug sells for p^*
    - Her guidebook tells her that all the other souvenir stands charge p^c
    - She goes elsewhere because she knows with certainty that any other stand will charge her less
    - She does not go to another stand if the $c > \epsilon$

Equilibrium[2]

- The full-information, competitive price equilibrium (p^c) is not an equilibrium when consumers have limited information about price and positive search costs
  - If there is a single price equilibrium, it can only be at p^m
  - If all stands charge the **monopolistic price p^m**, no stand would want to charge a higher price
  - At prices below p^m, firms have an incentive to raise prices
  - Only when the price is set so that the stand's $MR = MC$ can a firm maximized its profit
  - Even if the stand could charge a higher price without losing all its sales, it has no incentive to do so

Equilibrium[3]

- A deviant stand to lower its price only if the decrease is substantial enough to induce consumers to search for this low-price stand
  - Consumers have no incentive to search for a low-price stand if the stand lowers its price by less than c
- **If there are many stands, consumers do not search for the low-price stand because their chances of finding it are slight**
  - As a result, when a large number of stands makes searching for a low-price stand impractical, **the proposed single-price equilibrium at p^m is an equilibrium**

Reducing Search Costs

- **if search costs fall to zero**
  - the only possible equilibrium is at p^c
  - Because nothing depends on the size of c, as long as c is positive. A deviant firm can still raise its price by $\epsilon < \frac{c}{2}$ and break any proposed single-price equilibrium at a price less than p^m

Free Entry

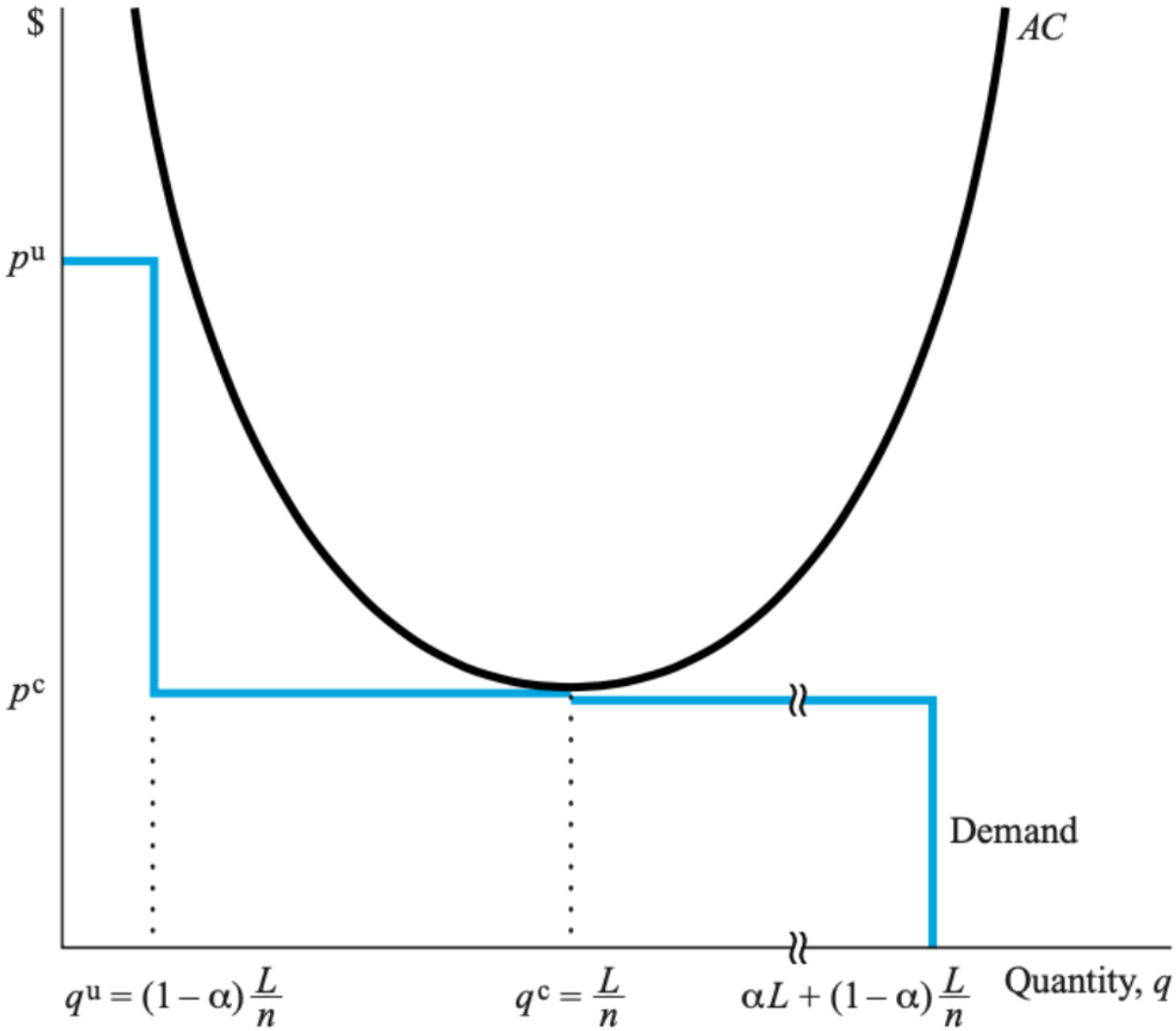
- As new stands enter the industry, the number of tourists going to any one souvenir stand falls, and profits fall
  - A monopolistically competitive equilibrium results: $p^m > MC$, but each firm's profits are zero
- The additional entry does not necessarily lower price if consumers have limited information
  - Additional entrants must sink some costs (buy a souvenir stand)
  - **Society can be worse off with free entry: Consumers do not gain from entry, all monopoly profits are dissipated in excess entry, and social expenditures on sunk costs rise**
  - e.g., If there is a large number of firms, it does not pay for any one firm to cut its price from p^m
    - ⋆ If several stands merge to form a chain of souvenir stands and collectively lower prices, they may be able to induce individuals to search for one of the stands in this low-price chain
    - ⋆ By reducing the number of independent stands, effective competition may be increased and price lowered
  - **With imperfect consumer information, competition may be socially wasteful because of entry costs, so that welfare may rise as the number of firms falls**

The Tourists-and-Natives Model

- Modify the tourist-trap model so that there are two types of consumers:
  - Natives are informed consumers, have zero search costs, and buy only at low-price stores
  - Tourists are uninformed consumers who have search costs of c
- The shopping behavior of the natives may drive the market price to the full-information, competitive price p^c
- Adding the following assumptions:
  - Of the L consumers in this market:
    - ⋆ Natives αL are informed
    - ⋆ Tourists $(1-\alpha)L$ are uninformed
    - ⋆ Each consumer buys 1 unit of the good as long as the price is no higher than p^u
    - ⋆ There are n firms
- This model has several possible equilibria, such as the full-information, competitive price equilibrium and a two-price equilibrium

If α is high

FIGURE 13.1 Single-Price Market

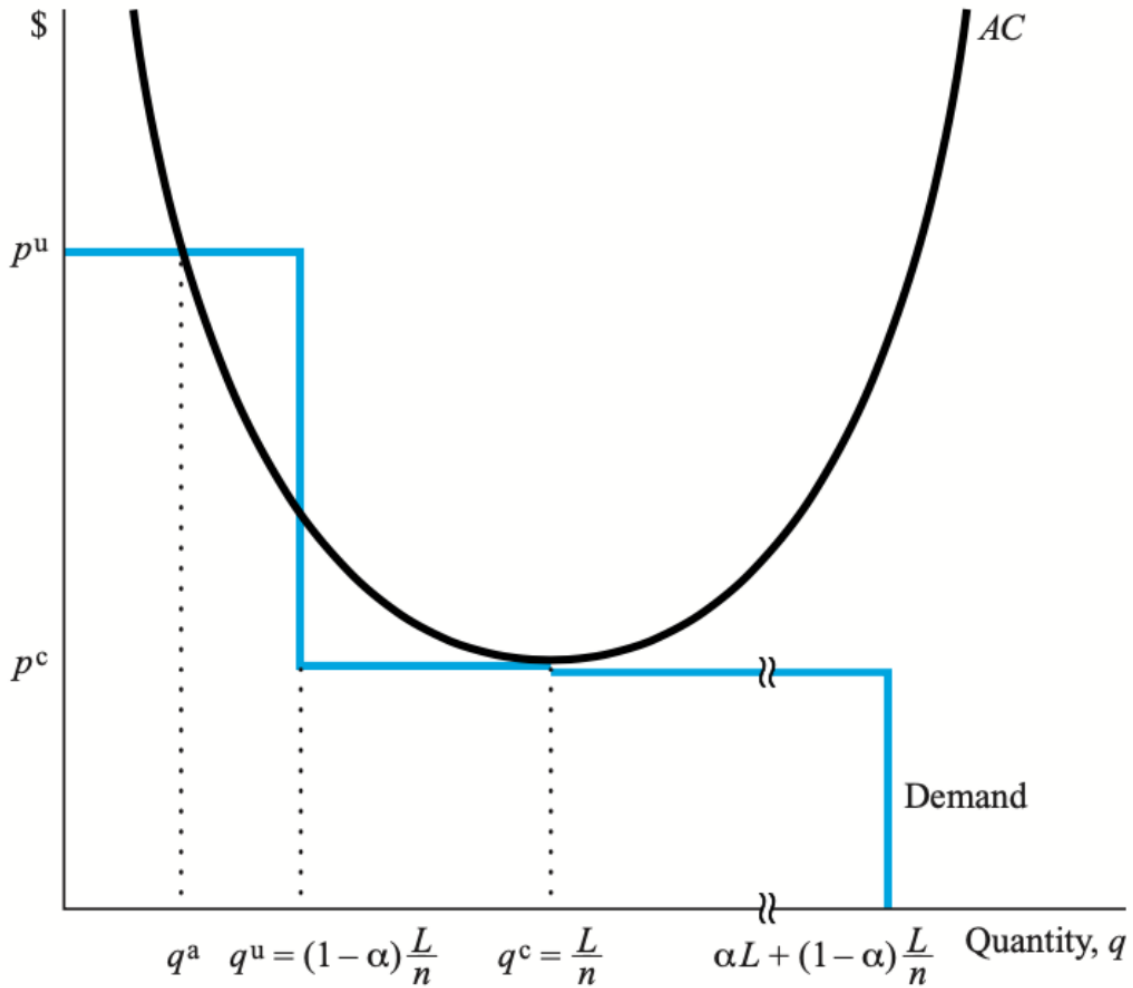


If α is high

- If there are many informed consumers, it does not pay for a firm to deviate by raising its price above p^c
- The deviant is uninterested in charging less than p^c, because that price is below its average cost
- If there are enough informed consumers, all consumers are charged the full- information, competitive equilibrium price

If α is low

FIGURE 13.2 Breaking the Single-Price Equilibrium



If α is low

- If there are relatively few informed consumers (α is relatively small), a firm can raise its price without losing many customers
- **Figure 13.1** shows that the number of informed consumers needed to produce a single-price equilibrium depends on
  - the shape of the average cost curve
  - the maximum price consumers are willing to pay p^u
- There cannot be an equilibrium where all firms charge p^u
  - A firm can lower its price to any amount less than p^u and obtain all the informed consumers
  - It profits because it has more sales at a price that is almost as high as p^u

Two-price equilibrium

- If there is a two-price equilibrium, the low-price firms charge p^c and the high-price firms charge p^u
  - All the informed customers shop at the low-price stores, and the uninformed consumers shop randomly
  - Low-price stores' share of the market is greater than the proportion of informed consumers
- All firms must make the same profits, or a firm has an incentive to change its pricing policy

How Information Lowers Prices

- At least two types of models show that improving information can lower prices
  1. Tourists-and-natives model with many firms: As most consumers become informed, all stores charge the low, competitive price
     - ★ When information is provided that allows consumers to better estimate true prices, the average price may fall
  2. In the second model, consumers who want to shop at the lowest-price store gather information
     - ★ Information is collected by visiting various stores, reading advertisements, watching commercials, and asking friends
     - ★ Consumers form estimates based on available information of the prices at each store and then choose the store they estimate has the lowest price
     - ★ Because consumers do not know the prices exactly, a store may raise its price without losing all its customers
  - ▶ Demand curve facing each store changes from being perfectly elastic under full information to being less elastic under limited consumer information
     - ★ As consumers become more knowledgeable, the demand curve facing a firm becomes more elastic
     - ★ Thus, if consumers gain more information, prices may fall

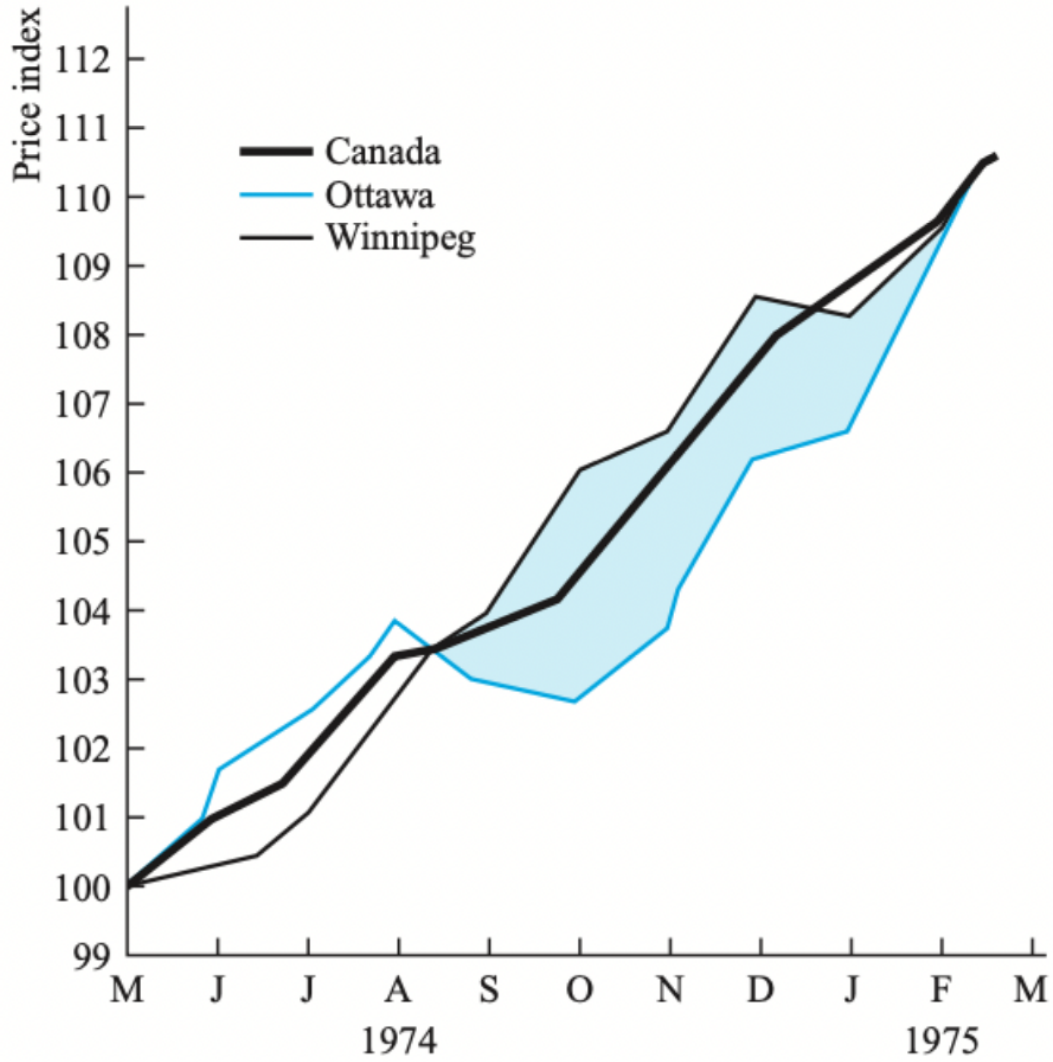
An Example: Grocery Store Information Programs[1]

- Does providing consumers with information increase the market shares of relatively low-price stores, lower the average market price, and reduce the variance in prices across stores?
  - A 1974 experiment by the Food Price Review Board of Canada

- There were three phases in the experiment
  - Phase 1 (a 17-week period):
    - Supermarket price information was collected in both the control city, Winnipeg, and the experimental city, Ottawa-Hull
  - Phase 2 (a 5-week period):
    - The information on grocery store prices in Ottawa-Hull was published in newspapers and mailed to some consumers, whose behavior was then monitored in detail
    - At no time was price information disseminated in the control city, Winnipeg
  - Final phase (6 weeks):
    - Price information was again collected in both cities but not disseminated

An Example: Grocery Store Information Programs[2]

FIGURE 13.4 Consumer Price Index for Food Consumed at Home, May 1974–March 1975 (May 1974 = 100)



Note: Observations are made once a month during the first two

An Example: Grocery Store Information Programs[3]

- Average food prices declined in Ottawa-Hull by 1.5% during the first week of Phase 2, by 3.0% the following week, and then remained steady for the next three weeks
- During the first week following the end of Phase 2, prices dropped an additional 2.5%
- The total decline over this 6-week period was 7.1%
- Prices in the control market declined by 0.6% during Phase 2
- Prices in the experimental city fell relative to prices in the control city by 6.5% during the 6-week period that included the first week of Phase 3

Outline

Advertising and Disclosure

- The four key points made in this part are:
  1. The purpose of promotion is to increase sales by shifting consumers' tastes or informing them of opportunities
  2. Although some types of advertising are harmful, many other types are welfare improving. Even where moderate advertising is helpful, however, there may be excessive advertising
  3. Skepticism by consumers discourages false advertising. Partial enforcement of antifraud laws may increase the amount of both truthful and false advertising
  4. When antifraud laws are fully enforced, firms generally have an incentive to disclose relevant information to consumers. Under some circumstances, however, mandatory disclosure laws reduce the extent of such disclosures

Promotions

- Advertising can be subtle and indirect or it can hit you over the head with its bluntness
- Besides advertising, firms also use price discounts and sales staffs
  - When it is hard to describe a product, a firm may include a discount coupon in its advertisement to encourage consumers to try the product
- Firms may advertise indirectly by establishing a brand name or a positive reputation
  - e.g., some agricultural firms now sell their fruits and vegetables under brand names

"Search" Versus "Experience" Goods

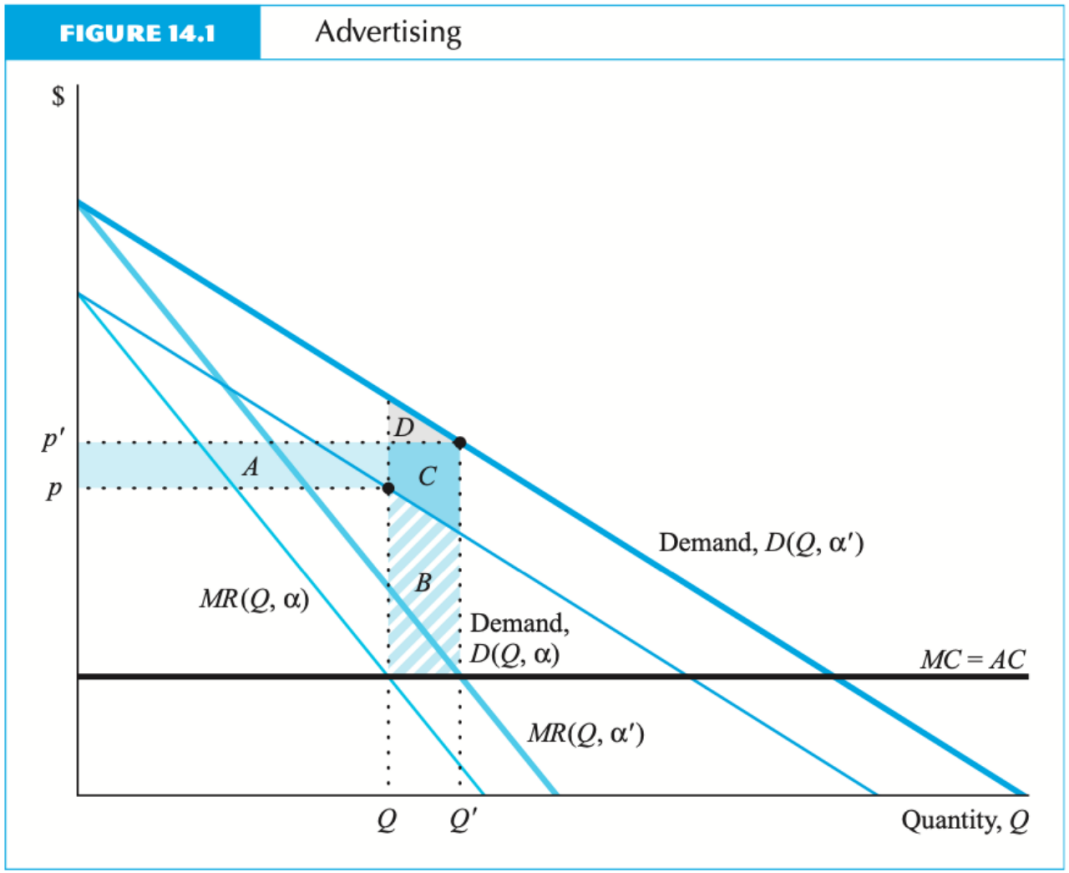
- If a consumer can establish a product's quality by inspection before purchase, the product has **search qualities**
  - e.g., furniture, clothing (determining style)
- If a customer must consume the product to determine its quality, it is said to have **experience qualities**
  - e.g., processed foods, software programs, and psychotherapy
- Advertising provides direct information about the characteristics of products with search qualities
  - In some cases, a consumer cannot directly observe a physical attribute, but it can be concisely described
  - e.g., food and drink advertisements may claim that their products are low in calories

Informational Versus Persuasive Advertising

- **Informational advertising**: describes a product's objective characteristics
  - Informational advertising may cite the price of a product, compare the advertising store's price to its rivals' prices, describe the features of the product, or list its uses
- **Persuasive advertising**: designed to shift consumers' tastes
  - Persuasive advertising may explicitly or implicitly make claims aimed to stimulate a purchase, such as "Smoke these cigarettes to look more mature and sexier."

Profit-Maximizing Advertising[1]

- All advertising is designed to increase the demand for a firm's product
  - An increase in informative or persuasive advertising expenditures from α to α' causes an outward shift of the demand curve facing a firm from $D(Q, \alpha)$ to $D(Q, \alpha')$
  - The firm chooses its output, given its advertising expenditures, by setting its $MR(Q, \alpha) = MC$



Profit-Maximizing Advertising[2]

- The outward shift in the demand curve increases profits for two reasons
  1. Profits increase by area B and area C because the firm increases its sales from Q to $Q^{'}$
  2. The firm makes more profits on the Q units it used to sell, area A. Because price rises from p to $p^{'}$, its profits on the first Q units increase by $(p^{'} - p)Q$
- Thus, profits (ignoring advertising costs) increase by the sum of areas A, B, and C due to the extra advertising.
- If (the extra expenditure on advertising) $E = \alpha^{'} - \alpha \leq A + B + C$ (increase in profits) the extra advertising pays
  - The firm maximizes its profits by setting the marginal cost of advertising equal to the marginal benefit
- Usually, firms with market power incur promotional expense to cause their demand curves to shift outward or become more inelastic, so that they can sell more at higher prices

Price Advertising Increases Welfare

- Advertising that provides price information tends to lower the market price
  - Truthful advertising lets consumers know where to buy at the lowest price
    - ⋆ Firms do not advertise unless the costs are at least covered by the additional revenues from an increase in demand
    - ⋆ If relatively low-price stores advertise their prices and attract more customers, these stores gain in size and the average price in the market falls
  - Without advertising, no store may find it profitable to charge the low price; but with advertising, all stores may charge the low price
- Many empirical studies show that advertising about price lowers the average price consumers pay for products such as drugs (Cady 1976), eyeglasses (Benham 1972; Ex- ample 14.4), liquor (Luksetich and Lofgren 1976), toys (Steiner 1973), and retail gasoline (Maurizi 1972)

Advertising to Solve the Lemons Problem

- In some markets, firms cannot profitably sell high-quality products because consumers are unable to distinguish between high-quality and low-quality products
  - e.g., a firm wants to start selling a high-quality experience good. The firm believes that if consumers try its product, they will like and purchase it repeatedly. That is, the firm's incentive to provide high-quality goods is to induce repeat sales. The firm hopes to make large profits by signaling its high quality and getting consumers to try its product
  - To keep this example simple, let's make two additional assumptions:
    - ★ Assume that consumers can find out about a product's quality only by trying the good
      - Otherwise, the firm could give products away to some consumers, and rely on word of mouth to sell its product
    - ★ Assume that the firm's marginal and average variable costs of production are the same as those of firms that produce low-quality goods
      - If the high-quality firm sells more units than low-quality firms sell at the same price, it makes higher profits on these sales
  - The high-quality firm has a greater incentive to advertise than does the low-quality firm:
    - ★ The high-quality firm's advertising leads to repeated sales
    - ★ The low-quality firm's advertising leads to sales only in the current period

When Advertising is Excessive: Advertising for a Single Product[1]

- Suppose that an advertisement convinces many consumers that using a cologne makes them more attractive, and thus results in more sales at a higher price. Are consumers better off?
  - The price is higher than before, but some consumers are receiving more pleasure from using the cologne than before
  - It is difficult to compare consumers' pleasure before and after advertising if the scale on which the pleasure is measured has changed
- Dixit and Norman (1978) concluded that in oligopolistic and monopolistically competitive markets:
  - A small increase in advertising raises welfare only if the firm finds it profitable
    - ⋆ There cannot be too little advertising, because if society benefits from the advertising, the firm finds it profitable to provide it
  - Reducing advertising from the profit-maximizing level raises welfare
    - ⋆ This result holds even using the postadvertising preferences of consumers
  - That is, it is possible that a low level of profitable advertising maximizes welfare, but that firms advertise at a higher level. Even at that excessive level, welfare may be higher than with no advertising

When Advertising is Excessive: Advertising for a Single Product[2]

- Two serious criticisms of Dixit and Norman's (1978):
  1. In general, one should not examine welfare on the basis of just preadvertising or just postadvertising preferences
     - ★ Suppose that an improvement in the product's quality, instead of advertising, shifted demand
  2. Shapiro (1980) explains that if advertising serves to inform consumers that a product exists rather than to shift tastes, there is too little advertising
     - ★ Some consumers are unaware of the product before it is advertised
     - ★ After exposure to advertising, they become aware of the product and purchase it, but no consumer tastes have changed

When Advertising is Excessive: Advertising as a Barrier to Entry

- Many people argue that persuasive advertising is anticompetitive and should be banned
- Persuasive advertising is said to be anticompetitive for two reasons:
  1. **Spurious product differentiation**: Advertising may cause some consumers to conclude mistakenly that physically identical brands differ
     - ⋆ e.g., some people pay a premium for branded bleaches that are chemically identical to many generic brands
     - ⋆ e.g., advertising may cause consumers incorrectly to become concerned that some generic brands are weak or contaminated and thus find it worth paying the premium for a branded good to avoid this (false) worry
  2. **Advertising by firms already in an industry may make entry by new firms more difficult**
     - ⋆ A potential entrant must advertise extensively to overcome the goodwill created by an incumbent firm's advertising, whereas the incumbent incurred no such introductory advertising expense when it entered the market
     - ⋆ Such a barrier to entry increases the market power of incumbent firms, and they charge higher prices

Limits to Lying

- Why don't all firms lie in their advertising? Because most consumers are hard to fool
- The functions of a brand are easily tested before purchase (search qualities), whereas the performance can be confirmed only after purchase (experience qualities)
  - False advertising is more likely for experience goods than for search goods
- A false claim about a search good leads to no additional purchases if the claim can be inexpensively checked prior to purchase
  - Making such a false claim only damages a firm's reputation
  - As a result, firms have no incentive to make such a claim
- In contrast, they may have an incentive to lie about experience goods, because the lie may prompt consumers to make a trial purchase
  - The amount of false advertising about experience goods may be minimized by high-quality firms' incentives to advertise the truth
  - A consumer who tries and enjoys a high-quality item is likely to make repeated purchases, whereas a consumer disappointed by a low-quality product does not buy it again

Antifraud Laws[1]

- A company that sells an unsafe or otherwise substandard product typically can produce at lower cost than can firms producing a safe or standard product
  - Such a firm may engage in deceptive advertising that implies that its products are safe and useful in order to induce consumers to buy
  - Although there may be no repeat sales from satisfied customers, the company may still make money if its costs are low enough
- One approach to dealing with deceptive ads is to prosecute unscrupulous firms under **antifraud laws**
  - Paradoxically, more deception may occur when an antifraud law is moderately enforced than when it is not enforced at all
  - e.g., Suppose the law prohibits the mislabeling of the fabric content of clothing
    - ★ If the law is almost always enforced, consumers believe that a clothing label is usually correct, thereby giving a manufacturer an incentive to mislabel
    - ★ In contrast, in the absence of any enforcement, consumers generally do not trust clothing labels. Here, deceptive labels do little harm because no one believes them. As a result, firms have little incentive to make deceptive claims

Antifraud Laws[2]

- Antifraud laws induce firms to make more information available to consumers
  - If a firm knows that consumers do not believe its claims in the absence of an antifraud law, it does not bother making any
  - There is **a trade-off between having more claims (and perhaps more information) and having more deception**
  - The optimal level of enforcement lies in the middle range between no enforcement and testing all claims

Disclosure Laws

- Disclosure laws require firms to reveal truthfully to consumers certain information about their products
  - e.g., the firm may provide appropriate warnings as protection against liability suits
- In some markets, the government requires firms to make disclosures about all material facts: all the good and bad factors that should influence the decision to buy the product
- When statements about a product's quality are costly to convey to consumers or costly to verify after the sale, firms do not offer standard guarantees
  - e.g., it is difficult for a car maker to describe the quality of an automobile's construction and difficult for a consumer to verify this quality even after purchase

For Further Reading I

- Carlton, Dennis W., and Jeffrey M. Perloff. Modern Industrial Organization. Fourth edition. Harlow, Essex, England: Pearson, 2015. Print.
- Belleflamme, Paul., and Martin. Peitz. Industrial Organization : Markets and Strategies. Cambridge, UK ;: Cambridge University Press, 2010. Print.