

PRICE DISCRIMINATION

Price Discrimination

Price discrimination exists when sales of identical goods or services are transacted at different prices from the same provider. In a theoretical market with perfect information, no transaction costs and a prohibition on secondary exchange (or re-selling) to prevent arbitrage, Price discrimination can only be a feature of monopoly markets.

Although the term "**discrimination**" has negative connotations, "**price discrimination**" is merely a technical term meaning differentiation in price to increase efficiency. However, the effects of price discrimination on social efficiency are unclear. Typically such behavior leads to lower prices for some consumers and higher prices for others. Output can be expanded as when price discrimination is very efficient, but output can also decline when discrimination is more effective at extracting surplus from high-valued users than expanding sales to low valued users. Even if output remains constant, price discrimination can reduce efficiency by misallocating output among consumers.

Types of price discrimination

- In first degree price discrimination, price varies by customer. This arises from the fact that the value of goods is subjective. A customer with low price elasticity is less deterred by a higher price than a customer with high price elasticity of demand. As long as the price elasticity (in absolute value) for a customer is less than one, it is very advantageous to increase **The price**: the seller gets more money for less goods. With an increase of the price the price elasticity tends to rise above one. One can show that in the optimum the price, as it varies by customer, is inversely proportional to one minus the reciprocal of the price elasticity of that customer at that price. This assumes that the consumer passively reacts to the price set by the seller, and that the seller knows the demand curve of the customer. In practice however there is a bargaining situation, which is more complex: the customer may try to influence the price, such as by pretending to like the product less than he or she really does, and by threatening not to buy it.
- In second degree price discrimination, price varies according to quantity sold. Larger quantities are available at a lower unit price. This is particularly widespread in sales to industrial customers, where bulk buyers enjoy higher discounts.
- In third degree price discrimination, price varies by location or by customer segment.
- In price skimming, price varies over time. Typically a company starts selling a new product at a relatively high price then gradually reduces the price as the low price elasticity segment gets satiated. Price skimming is closely related to the concept of yield management.
- These types are not mutually exclusive. Thus a company may vary pricing by location, but then offer bulk discounts as well. Airlines use several different types of price discrimination, including:
 - Bulk discounts to wholesalers, consolidators, and tour operators
 - Incentive discounts for higher sales volumes to travel agents and corporate buyers
 - Seasonal discounts, incentive discounts, and even general prices that vary by location. The price of a flight from say, Singapore to Beijing can vary widely if one buys the ticket

in Singapore compared to Beijing (or New York or Tokyo or elsewhere).

- First degree price discrimination based on customer. It is not accidental that hotel or car rental firms may quote higher prices to their loyalty program's top tier members than to the general public.

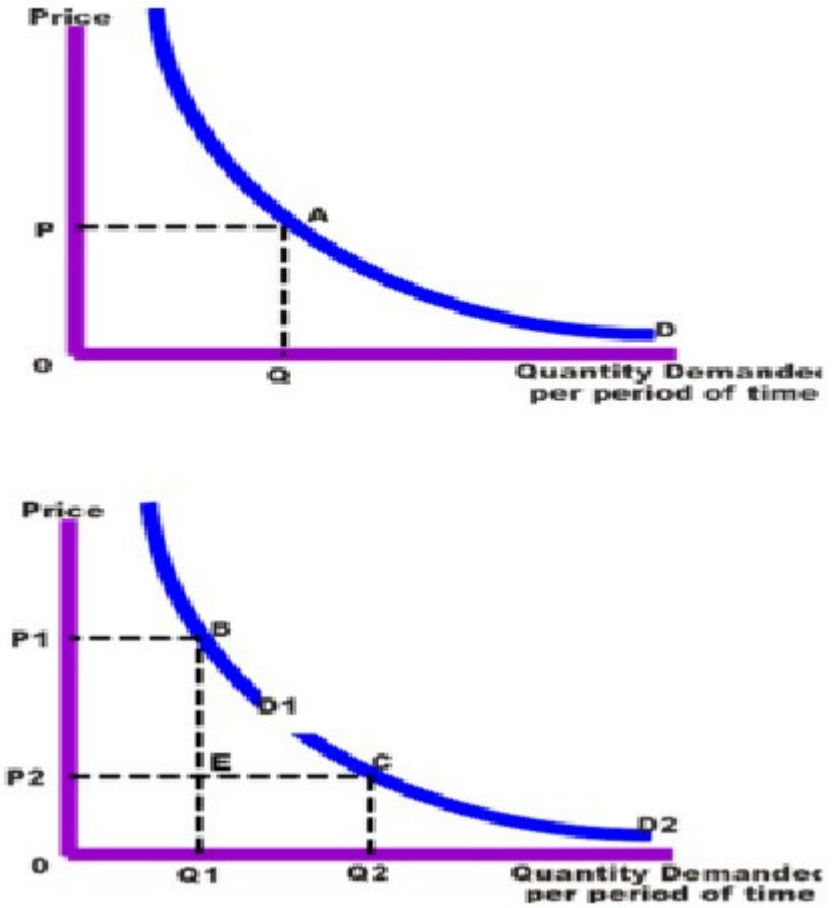
Modern Taxonomy

- Complete discrimination -- where each user purchases up to the point where the user's marginal benefit equals the marginal cost of the item;
- Direct segmentation -- where the seller can condition price on some attribute (like age or gender) that directly segments the buyers;
- Indirect segmentation -- where the seller relies on some proxy (eg, package size, usage quantity, coupon) to structure a choice that indirectly segments the buyers.

The hierarchy -- complete/direct/indirect -- is in decreasing order of

- Profitability and information requirement.

Complete price discrimination is most profitable, and requires the seller to have the most information about buyers. Indirect segmentation is least profitable, and requires the seller to have the least information about buyers.

<p>Explanation</p> <p>Sales revenue without and with Price Discrimination</p> <p>The purpose of price discrimination is generally to capture the market's consumer surplus. This surplus arises because, in a market with a single clearing price, some customers (the very low price elasticity segment) would have been prepared to pay more than the single market price.</p> <p>Price discrimination transfers some of this surplus from the consumer to the producer/marketer. Strictly, a consumer surplus need not exist, for example where price discrimination is necessary merely to pay the costs of production. An example is a high-speed internet connection shared</p>	 <p>The top graph shows a coordinate system with 'Price' on the vertical axis and 'Quantity Demanded per period of time' on the horizontal axis. A blue downward-sloping curve labeled 'D' starts from the vertical axis. A horizontal dashed line at price 'P' intersects the curve at point 'A'. A vertical dashed line from 'A' meets the horizontal axis at 'Q'. The origin is labeled 'O'.</p> <p>The bottom graph shows a similar coordinate system. The blue curve is split into two segments, 'D1' and 'D2'. A horizontal dashed line at price 'P1' intersects 'D1' at point 'B', which corresponds to quantity 'Q1' on the horizontal axis. A second horizontal dashed line at price 'P2' intersects 'D2' at point 'C', which corresponds to quantity 'Q2' on the horizontal axis. A vertical dashed line from 'B' meets the horizontal axis at 'Q1', and a vertical dashed line from 'C' meets the horizontal axis at 'Q2'. The origin is labeled 'O'.</p>
<p>by two consumers in a single building; if one is willing to pay less than half the cost, and the other willing to make up the rest but not to pay the entire cost, then price discrimination is necessary for the purchase to take place.</p>	

It can be proved mathematically that a firm facing a downward sloping demand curve that is convex to the origin will always obtain higher revenues under price discrimination than under a single price strategy. This can also be shown diagrammatically.

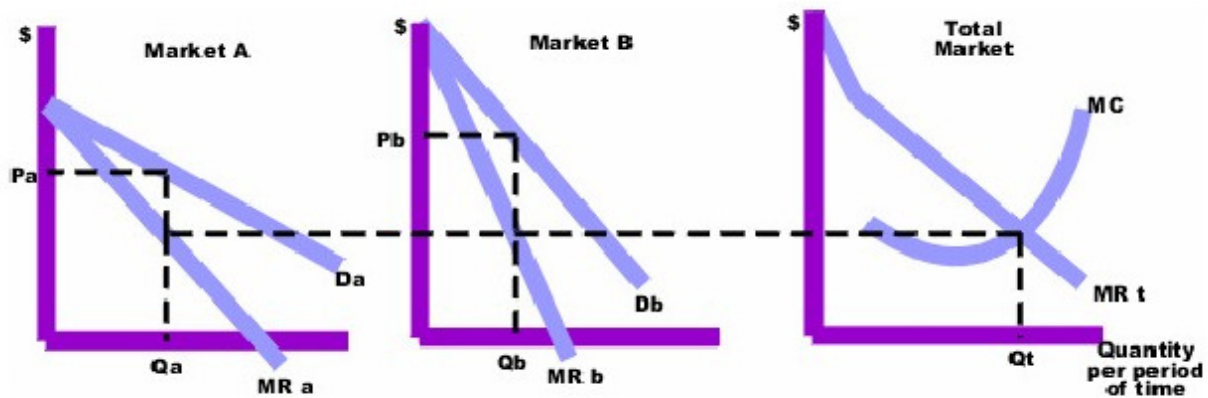
In the top diagram, a single price (P) is available to all customers. The amount of revenue is represented by area P,A,Q,O . The consumer surplus is the area above line segment P,A but below the demand curve (D).

With price discrimination, (the bottom diagram), the demand curve is divided into two segments ($D1$ and $D2$). A higher price ($P1$) is charged to the low elasticity segment, and a lower price ($P2$) is charged to the high elasticity segment. The total revenue from the first segment is equal to the area $P1,B,Q1,O$. The total revenue from the second segment is equal to the area $E,C,Q2,Q1$. The sum of these areas will always be greater than the area without discrimination assuming the demand curve resembles a rectangular hyperbola with unitary elasticity. The

more prices that are introduced, the greater the sum of the revenue areas, and the more of the consumer surplus is captured by the producer.

Note that the above requires both first and second degree price discrimination: the right segment corresponds partly to different people than the left segment, partly to the same people, willing to buy more if the product is cheaper.

It is very useful for the price discriminator to determine the optimum prices in each market segment. This is done in the next diagram where each segment is considered as a separate market with its own demand curve. As usual, the profit maximizing output (Q_t) is determined by the intersection of the marginal cost curve (MC) with the marginal revenue curve for the total market (MR_t).



Multiple Market Price Determination

The firm decides what amount of the total output to sell in each market. This is determined from the marginal revenue curves in each market. The intersection of the total market price with the marginal revenue curves in each market yields optimum outputs of Q_a and Q_b . From the demand curve in each market we can determine the profit maximizing prices of P_a and P_b .

Examples of price discrimination

Travel Industry

Airlines and other travel companies use differentiated pricing regularly, as they sell travel products and services simultaneously to different market segments. This is often done by assigning capacity to various booking classes, which sell for different prices and which may be linked to fare restrictions. The restrictions or "fences" help ensure that market segments buy in the booking class range that has been established for them. For example, schedule-sensitive business passengers who are willing to pay say, \$300 for a seat from city A to city B, cannot purchase a \$150 ticket because the \$150 booking class contains a requirement for a Saturday night stay, or a 15-day advance purchase, or another fare rule that effectively prevents a sale to business passengers.

Notice also that even in this simple example, the "seat" is not the same product. That is, the business person who purchases the \$300 ticket may be willing to do so in return for a seat on a high-demand morning flight, for full refundability if the ticket is not used, and for the ability to upgrade to first class if space is available for a nominal fee. On the same flight are price-sensitive passengers who are not willing to pay \$300, but who are willing to fly on a lower-demand flight (say one leaving an hour earlier), or via a connection city (not a non-stop flight), and who are willing to forego refundability.

Since airlines often fly multi-leg flights, and since no-show rates vary by segment, competition for the seat has to take in the spatial dynamics of the product. Someone trying to fly A-B is competing with people trying to fly A-C through city B on the same airplane. This is one reason airlines use yield management technology to determine how many seats to allot for A-B passengers, B-C passengers, and A-B-C passengers, at their varying fares and with varying demands and no-show rates.

With the rise of the Internet and the growth of low fare airlines, airfare pricing transparency became far more pronounced. Passengers discovered it quite easy to compare fares across different flights or different airlines. This helped put pressure on airlines to lower fares. Meanwhile, in the recession following the September 11, 2001 attacks on the U.S., business travelers and corporate buyers made it clear to airlines that they were not going to be buying air travel at rates high enough to subsidize lower fares for non-business travelers. This prediction has come true, as vast numbers of business travelers are buying airfares only in coach class for business travel.

As to the absolute level of airfares, they continue their 35-year downward trend line. Whereas following World War II it took an Australian the equivalent of a year's wages to fly from Sydney to London, today that can be done for approximately two week's average Australian wages, purchasing a far faster and more comfortable journey. The same trends are true in all deregulated areas of the world, including the U.S., intra-E.U. flights, and U.K.

Segmentation by Age Group and Student Status

Many movie theaters, amusement parks, tourist attractions, and other places have different admission prices per market segment: typical groupings are Youth, Student, Adult, and Senior. Each of these groups typically has a much different supply curve. Children, people living on student wages, and people living on retirement generally have much less disposable income.

Retail Incentives

A variety of incentive techniques may be used to increase market share or revenues at the retail level. These include discount coupons, rebates, bulk and quantity pricing, seasonal discounts, and frequent buyer discounts. firms involved.

Incentives for industrial buyers

Many methods exist to incentivize wholesale or industrial buyers. These may be quite targeted, as they are designed to generate specific activity, such as buying more frequently, buying more

regularly, buying in bigger quantities, buying new products with established ones, and so on. Thus, there are bulk discounts, special pricing for long-term commitments, non-peak discounts, discounts on high-demand goods to incentivize buying lower-demand goods, rebates, and many others. This can help the relations between the

Universal pricing

"Universal" pricing is the opposite of price discrimination – one price is offered for the good or service. This is usually preferred by consumers over tiered pricing. For example, the European Union is currently making efforts to set a single-price protocol for automobile sales.