Pricing of Media and Information

11.1 Setting a Price

11.1.1 Introduction

When a firm plans and produces a good or service, it does so with the intention of selling it to generate a profit. But at what price? Pricing is a critical part of business strategy and marketing (and has already been discussed briefly in ► Chap. 10 Marketing of Media and Information). It is an important part of business strategy and marketing because it translates a product into a revenue stream. As Thomas Nagle and Reed Holden observe, pricing tries to capture the value created by the design, production, and marketing efforts of the firm.[1] The goals of a company strategy are to gain penetration, profits, and customers. Where pricing is done in an ineffective way it offsets the company's other efforts. To analyze the pricing issues in the media, communications, and information sector, this chapter will cover:

- How to set a price based on cost and profit margins.
- How to use auctions.
- How to set the price dynamically and instantly.
- How to engage in price differentiation.
- How to measure price sensitivity.
- How to charge a price above cost.
- How to set prices strategically.
- How to set intra-company prices.
- How to hedge against price risks.
- How to stay inside the law in pricing.
- How to use technology for micropricing.

Setting a price is more complex than one would think. Many factors have an impact. They include, most obviously, cost, but also strategic objectives, customer perceptions,[2] competitors, marketing positioning, general economic price trends, and expectations.

This chapter will examine how prices for information products are or should be set. Unique pricing difficulties exist within the information and media industries, and this chapter discusses them. Pricing requires good judgment and experience, but it is also an application of the analytical approaches of microeconomics and marketing. Quantitative and analytical reasoning and good judgment must be based on a solid understanding of why some pricing strategies succeed and others fail.

Historically, price setting was never just a simple economic transaction. In medieval society, merchants were, at least in theory, obliged to charge a price close to cost, and prices were often closely regulated by guilds or by law.[3] More recently, price constraints exist in many countries and for many products. Even in the USA under a Republican president, Richard Nixon, temporary price freezes were imposed by government to mitigate inflation. In the Soviet Union, charging a price higher than the official price was a criminal offense. In severe cases, such profiteering was punishable by death.

To many economists and financial practitioners, the prices of stocks that are traded in stock and commodity exchanges have achieved the status of distilled global knowledge. They believe that these prices summarize the collective wisdom about the prospects of a company, the likelihood of a poor harvest, or the expected result of an election. The Efficient Market Hypothesis (introduced by Eugene Fama, a 2013 Nobel laureate) argues that it is impossible to "beat the market" because stock market efficiency causes existing share prices to incorporate all relevant information available at the time. This process becomes ever more efficient and rapid as technology progresses and spreads information more quickly and widely.

11.1.2 Special Problems in the Pricing of Information Products

11.1.2.1 High Fixed Cost, Low Marginal Cost

As discussed repeatedly, high fixed costs and low marginal costs (MCs) prevail in most media activities. In the case of software, it may cost over $10 million to write a computer program but less than 50 cents to produce a CD-ROM and $2 to physically distribute it, and almost nothing to copy and distribute it online.

These cost characteristics mean substantial economies of scale, which creates incentives for each competitor to expand in order to obtain them. It also results in prices dropping toward the low MC, since under competitive pressures the price for their content or service is the MC, which is close to zero. Such prices will be below average cost, meaning that they will not cover the fixed cost of initial development. With newspapers, for example, retail prices barely cover the basic costs of paper and delivery (i.e. the MC) and do not pay for the substantial cost of content creation. If advertising revenues drop—as they did with the advent of online platforms for local ads—the fixed cost becomes higher than revenues, and the newspaper runs a deficit.

11.1.2.2 Network Effects

Another fundamental economic characteristic of media and information is the presence of network effects. This means that users perceive a greater value from the presence of many other users. They benefit from being able to reach others on a network or from sharing an experience. This creates, for providers, incentives to price low in order to gain market share and generate high network effects, which in turn makes their services more attractive and thus allows them subsequently to charge a higher price. This demand-side characteristic creates incentives to price below cost in order to gain market share.

1   A source that has been invaluable to this chapter and deserves much credit is the excellent book Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. Saddle River, NJ: Prentice Hall, 2002. Nagle's subsequent editions were with John E. Hogan, Joseph Zale, and Georg Müller.

2   Warner, Alan and Chris Goodwin. *Pricing for Long-Term Profitability*. London: Prentice Hall Financial Times, 2002.

3   Heilbroner, Robert. *The Making of Economic Society*. Englewood Cliffs, NJ: Prentice-Hall, 1962.

11.1.2.3 Price Deflation

Information has become cheaper for many decades, and it is becoming difficult to charge anything for it. This is demonstrated by the proliferation of free online music, publishers, and newspapers. As the Internet community pioneer Stewart Brand put it, "information wants to be free."

The implication is that the entire information sector is subject to a gigantic downward price spiral. Examples are long-distance phone calls, cellphone service, online advertising, semiconductors, and consumer electronics hardware. This downward price spiral in the information sector represents one of the fundamental economic trends of our time.

Consider the price of telephony. The price of international telephone calls has dropped dramatically. In terms of hours of work equivalents, in 1927 a three-minute call from New York to London took 200 hours of work; in 1936, 56 hours; in 1945, 20 hours; in 1970, 5 hours; in 1995, 0.2 hours.[4] By 2013, with internet telephone service, the cost was virtually zero.[5] Similarly, the average monthly price paid by users in the USA per minute for mobile service (including the various miscellaneous charges and basic subscription) dropped from an average revenue per minute of 47 cents in 1994 to 7 cents in 2004.[6] A similar price drop has characterized electronic hardware, whether laptop computers, TV sets, video players, or mobile phones. Prices on all of these devices have dropped and/or performance has been rising.

At its basic level, these price changes are due to the rise in performance per dollar known as Moore's Law, which observes a doubling of performance of semiconductor microprocessors for every two or so years; that is, an increase of about 40% compounded annually. This law can be phrased differently, in terms of price for the same performance. That price decline, with performance held constant, proceeds at a similar rate.

Thus storage, transmission bandwidth, processing power, content, and applications have been moving to a zero price. It seems that nearly anything associated with competitive online technology moves down the path to being free.[7]

Even when the price is not literally zero, as is the case for a transistor in a microprocessor, it becomes so cheap that the price is not a major factor. Furthermore, for information products price arbitrage becomes fairly easy, and it is difficult to charge some people—or local markets—a hefty price while giving it to others for nothing.

Prices may drop, but they are also volatile. As prices decline companies cannot cover costs, and entire industries go through crisis. Eventually some competitors fail and go out of business, companies consolidate, price competition moderates, and companies become profitable again. This attracts new entrants, and competition reemerges. A new cycle of investment, over-production, competition, and price collapse appears again.

Thus, price deflation leads to cyclical volatility of prices, instability in the entire information sector, and difficulty price-setting. This economic situation is beneficial for consumers yet can be disastrous for producers and their employees.

11.1.2.4 Intangible Products and Public Goods

Intangible assets such as information, data, entertainment content, software, scripts, and technology innovations are difficult to value and price. Additionally, many of these intangible information products can be consumed by multiple people in a "non-rival" fashion. One person's consumption of the product does not diminish it for another, as would be the case with, for example, an automobile. Also, potential users are hard to exclude from consuming the product. Broadcast television is a good example. Unless one can encrypt the signals, nobody can be excluded from watching. Non-excludability and non-rival consumption are the characteristics of "public goods"—products and services outside a market or pricing system, such as national defense or the environment. The existence of public good characteristics leads to "market failure": customers have no incentive to pay the price at all, and the market will hence be unstable.[8] Market prices become extremely low, with no firm recovering its cost, or there is no equilibrium market price at all. Examples include natural resources such as fish in the ocean "over-the-air" radio/TV broadcasting, street lights, or national defense. Possible responses to market failure are:

- Governmental intervention to control resources, require broadcast licenses, operate street lights, and provide national defense.
- Co-operation of providers of this good to form a cartel and only offer it at a certain price.
- Find technical methods to make the good excludable (e.g. encrypt TV broadcast signal).
- Find ways to monetize the consumption of the good in ways other than by charging a price for it (e.g. include advertisements on over-the-air radio/TV).

11.1.2.5 Excess Supply

Another economic property of media is excess supply. Media production increases exponentially. Media consumption, however, increases linearly and slowly. This has consequences for both content style and marketing. When compared with 1998, fewer than half as many new products make it to the bestsellers lists, reach the top of audience rankings, or win a platinum disc.[9] Content is becoming more specialized to fill narrow niches. Marketing efforts must rise. Costs per use rise. At the same time, rising competition of content products puts a downward pressure on prices.

4   Odlyzko, Andrew. "Internet pricing and the history of communications." *AT&T Labs – Research*. February 8, 2001. Last accessed August 2, 2011. ► http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf.

5   Prices fell, in particular, after competition was introduced in the 1980s. Before that, international calls were run co-operatively by an international cartel of national monopolies, which kept prices at a fairly high level. Once competition was introduced, prices dropped dramatically.

6   Calculated using Average Local Monthly Bill and Average Minutes of User per Subscriber per Month from Cellular Telecommunications & Internet Association, October 2004.

7   Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

8   Groves, Theodore and John Ledyard. "Optimal allocation of public goods: A solution to the ' free rider' problem." *Econometrica* 45, no. 4 (May 1977): 783-809; Bergstrom, Theodore, Lawrence Blume, and Hal Varian. "On the private provision of public goods." *Journal of Public Economics* 29, no. 1 (1986): 25-49.

9   Aris, Annet and Jacques Bughin. *Managing Media Companies: Harnessing Creative Value.* 2nd ed. West Sussex: Wiley, 2009.

11.1.2.6 Presence of Non-Maximizers of Profit

Normally, economic analysis assumes the presence of rational actors who maximize profits. But in the media industry this is frequently not the case. Many creators of media content do not seek to maximize profit. They seek status and influence, or simply enjoy the creative process. For these producers of content, the setting of optimal prices to compensate them for their efforts is secondary. As an example, many performers provide free music as a means of self-marketing and of gaining the attention of record labels.

11.1.2.7 Role of Government

Another factor that poses a special problem for the pricing of information products is the typically active role of government in the information sector. Protection of access to information and networks leads to frequent government controls over retail and wholesale prices in some information sector markets. There exists a special sensitivity for monopolistic pricing within the media and information industries, and strong policies to make access to information and media services affordable to all. That is why throughout the world there exist free public libraries, subsidized phone or internet services, and "free TV" in even remote corners of a country, as well as uniform pricing across cable TV users, regulated interconnection prices for networks, and non-discriminatory prices for content providers over internet service providers (ISPs).

11.1.2.8 Convergence of Production

Lastly, the convergence of digital media makes the information pricing process especially challenging. The various sub-sectors of media and digital products are increasingly overlapping and hence more competitive. Price discrimination is also becoming more difficult owing to the greater ease of arbitrage on electronic networks.

Prices in the entire information sector are particularly interdependent. In the dot-com bust of the early 2000s, the overexpansion in the supply of ad space on websites led to a drop in ad prices, and hence the collapse of the business model of many websites, and of the websites themselves. This in turn led to a decline in demand for traffic on telecom networks where the dot-coms conducted their businesses. Consequently, investment in backbone infrastructure was negatively affected, which led to a major drop in the prices for telecom equipment.[10] Websites also radically reduced their own advertising efforts in print magazines, leading to a decline of that sector's revenues.

To conclude, the pricing of information products is subject to long-term pressures and short-term shocks. As societies become information economies, they also become more volatile economies. An information economy is a boom and bust economy, with unstable prices, and a general downward price trend. Pricing strategies in the media and information sector are both difficult and critical.

The problems of pricing of media and information product can be seen in the following case: the rise and fall of *Encyclopaedia Britannica*.

11.1.3 Case Discussion

Encyclopaedia Britannica (*EB*)[11] was first published in Scotland in 1768, but it has been American-owned since 1901. By 1929, *EB* was mainly operating from the USA, with a permanent editorial team located in Chicago. Under the leadership of William Benton (founder of a major advertising agency and a U.S. Senator). EB bought other publishers such as Compton's Encyclopedia and the dictionary publisher G & C Merriam.[12] In 2009, a poll in the UK named *EB* as one of Britain's top consumer brands (tenth place) in terms of reputation and reliability.

EB used to be one of the world's largest publishing firms. It featured highly respected contributors, such as Sigmund Freud, Albert Einstein, Henry Ford, W.E.B. Du Bois, Leon Trotsky, Marie Curie, Milton Friedman, Carl Sagan, and many others. Its team consisted of 4500 contributors worldwide, including academics and experts from many various fields, plus a team of 100 full-time editors who needed to approve every article. *EB* was a profitable market leader. In 1988, the encyclopedia was priced at $1200, a leather-bound embodiment of humanity's accumulated knowledge. Libraries around the world were renewing their subscriptions at a rate of 98%. Doting parents and grandparents treated children with the gift of a brandnew set for a birthday or other important occasions. In 1990, *EB* sold 120,000 sets of encyclopedias in the USA alone.

But then the electronic onslaught began. In 1989, *Compton's Encyclopedia* was the first to issue a CD-ROM version. Another encyclopedia, Funk & Wagnall, soon acquired by Microsoft, sold its product as *Encarta* for $49.95 on a CD-ROM. In response, EB tried a number of pricing strategies. In 1993, it offered online access to libraries for $2000 per year and to consumers a CD at $1,200. In 1994, it offered consumers an online subscription for $120 per year, and in 1995, a CD version for $800. It then rapidly dropped the CD price to $200. Consumers stopped buying the costly leather-bound print version, revenues plummeted, and by 1996 *EB* was near bankruptcy.

The company was then bought by financier Jacob Safra, a Geneva-based banker and encyclopedia fan. *EB*'s renowned sales force was closed down, and the price of the CD was cut to $90. In 1999, *EB* put basic content on a website, accessible for nothing, with revenue expected to come through e-commerce transactions. The number of users increased, but advertising and transaction revenues were tiny.[13]

10 Noam, Eli M. "Fundamental Instability: Why Telecom Is Becoming a Cyclical and Oligopolistic Industry." *Information Economics and Policy* 18, no. 3 (2008): 272-84.

11 A note on spelling: in American usage, the books are known as an "encyclopedia." The British usage is "encyclopaedia" or "encyclopoedia." EB seems to be using all three spellings.

12 Enoch, Nick. "Your Tome is up … Encyclopedia Britannica Ends its Print Edition after 244 Years as it Fully Embraces Digital Age." *Mail Online News*. March 13, 2012. *The Daily*

Mail. Last accessed July 6, 2012. ▶ http://www.dailymail.co.uk/news/article-2114646/Encyclopedia-Britannica-cut-print-edition--244-YEARS.html.

13 Boudreau, John W., Benjamin Dunford, and Peter M. Ramstad. "The Human Capital Impact on E-Business: The Case of Encyclopedia Britannica." In *Pushing the digital frontier*. Eds. Nirmal Pal and Judith M. Ray. New York: Amacom, 2001.

In 2002, *EB* raised online subscription prices to $65, with many discount plans. The 32-volume print edition still cost $1200, including major updates, newer articles, and free web browsing. In 2005, the price of the print version was raised to $1500. The CD-ROM price was lowered to $35 and content shortened. The online version still cost $65 per year, and was updated every two weeks. For schools, group subscriptions were offered. A student-version of the encyclopedia, released in 16 volumes, cost $400–450 in 2007.[14]

But this was just the beginning of the crisis. *EB* was still the premium product; the problem was how to monetize it. However, a challenge soon emerged for the content itself. After 2005, the free website Wikipedia emerged as a serious threat. Launched in the USA in 2001 by Jimmy Wales and Larry Sanger, Wikipedia presented a free online encyclopedia written by volunteers. It is owned by the non-profit Wikimedia Foundation, which pays all costs (which are claimed to be only several thousand dollars annually). There are no advertising or subscription revenues but the Foundation solicits donations. Wikipedia operates with an open community model. Access is free and anyone can make edits to an article. There is no formal editing process, at least in theory, and the hope is that a large community of volunteer editors will quickly detect and correct any mistakes. In contrast, *EB* had 4500 expert contributors worldwide, many of whom received honoraria for their articles, and contributions went through a team of 100 paid editors before approval. In 2015, there were almost 5 million articles in the English language version of Wikipedia while *EB* had "only" 120,000. There are numerous other language editions of Wikipedia, and translation programs make them partly available in English too.

Was there a quality differential, given that Wikipedia is edited by volunteers? In 2006, the science journal *Nature* compared scientific entries and found that *EB* was only 30% more accurate than Wikipedia.[15] Thus, without much more credibility, yet with a much smaller number of entries and a much higher price, *EB*'s business kept dropping, from $586 million in 1992 to $50 million in 2008. In 2009, 60% of its revenues came from online operations. Its print sales were primarily to libraries, where subscription renewal rates were still about 98%.[16]

In 2009, rival Microsoft threw in the towel and ended the sale and production of Encarta encyclopedia and Encarta Online. At that time, Wikipedia had 97% of US web users of encyclopedia information while Encarta had only 1.27%.

So the question is, what should *EB*'s pricing strategy have been in such an environment? A price of zero to match Wikipedia's? Stay at $1,200? In between, and if so where? Or a higher price than $1200, to focus on libraries and the prestige market, and give up on the consumer market? Different prices for different customers? Pay per use? Freemium? Basic subscription fee plus usage-based fees? Individualized price or single price with lots of discount categories? These are some of the options we will explore in this chapter.

11.2 Pricing Strategies

Firms normally have several basic options for setting prices. They can be:

- based on the cost of production;
- determined by the market;
- based on the value of the product to the customer;
- reflecting a firm's market power;
- pursuing a company's strategic objectives;
- regulated by government.

We will analyze these options and how they relate to media and communication.

11.2.1 Pricing by Cost

11.2.1.1 Cost-Plus

Companies often set prices by calculating the cost of producing the good or service and adding a percentage of profit on top of it. This is known as "cost-plus" pricing or as "mark-up" pricing. This is a straightforward and widely used process.

It is often thought that one advantage of cost-plus pricing is its simplicity. Actually, however, cost is difficult to determine.[17] The first problem is to determine which type of cost should be used. It could be either incremental cost (MC) or average cost. Typically, what is meant by "cost-plus" is average cost. The difference in pricing between the two types of costs is often significant and will be explored later in this chapter. Average cost could be much higher than incremental cost, especially where fixed (upfront) costs are high and incremental costs are low.

Another problem is that what gets included in the term "costs" can be subjective and strategic. Cost definition can vary greatly, depending on the business purpose. Firms have incentives to show high costs for a number of reasons, such as to lower income tax, to reduce the sharing of profits with investors or licensors, or to show low profits to regulators. Conversely, firms have incentives to show lower costs (and thus higher profits) if they aim to impress investors or gain bonuses for managers. There are many ways to structure and allocate costs, as cost figures can be affected by factors such as the expensing versus capitalization of investments, the depreciation rates chosen, or the timing of the cost. They can also be affected by the allocation of overhead and other expenses, the reserves for potential risk, the valuation of inventory, and the allocation of costs among different projects. This is discussed in ▶ Chap. 13 Accounting in Media and Information Firms.

14 Marchand, Philip. "Browsing the new Britannica offline; Internet be damned." *The Toronto Star*. February 4, 2007. Last accessed July 6, 2012. ▶ http://www.thestar.com/news/insight/article/178025--browsing-the-new-britannica-offline.

15 The Economist. "Encyclopedias: Battle of Britannica." March 30, 2006. Last accessed July 28, 2011. ▶ http://www.economist.com/node/6739977.

16 Charlton, Graham. "Q&A: Ian Grant of Encyclopaedia Britannica UK." February 10, 2009. *Econsultancy Digital Marketers United*. Last accessed August 2, 2011. ▶ http://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk.

17 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

The third problem regarding cost-plus pricing is that cost actually depends on scale of production, but that also, vice versa, production volume depends on price. Cost depends on price, just as price depends on cost. Unit costs (both average and marginal) change with volume.[18] For example, consider the computer manufacturer Wang Laboratory, which priced its machines based on average costs. When Wang lost volume it raised its prices to cover the rising average costs, but the price increase reduced sales even further, which caused the unit cost to rise still more. This created a deadly spiral for Wang Laboratory, which eventually went bankrupt.

But perhaps the main problem with cost-plus pricing is that it is not based on market conditions. Whether demand is high or low, cost-driven pricing leads to the same price, thus being too high in weak markets and too low in strong ones.

Despite these challenges, cost-plus pricing is used, for example, in certain procurement contracts with governments. It is also used in price regulation, for example of telecom prices or of compulsory licenses for music. When it comes to telecom pricing of interconnection or of network elements, regulators differentiate between past ("historical") cost and hypothetical "best practice" cost ("forward-looking cost"), which takes into account the greater performance and lower cost of newer technology. To measure and track actual cost, the US government established an Automatic Reporting Management Information System (ARMIS), and the figures calculated by this were the basis for the regulated prices that the network companies could charge each other for carrying traffic.[19]

Other circumstances favoring cost-plus pricing are the introduction of a new product to the market, when consumer demand for a good is quite uncertain,[20] and where there is thus no reference point for an assessment of a market price.

Case Discussion

Cost-Plus Pricing

Should EB Price Its Product Using a Cost-plus Approach? What Kind of Costs Would it Have to Consider?
The actual *EB* prices were as follows:
- online: $65;
- print: $1200.

What do these prices suggest about the use of cost-plus pricing by *EB*? For the online version, cost-plus is remarkably close to actuality (Table 11.1). But for the print version, cost-plus is about 50% lower than actuality. In the online case, competition must have brought down prices to a level of slim profits ($10 per unit, about 18%). For the print version, profits were $500 per unit, or 71.4%. Such a high level is possible only where there is market power or significant product differentiation.

*Why wou*ld EB take such different pricing approaches to the print and the CD-ROM version? We will discuss this in other segments of the case.

Table 11.1 Cost characteristics of *Encyclopaedia Britannica*

	Online version	Print version
Marginal costs	$5	$500
Fixed costs allocated (per unit):	$50	$200
Average total cost	$55	$700
Cost-plus price (adding a 15% profit margin)	$63.25	$805

11.2.1.2 Marginal Cost Pricing

Economists favor MC pricing since they consider it to be efficient in sending correct signals to market participants. They argue that a fixed cost is typically "sunk" and therefore no longer relevant to a firm's pricing decision, at least not in the short run. If the price is set at a level below MC the firm will spend more on producing the extra unit than it will gain by selling it. Ideally it would set a price above MC so that it would profit from the sale. However, where markets are competitive, the presence of a profit that is "above normal" would attract similarly situated competitors to underprice the firm, and thus drive prices down to MC, which would be the floor. Thus, setting the price equal to MC is not the price point a firm would choose voluntarily; rather, it is the level the firm would be forced to set if subject to competitive pressures.

A related terminology is to speak of "avoidable" (i.e. incremental) costs and "sunk" (i.e. fixed) costs. Only the former are relevant to short-term pricing decisions, because they are affected by current managerial decisions, whereas sunk costs are set and cannot be reversed. Yet many managers believe that they must somehow recover them. This may mean throwing good money after bad.

There are major practical problems with MC pricing. First, it is even more difficult to measure incremental costs than average costs. Second, MCs, too, vary with the scale of production. And costs may not be fixed in the long run but only the short run, or fixed over a certain production range, thus being "semi-fixed."

18 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

19 Noam, Eli M. *Interconnecting the Network of Networks*. (Cambridge: Massachusetts Institute of Technology Press, 2001), 69-117.

20 Warner, Alan and Chris Goodwin. *Pricing for Long-Term Profitability*. London: Prentice Hall Financial Times, 2002.

But more of a problem than these conceptual and measurement problems is the economic issue that marginal pricing may lead to prices at a level too low to cover the fixed costs. At that level the firm will lose money.[21] But raising the price above short-run MC is difficult in competition because it will lose sales to competitors.

11.2.1.3 Contribution Margin Analysis

Marginal cost when subtracted from marginal revenue (MR), leads to marginal net profit, the positive (or negative) profit on an additional unit produced and sold. This is also known as the contribution margin (CM). For example, if a firm sells widgets for $10, and the variable cost for each is $6, then the CM is $4, or 40%. A CM must be distinguished from a profit margin, which is sales price minus average cost.[22]

Suppose two companies, A and B, produce and sell a product, each with the same cost and with the same net profit on sales, but with substantially different production technology and hence different CMs. Company A has relatively low fixed costs in terms of equipment and machinery, but a high variable labor cost. A's variable costs equal to 80% of its sales price, and its CM is therefore 20%. Conversely, Company B is highly automated and its cost structure is the opposite, with high fixed costs and low variable costs. With variable costs of 20% of the sales price, its CM is 80%. Overall unit cost and profit at the moment are identical, and the firms might therefore set their price at the same level. But further analysis would come to a different conclusion, owing to their different cost structures.

The effects of a change in sales volume are very different. For Company A, given its high variable costs, the increase in profit relative to sales—the CM—is only $0.20 for every additional dollar of sales. But for Company B with its low variable costs it is $0.80. In consequence, the two companies are affected differently by changes in price. The question to consider is, if prices change, how many additional sales it would take for a firm to remain at the same revenue level.

One can calculate how many added sales are needed to keep overall net profits at the same level when prices change (Table 11.2).[23] Applied to a company, this would result in calculating the increase in sales volume that is necessary to make

Table 11.2 The effect of contribution margin on breakeven sales changes

	Company A	Company B
Break-even sales change (%) for a:		
5% price reduction	+33.3	+6.7
10% price reduction	+100.0	+14.3
20% price reduction	Infinity	+33.3
5% price increase	−20.0	−5.9
10% price increase	−33.3	−11.1
20% price increase	−50.0	−20.0

up for a price reduction, or calculating how much sales could drop following a price increase without an impact on profits.

$$\frac{\Delta P}{P} = \% \text{ change in price}$$

Company A's product has a relatively small percentage CM to profit. Therefore, to compensate for a 5% price cut, its sales must increase by a substantial 33.3%. For Company B, however, with its much larger percentage CM, its sales increase needs to be only 6.7%. Therefore, Company A cannot easily pick a strategy of lowering the price of A in order to build volume for the product, whereas it is easier to do so for Company B.

However, the opposite is true, symmetrically, for price increases. For a price that is 5% higher, Company A can afford to lose many more sales (up to 20%) than Company B (only up to 5.9%) and still benefit from the higher price. It is therefore much easier to justify a premium price strategy for Company A than for Company B.[24]

How does this relate, in particular, to media and digital firms? Such firms are typically "Product B"-type companies, as they have high fixed costs and low MCs. This means that to raise profits, price reductions tend to work better than price increases. This is a contributing factor to the price deflation in media products that we have described before.

In practical terms, how does one determine a breakeven sales curve? This is not something one can look up. It requires educated estimates based on experience. Few managers actually know the demand curve for their products, but many can roughly estimate the impact of a 10% (or 20%, or 30%) price change on their sales volume. One must start with a baseline point, possibly today's status quo. Then the firm's sales and marketing managers should estimate the impact on sales unit volume of lowering the price by a given percentage of 5%, calculate the resulting sales revenues and profit, and then calculate how many extra sales are needed to make up for the lower price and remain on the same profit level.

21 To deal with that problem, economists tend to postulate that prices will come down only to long-run marginal costs, which include the elements of fixed costs that are variable in the long run.

22 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

23 Nagle and Holden define a "Breakeven sales change (S_B)" which uses a product's contribution margin and marginal cost to show the percentage change in sales required to keep sales at a breakeven level, given a price change. This value is expressed by percent changes in price, and is given by the formula:

$$S_B = \left[\mathrm{CM} / \left(P \times \left(1 + \frac{\Delta P}{P} \right) - \mathrm{MC} \right) \right] - 1$$

Or using absolute changes:

$$S_B = -\Delta P / (\mathrm{CM} + \Delta P)$$

Where:
CM= Contribution Margin before change
P= price
MC= marginal cost
Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

24 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Fig. 11.1 Sales volume required to maintain equal profitability
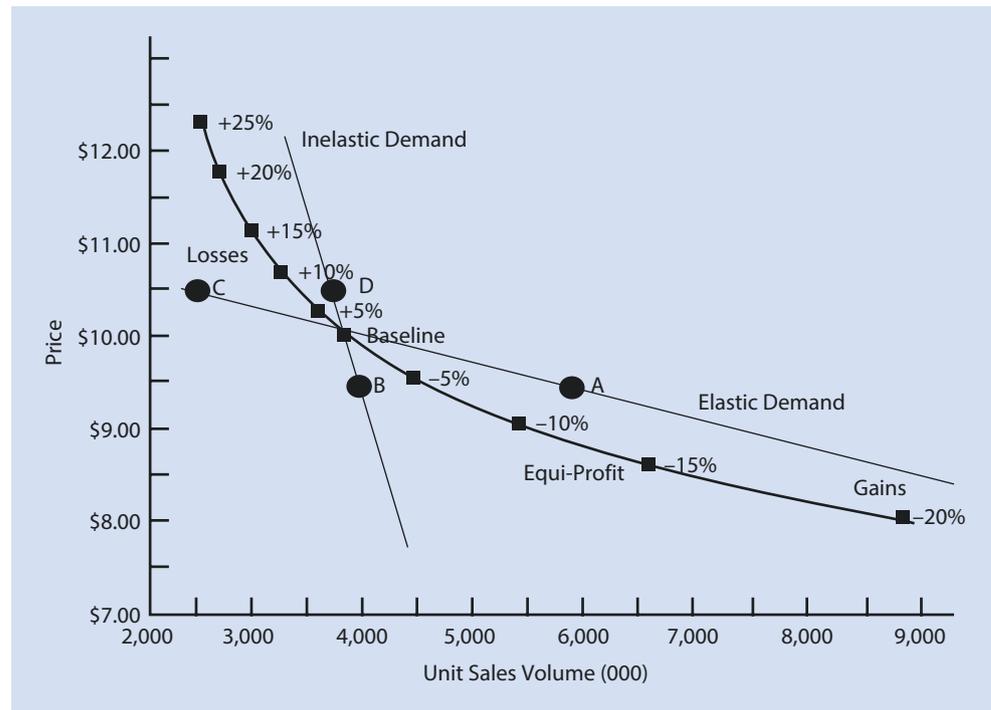
Doing the same process for price changes of −10%, +5%, +10%, and so on creates a breakeven sales curve.

In ◘ Fig. 11.1,[25] the curved line shows constant profitability ("equi-profit") and its slopes are the tradeoffs between price and sales volume required to remain at that same profitability level.[26] The baseline scenario in that illustration is a price of $10.00 and a sales volume of 4000. If the price were raised to $11.00, the graph indicates that sales volume could decline by 15%, (incorporating also cost savings of lower production level) to remain at the same level of profit. If sales drop more than that (points to the left of the curve) profits would decline. If volume dropped less (points to the right of the curve) then profits would rise.

The graph also shows relationship between demand and profitability. We draw two demand curves that show the quantity demanded for each level of price. These are the straight lines through the baseline scenario. One of these demand curves is elastic, in other words sensitive to price. It is the line that is fairly horizontal. The other demand curve, more steeply angled, is inelastic in its price sensitivity. The two types of demand lead to two different scenarios. When the price is lowered by the firm to $9.50, if demand is elastic it would rise considerably to the sales corresponding to A where demand is elastic, and only rise to sales corresponding to B if demand is inelastic. Point A is to the right of the equi-profit curve; that is, profits would rise with a price reduction when demand is elastic. But for the inelastic demand, Point B is to the left of the equi-profit curve, which means that profits would decline in that scenario of a price reduction. It is the opposite for price increases. Now, the elastic demand leads to a drop to Point C, which is at the left and lower-profit side of the equi-profit line. And it leads to a higher profit at D for the inelastic demand.[27]

Case Discussion

EB had fixed costs estimated at $20 million annually, about $10 million of which was for editing and research. The remaining $10 million was administrative overhead. (These numbers are hypothetical and for illustration only.) *EB* incurred incremental costs to produce and distribute the 30-volume set, at about $500 per set, and the market price of the set was $1200.[28] Its online subscription product had a much lower incremental cost of $5, mostly for administrative processing.

EB had online sales of 200,000 copies per year. Its print sales were approximately 14,000 per year. The basis of allocating the fixed costs between print and online editions of the encyclopedia is 50/50, meaning that each of them will be allocated half of

25 Supplemented and based on chart in Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

26 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

27 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

28 Philip, Evans B. and Thomas Wurster. "Strategy and the New Economics of Information." *Harvard Business Review*. September/October 1997. Last accessed June 17, 2017.
   ▶ https://hbr.org/1997/09/strategy-and-the-new-economics-of-information.

the fixed costs, $10 million. Average fixed costs then were for the print edition, $10 million/14,000 about $700; and for the online edition, $10 million/200,000 = $50.

MCs of printing 30 volumes was approximately $500, while online marginal costs are $5 per subscriber. One can use these costs to show the CM, which is the selling price (MR) minus the MC. This is shown in ▣ Table 11.3.

Using these CMs, one can calculate the change in sales required to offset the revenue effects of a price change, using the formula

$$S_B = \left[\mathrm{CM} / \left(P\left(1 + \frac{\Delta P}{P}\right) - \mathrm{MC} \right) \right] - 1 = \Delta Q / Q$$

Where:

S_B is the sales required to offset the price change

$\frac{\Delta P}{P}$: % change in price

CM: Contribution margin before price change

MC: Marginal cost

$\Delta Q/Q$: % Change in sales required to maintain same profit level

If *EB* lowers its online price by 20%, by how much must it raise sales to break even? Is such an increase likely? Should *EB* raise its price?

Applying this formula and the numbers from ▣ Table 11.3, one finds that a 20%

price cut for the online edition will require about a 28% increase in sales to maintain the same profit. However, the same 20% price cut for the print edition would require about a 52% increase in sales to offset the price reduction. Expecting this kind of an increase seems unrealistic. Thus, a price cutting strategy for the online product, with its smaller CM, is more viable than the same strategy for the print edition. Conversely, if the price is raised by 20%, the print edition could drop sales by 25% and still break even, and if it loses only, say, 15% it would be better off.[29] In contrast, the online edition could not afford to lose more than about 18% of sales.

▣ Table 11.3   Costs and profits of encyclopedia versions

Breakdown of unit costs and profits	Online	Print
Marginal cost	$5	$500
Average fixed cost (AFC)	$50	$700
Price (actual)	$65	$1200
Net profit margin	$10	$0
Contribution margin	$60	$700

11.2.2 Market-Based Pricing

11.2.2.1 Commodity Pricing

In many situations of active and competitive markets, firms cannot set a price at a level they like but must follow market prices. For example, for products such as memory chips, or for services such as telecom transmission, conditions of supply and demand determine prices. A firm can lower prices to gain sales volume. But the price cut would often be matched by competitors. This is in particular the case where products are similar and where the initiating firm has no efficiency advantage. The result would be a lower market price equilibrium with lower profits for every firm.

In some cases, even low prices do not create a market equilibrium. When there is significant overcapacity there may be no market-clearing prices, at least not for a while. For instance, consider telecom transmission. The volume of transatlantic traffic minutes greatly increased between 1998 and 2001, but much less than the huge increase in available capacity.[30] Despite a major drop in the price of transatlantic

transmission there was a gigantic excess capacity and 90% of the circuits were "dark," in other words unused.

The internet raises the use of competitive pricing. Companies' prices are usually easily available. Search engines, shopping bots, and shopping sites make it easy for customers to compare prices. This is particularly true for standardized products. The result is an occurrence of "price wars."

Case Discussion

Market Pricing?

In the 1980s, the competition among general-audience print encyclopedias was between *EB*, Compton's, Funk & Wagnall's, World Book, and Grolier. *EB* kept a huge price premium over its print competitors, with a price of $1500. Two other publishers, Compton's World Book and Grolier, charged intermediate prices of $400–$600. Funk and Wagnall's went for a low price of $150 and sold in supermarkets.

In contrast, in the CD-ROM market in 2001, *EB*'s price of $69 was fairly comparable to the going market price, since Grolier's price was $50, World Book's was $90, and Microsoft Encarta cost $100. There was one low-end vendor, Compton's, which cost only $15.

Why would EB take such different pricing approaches to the print and the CD-ROM version?

11.2.2.2 Market Price Determination Through Auctions

Auctions and competitive bidding are processes that help find a market price for a good or service.[31] Such an auction price may then set the reference price for similar products. There are several main types of auctions. In open-outcry auctions, bids are public at the time of bidding, which gives the various bidders the opportunity of observing each other. In contrast, in a sealed-bid auction, no party knows the other's bid and it may therefore overbid to be on the safe side. The

29   Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

30   Stronge, Tim. "Submarine Bandwidth: Telegeography's 2002 Review." *Submarine Telecoms Forum*. Third Quarter 2002. Last accessed June 17, 2017. ▶ http://www.subtelforum.com/issues/Issue%204.pdf. Voice Capacity data has been recalculated from minutes to bps to be comparable to capacity, accounting for peak load and multiplexing.

31   Bichler, et al, "Applications of flexible pricing in business-to-business electronic commerce." *IBM Systems Journal* 41, no. 2 (2002) 287-302.

primary purpose of a sealed-bid auction is to prevent collusion. The "sealed first-price auction" is a simultaneous, secret, and one-bid process often used in government contracts.[32]

In "English auctions," prices are ascending, meaning that bids start at a low price and bidders keep increasing the amount. The problem with ascending auctions is that when competition for bids is weak, winners can get a real bargain. For that reason, a minimum "reservation price" might be specified. Bidders can gain advantage by "bid-rigging," that is by agreeing to not bid against each other, thus unfairly reducing the price. From the seller's perspective, an English auction reveals the willingness to pay (WTP) of every bidder, except that of the most important one, the last bidder, who in fact might have been willing to bid higher.

Unlike English auctions, "Dutch auctions" start at a high price, and decrease the price until it is accepted by one bidder. The winner thus reveals his WTP. This type of descending-price auction incentivizes bidders to act quickly as they do not know when the auction will end. The first bidder gets the deal, whereas in an English auction it is the last bidder. Therefore, it is used to sell goods that must be sold quickly, such as cut flowers in the Netherlands, fish in Israel, and tobacco in Canada. Another example of this type of auction is Google's 2004 initial public offering, in which the company sold 19.6 million shares using a modified Dutch auction.[33] In a "Japanese auction," no new bidder may join and no non-bidders can rejoin. In a "reverse auction," a buyer seeks the lowest bids by sellers. Examples are "requests for proposals" that solicit the cheapest offer by vendors.

One issue with auctions is the "winner's curse"—a situation in which the winner of the auction may well have overbid, since the judgment of all the other parties was that a lower price was appropriate. Another problem is underbidding. In a sealed-bid auction it does not pay to bid honestly (i.e. up to one's WTP, because one might pay more than necessary. The best strategy is to bid less than the true value of the item and hope that it is still the highest bid. This is known as shading of the bid. In a "first-price" auction the top bidder pays the amount of its bid. But in a "second-price" auction, the top bidder pays the amount of the second highest bid. William Vickery, a Columbia professor and Nobel Prize winner, designed a sealed-bid second-price auction, known as a Vickery auction, so that parties can bid the amount at which they value an object,[34] but have to pay only what it would have taken to just win over the second-highest bidder. Vickery showed that a second-price auction does not bring in less money than a first-price auction, and possibly more, even if the payment is that of the second-highest bid, because bidding would be encouraged and under-bidding discouraged.

The second-price auction is hence more efficient than a first-price auction.[35]

Today, Google and Yahoo use a variation of a second-price auction for the sale of search engine advertising. The potential advertiser bids for top placement on specific keywords associated with their product, for example "Venice" for travel agencies.[36] Once a user enters such a keyword in the search engine, ads tagged with that keyword will appear in an order corresponding to each advertiser's bid. The placement on the page depends on the bid amount; the highest bid, weighted by its quality factor, will receive the best placement on the page. For such a placement, the winning advertiser (based on bid offered plus several other factors) pays the bid amount of the next-highest bidder. In order to advertise with Google (Google Adwords for sponsored search results and Google Adsense for ads on third-party sites—the auction mechanisms are identical), the advertiser must define the search keywords it wants the ad affiliated with and make a bid for the maximum amount it is willing to pay for one click on it (called maxCPC). Google then evaluates the quality (e.g. layout, loading time, match with keywords) of the website to which that click leads and assigns an individual quality factor; and the bid is then ranked based on the formula: maxCPC x quality factor.[37, 38]

Auctions have become the preferred method to assign licenses for radio-magnetic spectrum, particularly for mobile phones, and increasingly for other uses of the airwaves. The concept of spectrum auctions was proposed by Ronald Coase of the University of Chicago, though much of the credit should go to his student Leo Hertzel who wrote up the idea in a term paper in the early 1950s. It was adopted first in New Zealand, then in the UK, and in the USA in the 1990s, afterwards spreading to the rest of the world. On the whole, spectrum auctions have experienced mixed success, with frequent cases of winner's curse. The inherent problems are that the top bidders are those willing to engage in a cartel to establish a high user price. In the 2000 Germany 3G license auction, bids were very high (the winner's curse), and the winners eventually had to renegotiate with the government for a lower price.[39]

In the USA, spectrum auctions are widely used. Since their implementation in the 1990s and into 2017, the Federal Communications Commission (FCC) has conducted about 100 auctions, raising over $127 billion for the US Treasury.[40]

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32   Shor, Mikhael. "Second Price Auction." *GameTheory.net*. August 12, 2005. Last accessed June 12, 2012. ▶ http://www.gametheory.net/dictionary/Auctions/SecondPriceAuction.html.

33   Hodrick, Laurie Simon. "Google's IPO: A Dutch Auction Works, If You Let It." October 1, 2004. *Columbia Business School: Hermes*. Last accessed August 2, 2011. ▶ http://www7.gsb.columbia.edu/alumni/news/Googles-IPO.

34   Klarreich, Erica et al. "The Bidding Game" *Beyond Discovery*. March 2003. Last accessed June 17, 2017. ▶ http://www.nasonline.org/publications/beyond-discovery/the-bidding-game.pdf.

35   It is claimed that already in 1797 the author and statesman Johann Wolfgang Goethe sold a manuscript through what we call today a second-price auction. Moldovanu, Benny and Manfred Tietzel. "Goethe's Second-Price Auction." *Journal of Political Economy* 106, no. 4 (August 1998): 854–859.

36   Varian, Hal R. "Position Auctions." *International Journal of Industrial Organization* 25 (2007): 1163–1178.

37   Varian, Hal R. "Search Advertising With Google: Quality Score Explanation by Google Chief Economist." *YouTube*. March 4, 2010. Last accessed June 17, 2017. ▶ https://youtu.be/qwuUe5kq_O8.

38   Google. "About the Ad Auction." Last accessed June 17, 2017. ▶ https://support.google.com/adsense/answer/160525.

39   Moldovanu, Benny and Christian Ewerhart. "A Stylized Model of the German UMTS Auction." *Sonderforschungsbereich 504*, No 02-07. January 1, 2002. Last accessed June 17, 2017. ▶ https://pdfs.semanticscholar.org/625c/141d7891603435b7d067bd45e170d2819f3c.pdf.

40   Federal Communications Commission. "Auctions Summary." Last accessed June 17, 2017. ▶ http://wireless.fcc.gov/auctions/default.htm?job=auctions_all#completed.

The "simultaneous ascending auction" is the most popular auction format for wireless spectrum auctions. In this format, several regional licenses are auctioned simultaneously, and bidding continues until the number of active bidders equals the number of licenses. Bidding on all licenses then closes at the same time.

Another application for auctions is for telecom bandwidth trading. Telecom carriers with excess capacity in their cables can sell such unused bandwidth to other carriers or to large users who are in need of extra capacity. Bandwidth trading companies bring buyers and sellers together. They include Arbinet, Band X, Invisible Hand, Rate Xchange, and InterXion.[41]

Auctions are also used in the publishing industry. If there is great interest in a project, the book's agent typically organizes a formal or informal auction for it, and publishers bid on the project.[42] A winner's curse frequently occurs, with publishers at times getting carried away by wanting to prevail and get publicity, but doing so at a price beyond a reasonable chance of profitability.

In the past, auctions (and dynamic pricing more generally) had high transaction costs, and this meant that they were limited to high-volume sectors such as finance, commodities, and art. Subsequently, electronic platforms made it much easier for consumers to use auctions, as typified by the online auction firm eBay. EBay has created a large-scale auction-style marketplace. In China, Taobao, part of the Alibaba Group, has a strong presence in consumer online auctions.

Another approach is a "name your own price" auction. The basic idea is for a consumer to state her price for a hotel, or for a TV set, with conditions on brand or location, by entering a bid (legally binding and backed by a credit card), and the highest bids might be accepted by the seller. The website Priceline used auction pricing first in 1998 for the sale of airline tickets. Airline seats are a perishable commodity. Priceline asks consumers to list how much they will pay to reach a certain destination. Priceline then runs these offers through a database of tickets, and may accept the consumer's offer if it is above incremental cost and if the seat would remain empty otherwise.[43]

Auctions make sense for business-to-business transactions where deals are relatively big and vary, or for special and valuable objects such as artworks where it is difficult to determine market prices. Economic efficiency rises by enabling transactions which might not take place otherwise because buyers and sellers do not connect, or because a price is set too high and no sale takes place, or it is set too low and the seller leaves money on the table.

But for the consumer market, the main problem, even with the introduction of e-auctions, is that most consumers do not want to negotiate for their goods, preferring simplicity over transacting for a potentially lower price.[44] In the case of hotels, consumers also want to know exactly what they are getting. A hotel on the beach is a very different product from one across the highway. Thus, after an initial euphoric embrace of auctions, many economists have concluded that it is often preferable to put a price tag on an item because it reduces transaction costs. In the same vein, vendors do not like selling their goods to customers who are looking for the best bargain, the "bottom feeders." As a general proposition, and excepting perishable commodities such as flowers and airline seats, a company's pricing strategy requires it to be pro-active rather than based on the consumers' WTP at a given moment.

11.2.3 Dynamic Pricing and Peak-Load Pricing

"Dynamic pricing" is a price mechanism that adjusts to short-term changes in demand and supply in a predefined fashion.[45] Dynamic pricing is often used by airlines. "Yield management" helps some sellers to vary prices both upwards and downwards when demand varies and the product cannot be stored. Examples are airline seats, hotel rooms, rental cars, and telecom network capacity. An airline or resort hotel will have a historical booking path for a route or location and a specific date. As the day comes closer it must fill its seats and rooms or be stuck with unsold capacity. By comparing its yield to that of previous years it can observe whether ticket sales are ahead or behind, and whether to discount prices or raise them.[46]

Broadway theaters use a similar approach in selling their tickets. The online box office agency Ticket.com Inc. claims improved revenue per event of 45% by modifying prices on the basis of supply and demand.[47] However, yield management and dynamic pricing are not used by movie theaters, and movie tickets are sold, for a given time slot, at the same price whether the particular theater is half-empty or overflowing. Yet an increase in ticket prices for blockbuster films could increase profits, even if some people dropped out owing to the higher price. Or films could be priced higher based on expected demand, for example because of special effects or popular stars, or if it is the sequel to a blockbuster. Documentaries might be cheaper. The movie theater industry explains the absence of such dynamic and differentiated pricing through several factors: the negative message that it sends out if one prices some films more cheaply; that theatergoers are not price elastic in their choice of a particular

41   Keppo, Jussi. "Pricing of point-to-point bandwidth contracts." *Mathematical Methods of Operations Research* 61, no. 2 (June 2005): 191-218.

42   The Doris S. Michaels Literary Agency. "Outline of the Publication Process." Last accessed July 28, 2011. ▶ http://www.dsmagency.com/published.html.

43   Priceline offers a "winning bids" section, which lets customers review previously successful bids so that they can make a reasonable offer.

44   Bodow, Steve. "Is That Your Final Offer?" *New York.* January 10, 2000. Last accessed July 28, 2011. ▶ http://nymag.com/nymetro/news/bizfinance/columns/bottomline/1778/.

45   Bodow, Steve. "Is That Your Final Offer?" *New York.* January 10, 2000. Last accessed July 28, 2011. ▶ http://nymag.com/nymetro/news/bizfinance/columns/bottomline/1778/.

46   Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

47   Fleischmann, Moritz, Joseph M. Hall, and David F. Pyke. "Smart Pricing." *MIT Sloan Management Review* 45, no. 2 (Winter 2004): 9-13.

film; that the long lines for tickets generate valuable publicity for the film; and that at a multiplex people who could not get a ticket to their favored film could settle for another film, so these are not lost sales and maybe even raise ticket sales. Other factors are administrative complexity and unpredictability.[48]

In contrast to film theaters adopting dynamic pricing, sports teams have been actively doing so. Many teams already offer preplanned tickets at prices that use several variables that historically draw larger crowds, such as the date or the opponent. The San Francisco Giants baseball team went one step further by changing prices on a daily basis. The team had experienced a 20% increase in sales when it started the star pitcher Tim Lincecum, winner of the prestigious Cy Young Award.[49] Whenever he was in the team's lineup, ticket sales skyrocketed, and an active scalpers market emerged, meaning that the official ticket price was too low. When he pitched, all other things being equal, prices for a left-field view that sold for $15 the day before became a $20 ticket, a $42 lower box seat rose to $50, and a $105 field club ticket to $130. The Giants therefore adopted a pricing system from the company Qcue and made an extra $500,000 in revenue in a test season, and then several million each year with full adoption. The Qcue software platform forecasts ticket demand uses a pricing engine that is integrated into a club's ticketing system. Qcue itself earns money by an upfront software fee and by a revenue sharing on ticket sales (above a certain level) through the dynamic-pricing model.[50]

Flexible pricing (i.e. variable by consumer characteristics or demand) becomes easy with online platforms. Prices can change daily, and be different for different types of customers and market conditions. E-commerce sites can easily use so-called A/B testing to optimize dynamic pricing and price discrimination models and to operate such systems.[51] Yet short-term gains might conflict with long-term goodwill. Consumers often react negatively to aggressively differentiated pricing.[52] Suppose a vending machine increases prices on hot days? The Coca-Cola Co. got bad publicity when it discussed a machine that would do just that. The company dumped the idea, as well as its chief executive officer (CEO).

When Amazon.com charged different prices for people residing in different areas for the same DVD, it created a backlash.[53] The company is technically able to price discriminate on where people live, what they buy otherwise, how much they spent on purchases in the past. Even more problematic was Amazon's use of dynamic pricing to measure users' price elasticities. Thus, Amazon quietly charged higher prices to buyers who bought many books and thus appeared to be less price-sensitive. These frequent customers were being charged up to 5% more than the regular price. They were outraged to learn that Amazon charged them higher prices because they were taken for granted, instead of getting a discount for being loyal customers. Amazon denied such a policy and explained it as merely a test-marketing, but observers were skeptical.

Price negotiations based on better information works both ways. Consumers, too, are using the internet to easily engage in price comparisons. They can then engage in "cherry-picking" the best offers, with little loyalty to a retailer. This limits the bargaining position of any one website or store to price discriminate.[54]

A sub-category of dynamic pricing is "peak-load pricing," where price variations are already preset. For example, electric companies charge more during high usage periods, thus moving some consumption such as running washers and dryers toward periods of lower demand and making more efficient use of capacity.

In a peak-load situation companies face two types of costs: the variable operating costs, which are based on capacity used, and the fixed capacity costs, based on the capacity available whether used or not. Where capacity limits are reached, the price is set at capacity cost. But where there is slack in demand, where there is excess capacity, price is dropped to operating cost, since the capacity cost is sunk and does not affect the price. And where demand exceeds capacity, the price should be set at a higher level to prevent congestion. It would therefore depend on the price elasticity of demand.

Thus, when it comes to the setting of the peak-load prices, for example for telecom where there is very little incremental cost up to the point where the system is full and congested, the economically correct rule is to allocate the entire fixed cost of the overall capacity to the peak demand period, and to set the price for that period accordingly, which means at a fairly high level. The logic is that the system was built to meet its peak capacity. Where demand is higher than peak load, the price should be set still higher to discourage excess demand and congestion. And when demand is lower than peak load there is no cost being imposed, and the price should be close to zero.

48 Orbach, Barak Y. "Antitrust and Pricing in the Motion Picture Industry," *Yale Journal On Regulation* 21, no. 2 (Summer 2004): 317.

49 Fisher, Eric. "Ticketing's Changeup." *Sports Business Journal*. May 31, 2012. Last accessed July 7, 2012. ► http://www.sportsbusinessdaily.com/Journal/Issues/2010/05/20100531/SBJ-In-Depth/Ticketings-Changeup.aspx.

50 When carried too far, dynamic pricing, as with all differentiated pricing systems, leads to a backlash. The San Francisco Giants management had to mollify the team's base of 21,000 full-season pass holders, who, in a way, overpay for low-demand tickets but underpay for attractive games. By unbundling, they may drop out of season passes altogether. Thus, some concessions had to be made to maintain their loyalty. Fisher, Eric. "Ticketing's Changeup." *Sports Business Journal*. May 31, 2012. Last accessed July 7, 2012. ► http://www.sportsbusinessdaily.com/Journal/Issues/2010/05/20100531/SBJ-In-Depth/Ticketings-Changeup.aspx.

51 Weiss, Robert M. and Ajay K. Mehrotra. "Online Dynamic Pricing: Efficiency, Equity and the Future of E-commerce." *Virginia Journal of Law and Technology* 6, no. 2 (2001). Last accessed July 28, 2011. ► http://www.vjolt.net/vol6/issue2/v6i2-a11-Weiss.html.

52 Kemp, Ted. "The road to one-to-one pricing; retailers are becoming more customer-centric, and that's driving them toward dynamic pricing to foster customer loyalty and maximize revenues and margins." *Fairchild's Executive Technology* 6, no. 5 (May, 2004): 36.

53 Streitfeld, David. "Amazon Flunks Its Pricing Test / Sliding costs anger shoppers." *SFGate*. September 28, 2000. Last accessed June 17, 2017. ► http://www.sfgate.com/business/article/Amazon-Flunks-Its-Pricing-Test-Sliding-costs-2703998.php.

54 Weiss, Robert M., and Ajay K. Mehrotra. "Online Dynamic Pricing: Efficiency, Equity and the Future of E-commerce." *Virginia Journal of Law and Technology* 6, no. 2 (2001). Last accessed July 28, 2011. ► http://www.vjolt.net/vol6/issue2/v6i2-a11-Weiss.html.

11.2.4 Indexed Pricing

Prices are affected by the more general developments in the overall economy, in particular by inflation—the rate at which the general level of prices for goods and services is rising.[55] One type of pricing is to regularly adjust the price upwards by an index of inflation.

Why is there price inflation? The causes of price inflation have been an area of great debate by economists and others. There are several theories and they all have an impact on one's view of expected price trends:

- The quantity theory of money holds that a growth in the money supply that is larger than the growth of the economy results in inflation. Prices may rise when governments raise the money supply by various monetary policy means, such as printing more money, lowering the reserve requirements of banks, lowering the discount rate charged to banks, or by buying government bonds and injecting liquidity into the economy. Firms thus need to watch a government's monetary policies to anticipate price trends.
- The Keynesian economic theory argues that when aggregate demand for goods grows faster than supply (a "demand-pull"), price increases are the result.[56] Causes could be a rise in government spending as well as consumption and investment, a lowering of taxes, and a drop in the exchange rate.[57] These are factors that require monitoring by a firm concerned about price trends in the near future.
- The rational expectations perspective observes that an expectation of inflation can itself lead to inflation.[58] Firms thus need to watch each other and how serious government is about holding inflation in check.
- The cost-push inflation view argues that price increases are driven by increases in the costs of producing goods, such as wage inflation brought about by strong labor unions, natural disasters, depreciation of the exchange rate, monopoly power, and taxes.[59]

Inflation can get out of control and spiral into hyperinflation. Examples include:

- Germany, 1923: inflation reached a rate of more than 30,000% per month, with prices doubling every few days.
- Hungary, 1946: daily inflation exceeded 200%, which equates to an annual inflation rate of more than 13 quadrillion %. Prices doubled every 15 hours.

- Israel, 1984: an annual inflation rate of 445%.
- Argentina, 1980s: the annual inflation rate reached 12,000% in 1989.
- Zimbabwe, 2007–2009: hyperinflation that at its peak exceeded 79 billion % per month.[60, 61]
- Venezuela after 2016: the 2018 inflation rate was 15,675%.

What then are companies to do with their pricing when high inflation hits? In cases of extreme instability of a currency, companies might have to take strong steps. For example, when prices are out of control a company might leave the market altogether to let things settle down. For example, when the Russian ruble started to drop like a rock in 2014, Apple was caught off guard and at first did not raise iPhone prices. As a result the price of an iPhone in Russia was the lowest in Europe. Tourists from other countries came to Moscow to buy them. Apple then stopped selling its products in Russia. Soon, however, Apple increased its prices by 25%, and then by another 35%,[62] this time overcompensating beyond actual inflation.

In other cases companies may tie their prices to an inflation measure such as the consumer price index. Contract prices, bank debt, or wages would then increase automatically in every period (e.g. quarterly) by the same factor as the price index increases. In countries that regulate telecom retail prices based on price caps (to be discussed below) there is usually a built-in inflation factor that adjusts the regulated price each year. A variant of this system is for all transactions to be denominated in a relatively stable foreign currency, such as the US dollar or the Euro. The advantage of such indexing is that" real" prices stay (approximately) the same. The disadvantage is that by making inflation more tolerable it reduces the will of a government to regain control over prices.

11.2.5 Value Pricing

11.2.5.1 Economic Theories of Value

So far, we have discussed pricing based on variations of cost and market conditions. A third approach is to set price based on value. This can be both objective and subjective. To a firm, the value of an asset can be measured objectively by the net present value of future income streams. But to a consumer, value is more subjective. Price does not mean value. These are two different concepts. To a worried parent of a gravely ill child curable by penicillin, the value of the drug might be almost infinite. But the price in the drug store is only $5.95. The difference is known as the consumer surplus. Conversely,

55 Investopedia. "Inflation." Last accessed June 17, 2017. ▶ http://www.investopedia.com/terms/i/inflation.asp.

56 Investopedia. "Keynesian Economics." Last accessed June 17, 2017. ▶ http://www.investopedia.com/terms/k/keynesianeconomics.asp.

57 Agarwal, Prateek. "Demand Pull Inflation." *Intelligent Economist.* Last accessed June 17, 2017. ▶ https://www.intelligenteconomist.com/demand-pull-inflation/.

58 Fair, Ray C. "Inflationary expectations and price setting behavior." *The Review of Economics and Statistics* 75, no. 1 (February 1993): 8-18; Konieczny, Jerzy D. and Andrzej Skrzypacz. "Inflation and price setting in a natural experiment." *Journal of Monetary Economics* 52, no. 3 (2005): 621-632; Lach, Saul and Daniel Tsiddon. "The behavior of prices and inflation: An empirical analysis of disaggregate price data." *Journal of Political Economy* (1992): 349-389.

59 Amadeo, Kimberly. "What Is Cost-Push Inflation? With Causes and Examples." *The Balance.* January 18, 2017. Last accessed June 17, 2017. ▶ https://www.thebalance.com/what-is-cost-push-inflation-3306096.

60 Investopedia. "What are some historic examples of hyperinflation?" June 15, 2015. June 17, 2017. ▶ http://www.investopedia.com/ask/answers/061515/what-are-some-historic-examples-hyperinflation.asp.

61 Badkar, Mamta. "10 Hyperinflation Horror Stories of the 20th Century." *Business Insider.* March 19, 2011. Last accessed June 17, 2017. ▶ http://www.businessinsider.com/10-hyperinflation-stories-of-the-20th-century-2011-3.

62 Huddleston Jr., Tom. "After ruble's plunge, Apple reopens Russian online store with big price hike." *Fortune.* December 22, 2014. Last accessed June 17, 2017. ▶ http://fortune.com/2014/12/22/russia-apple-online-hike/.

the price of a fashionable handbag may be high, but for consumers who do not care or know about fashion its value would not be higher than that of a regular handbag.

Early economists tried to determine objective rules for a product's value. In the eighteenth century, French economic thinkers known as physiocrats, such as A.R.J. Turgot, related value to the cost of production. The classical economists Adam Smith and David Ricardo similarly held that the value of a good is closely related to its cost of production.[63] Karl Marx also followed this line, except that his cost-based value theory recognized only labor inputs. In his 1867 work with Friedrich Engels, *Capital*, he wrote: "the value of a commodity can be objectively measured by the average amount of labor hours that are required to produce that commodity."[64] Thus, if shoes take twice as much labor to make than a TV set, the long run price of shoes would be twice that of a TV set. This labor theory of value ignores several factors, including the contributions of raw materials, production machinery, supply and demand, and risk.

In the second half of the nineteenth century, the neoclassical theory of value began to be defined not from the perspective of production but in terms of user satisfaction. Economists such as Alfred Marshall, Stanley Jevons, Leon Walras, and Vilfredo Paredo promoted the concept of "utility." This depends on individual taste, needs, and preferences. Utility—and hence value—may also depend on other users who share the experience, which means the value is subject to network effects. Utility is varied for individuals, but consumers' incremental utility declines with consumption. This means that the more one has of a good, the less extra satisfaction is gained from an additional unit of that good. In 1890, Harvard psychologist Henry James provided a physiological interpretation for diminishing marginal utility. This assumption was important in terms of mathematical and analytical properties of neoclassical economists. The underlying principle is that buyers increase their purchase of a good until their marginal utility (the satisfaction gained from buying that extra unit) balances what they have to give up to get the unit (the item's price).

A newer way to look at prices based on psychology has emerged more recently from behavioral economists, who observe that people's valuations are not necessarily rational or analytical but based on rules of thumb, or heuristics. Daniel Kahneman was awarded the 2002 Nobel Prize in Economics for his application, with the late Amos Tversky, of such heuristics. They included asymmetries in valuation, where adding a unit provides a lesser extra satisfaction than does subtracting that same unit.[65]

Value pricing is important for information products. But to engage in value-based pricing requires some uniqueness of the product or market power, since competition would otherwise push prices down toward the very low MC.

11.2.5.2 Willingness to Pay

If value pricing is a good method of pricing information products, what, then, would be the optimal price for sellers? The simple answer is this: the seller's optimum price is at each individual buyer's WTP price.[66] WTP is the maximum the buyer would pay. Any higher price, and the potential buyer will obtain less in added utility than the payment for such utility. Any price that is lower, on the other hand, is a bargain to a consumer, and provides a consumer surplus. But to charge such a WTP price requires a seller's knowledge of what the buyer's WTP is, and also the absence of a price competitor and the absence of arbitrage among buyers.

How does the seller identify the WTP of a customer? One could ask, of course. But the fundamental problem with measuring WTP through surveys is that buyers are rarely truly forthright, or conscious, about their WTP, and instead engage in a strategic response that low-balls their actual WTP.

One method for measuring aggregate WTP is by estimating the elasticity of demand with respect to price. Estimating this price elasticity is the basic question for any pricing strategy. The price elasticity of demand is the percentage change in quantity divided by the percentage change in price:

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

This measure is used to determine how responsive customers are to price changes for a given good.[67] With minor exceptions, the elasticity will be negative, because an increase in price will reduce demand. Exceptions are where a higher price may lead customers to consider the products as having higher quality or prestige, hence making it actually more desirable. Another exception is where a price reduction leads, first, to a greater number of users. When the users interact, the value of a larger user base is greater than before, and therefore users would be willing to pay more than before and the price could therefore rise. Thus, the new equilibrium is at a higher price and a higher quantity.

Although price elasticities are mostly negative, analysts (including this book) ignore the negative sign and just talk about "high price elasticities" when they mean "more highly negative elasticities." If elasticity is 1 or greater, then demand is sensitive to price. Lowering the price of an item will result, through the greater quantity sold, in higher revenue. On the other hand, if elasticity is lower than 1 (e.g. 0.5), then demand is relatively insensitive to the price. In this circumstance, a *higher* price, though it would reduce the quantity sold somewhat, still raises overall revenue. At the midpoint, when the elasticity $\eta = -1$, the revenue will be maximized. As seen in ◻ Fig. 11.2, elasticity values higher than 1 are elastic, and values smaller than 1 are inelastic.

63 Rhoads, Steven. "Marginalism." *The Concise Encyclopedia of Economics*. Last accessed August 2, 2011. ▶ http://www.econlib.org/library/Enc/Marginalism.html.

64 Pryohitko, David. "Marxism." *The Concise Encyclopedia of Economics*. Last accessed August 2, 2011. ▶ http://www.econlib.org/library/Enc/Marxism.html.

65 Nobelprize.org. "Daniel Kahneman-Autobiography." Last accessed August 3, 2011. ▶ http://nobelprize.org/nobel_prizes/economics/laureates/2002/kahneman.html.

66 More precisely, where the WTP is above long-run marginal cost (LRMC).

67 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.
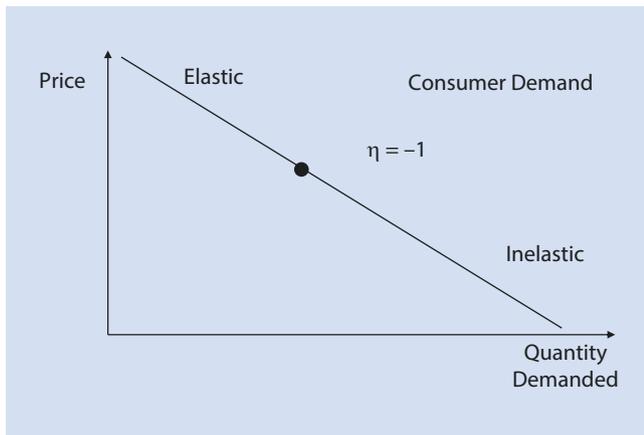
🔲 **Fig. 11.2** Price elasticity of demand

Factors Affecting Price Elasticity

A number of factors affect an individual's price sensitivity for a product, including:

- How proximate is the product to substitute products?
- How high is the prestige of the product?
- How expensive is it to switch to another product?
- How difficult is it to compare prices?
- How big is the purchase?
- What is the end-product effect?
- Is the product a necessity or a luxury?

An example of proximity to substitute products is the newspaper industry. In the UK, newspaper readers once were loyal to their newspaper's style and politics, and the price elasticity of demand for newspapers in the 1970s was therefore found to be quite low, in the range between –.08 and –.10, which would suggest that prices could be raised and revenue would increase. And that indeed is what Rupert Murdoch was able to do when he acquired several UK papers. However, more recently, online news as well as free print newspapers have created an alternative access to free news media,[68] with much higher demand elasticities. In a study of the consequences of price increases between 2007 and 2010 for quality papers,[69] the price elasticity for *The Guardian*, whose readership is fairly committed, was found to be at the low end, only –0.25, in other words fairly inelastic. Price elasticities for US newspapers varied from –0.3 to –1.1, with an average of –0.7.[70] Thus, where price elasticity was low (*New York Times*, *Boston Globe*, and *Washington Post*) significant price increases (respectively from $1.25 to $2, from $ 0.75 to $1, and from $1.50 to $2) actually improved circulation revenues by 5%, 7%, and 10%. (On the other hand, the lower circulation leads also to lower advertising revenues, so the bottom-line calculation is more complicated.)

Another factor is the cost of switching from one product to another. For example, the transaction cost associated with switching to a new mobile phone service provider may be very high when users have to change phone numbers and notify their friends and colleagues of the change. In consequence, "number portability" was mandated by regulators, and this action raised price elasticity since customers were less captured by their existing service provider.

The magnitude of a purchase also affects price sensitivity, with buyers being more price sensitive when the expenditure is large in dollar terms or as a percentage of their household income.[71]

The price sensitivity of products cascades through the value chain. The more price sensitive the demand is for a company's output, the more price sensitive the firm will be when buying its inputs for its production. This is known as the end product effect.

The pricing of a good or service is affected by its status as a necessity or a luxury. For instance, consider the pricing of entertainment products. The conventional wisdom is that entertainment is non-essential and hence highly sensitive to changes in price and income. But actually, certain entertainment prices actually increase during economic slowdowns. In 2009, in the midst of the most severe recession since the 1930s, the price of movie tickets in the USA rose by an average of 4.5% and the average TV cable bill went up 5%. One recession earlier, in 2000/2001, the cost of a theme park visit rose by 7.2%, the average movie ticket price by 6%, and the average cable TV subscription by 10.6%. For museums, prices were up 20–30%.[72] Similarly, the years of the Great Depression and of World War II were the Golden Age of Hollywood. How can this be explained? When people are out of a job, they have more time and more need for diversion. Popular entertainment is pretty cheap, on an hourly basis. And demand elasticities are low, so relatively few people drop off when prices rise.

What is the impact of advertising on product prices? On the one hand, advertising allows better product comparison and reduces prices. But advertising also creates brands and barriers to entry, which generates higher prices. Price elasticities are affected by advertising. In formal terms, advertising is paid by the sellers of a product. But it may well end up being paid by the product's buyers if the price increases when the advertising increases demand and makes demand for the product less elastic. From the company's perspective, the most successful advertising is paid for by buyers through higher prices.

The price of advertising itself is determined from both the demand side (the likelihood of impact and the number of other parties interested in the advertising slot) as well as the supply side (the inventory).

68   Reekie, W. D. "The Price elasticity of Demand for Evening Newspapers." *Applied Economics* 8, no. 1 (1979): 69-79.
69   Filloux, Frederic. "Why Newspapers must raise their price." *The Guardian*. September 3, 2012. Last accessed July 17, 2017. ▶ https://www.theguardian.com/technology/2012/sep/03/monday-note-blogpost
70   Weber, Andre and Kyle Poyar. "Calling all newspapers: A premium model is your best hope." *Simon Kuchar & Partners*. August 7, 2012.
71   Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.
72   Gale Group. "What Price Entertainment? Or, More To The Marketing Point, Do Consumers Care?" *Entertainment Marketing Letter*, 2001.

Price sensitivity for its product is bad news for a company. It can be dealt with by some of the following stratagems:

- differentiate the product from competing options;
- focus the customer on unique features, especially those essential to the buyer;
- raise the cost of out-switching, and lower the cost of in-switching;
- make comparisons with rival's products difficult;
- promote the product's prestige;
- strengthen applications and interoperabilities with other products and services, and hence the centrality of the product.

Looking to the future, a relevant question to consider is this: is the demand for media entertainment getting more elastic (i.e., more price-sensitive)? This question has two answers. Demand for "commodity" entertainment and information, such as news, is getting more elastic, to the point of great resistance to pay anything at all. On the other hand, for unique entertainment products and services demand is not becoming more elastic, or at least not by much. And for essential services, such as broadband and mobile connectivities, price elasticities are declining as customers get more independent on them. In a competitive market for such services, prices would not rise up to users' WTP. They would therefore enjoy a significant consumer surplus. But in a monopolistic or oligopolistic market, the companies would reap a considerable benefit from reducing this consumer surplus. Hence incentives clearly exist for companies in these essential services to reduce price competition.

11.3 Measuring Price Sensitivity

Measuring price sensitivity is part of demand analysis. For details, see ▶ Chap. 9 Demand and Market Research for Media and Information Products.

Methods to determine price elasticity include:

- personal interviews, focus groups, and online surveys;
- test marketing;
- surveys of experts and retailers;
- computer simulation;
- statistical and econometric analysis of time trends or cross-product sales data;
- historical analogy to other products;
- psycho-physiological tests;
- automated observations such as metering and computer-cookies;
- point-of-sales monitoring;
- lab experiments.

The research methods are either uncontrolled or controlled. In uncontrolled studies the researchers are only observers. In controlled studies, the researchers are able to change variables and observe their effect.

11.3.1 Econometric Estimation of Price Elasticities and Hedonic Prices

With enough data one can use statistical methods to estimate variables that explain prices. This is known as econometrics. It is discussed in ▶ Chap. 9 Demand and Market Research for Media and Information Products. Econometrics generally relies on a number of techniques of regression analysis, which is basically the determination of a line that best fits the direction of a scatter of data points, with a certain statistical significance, and in multiple dimensions. Such an analysis shows, for example, the contribution of price to sales, and can isolate and separate the impact of other factors. But it must be noted that since it draws on past data, it makes the implicit assumption that future consumers will keep behaving today and tomorrow as they did yesterday or follow the same trend as before.

There are two main ways of applying econometrics to pricing analysis. In the first, price is the explained variable (also known as the left-hand variable.) The task is to determine the factors that seem to explain a price, such as the season, the number of competitors, the age of the product design, and so on. The second type of estimation has price as the explanatory variable (or right-hand variable), which affects a left-hand variable such as sales or demand. Variations in price affect demand, and hence enable us to estimate demand elasticities.

Sometimes price is both the explained and the explanatory variable. For example, price is explained by demand conditions, but it also determines that demand. This is a case of simultaneous equations, and it calls for more complex forms of econometric estimation.

The following equation describes the variable "sales" as a value dependent of three factors: price, advertising, and a set of "other variables."

$$\text{Sales} = b_0 \left(\text{price}\right)_{b_1} \left(\text{advertising}\right)_{b_2} \left(\text{other variables}\right)_{b_i}$$

If we take the natural logarithm this equation becomes:

$$ln\,\text{sales} = ln\,b_0 + b_1\,ln\,\text{price} + b_2\,ln\,\text{advertising} + b_i\,ln\,\text{other} + e$$

This can be estimated as a simple linear regression. The coefficients of these logarithmic models are the elasticities (b_1 is the elasticity of sales with respect to price, b_2 is the elasticity of sales with respect to advertising expenditures, etc.).

As mentioned, in most examples, price is a variable explaining sales. But another approach has prices as the explained variable. This approach is known as that of hedonic prices, in which several factors explain the value (as expressed in the price) of a product. The hedonic approach assumes that a price P a consumer is willing to pay is based on the sum of value of several characteristics β, at a quantity x.

This can be written as $P = \beta_0 + \sum_{k=1}^{K} \beta_k x_k$

For example, factors in a price of a laptop computer would be its weight, processing speed, and battery life. These are the factors k of the equation, and each has a certain weight β that indicates how much the factor affects the price. When we plug in the actual values for that factor (i.e. x), such as 2 pounds of weight, 3.6 GHz of processing speed, and six hours of battery, we could estimate the likely price. The impacts of the characteristics are assumed to be additive.[73]

Hedonic pricing is used in the appraisal of residential homes. Pricing is dependent on the characteristics of the house, such as size and condition, and the characteristics of the neighborhood, such as pollution and school access, proximity to public transit, and the tax rate.[74] Depending on the scores of a house on each of these dimensions, the appraised value goes up or down by an estimated amount.

For an example of the hedonic approach, consider the price of newspapers. How do consumers value different attributes of newspapers? To answer this, an econometric study explored how various characteristics affect the prices of British papers.[75] The study examined several quantitative factors, including: page size (tabloid versus full size), the number of pages, and the ratio of advertising to total newspaper size (AD/ED), the color supplement, the existence of a Sunday edition, the number of regional editions, and the overall circulation. It adjusted for a variety of factors, including the social class of readers (ABC1) in the area, the national region (e.g. Scotland), and so on.[76] ◘ Table 11.4 shows the study's findings for significant variables impacting a newspaper's price.

Price is related to several factors: the quantity of news offered relative to advertising (the more advertising relative to news, the lower the price), the number and size of pages, the Sunday edition, and the color supplement. The study found that national papers (London HQ) command a price premium over provincial papers. Papers in Ireland are more expensive. The social class of the paper's local readership played a small role in price.

Another example of hedonic analysis deals with mobile phones. What is the relation of different features on the price of mobile phones? A study considered several phone features, including age of model, weight, size, volume, battery duration, number of ringtones, MP3, multimedia messaging service (MMS), and Bluetooth capabilities. ◘ Table 11.5 shows the relationship of these characteristics with the mobile phone's price.

◘ **Table 11.4** Hedonic prices for British newspapers

Characteristic	Effect on price
Ratio of advertising/editorial pages	−0.074
Page size	0.098
Color supplement	3.037
Sunday edition	5.147
London HQ	2.254
Ireland HQ	16.444
Social class of readership	0.034
R^2	0.797
F	15.383
n	34

Thompson, R.S. "Product Differentiation in the Newspaper Industry: A Hedonic Price Approach." *Applied Economics* 20, no. 3 (1988): 367–376

◘ **Table 11.5** Features' relation to cellphone price

Feature	Price impact (in €)
Volume (in ccm)	−0.59
Model age (in months)	−7.76
Battery duration/weight	147.65
Ringtones	1.87
Bluetooth	193.24
MP3	205.38
MMS	115.71

Dewenter, Ralf et al. "Hedonic Prices in the German Market for Mobile Phones." *Telecommunications Policy* 31, no. 1 (February 2007): 4-13

This table illustrates the change in price that are associated with a change in one of the characteristics. A decrease in volume of the phone by 1 cubic centimeter is associated with increases in the price by €0.59. If the phone's manufacturer decreased the device size they could expect an increase in its price to roughly correspond to that number. Older phone models were cheaper. A phone's battery life, ringtone variety, and additional features were also all found to greatly affect the price that could be charged by the manufacturers. Of all the features evaluated, the ability to store MP3 files was found to relate the most to the price, at least at the time of the study, when this was a fairly novel and differentiating feature.

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73 The hedonic model can also be written as an exponential equation, with the beta co-efficients as elasticities. Brachinger, Hans Wolfgang. "Statistical Theory of Hedonic Price Indices." *DQE Working Papers*. August 2002. Last accessed June 17, 2017. ► http://www.unifr.ch/dqe/papers/files/wp0001.pdf.

74 Investopedia. "Hedonic Pricing." Last accessed June 17, 2017. ► http://www.investopedia.com/terms/h/hedonicpricing.asp.

75 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

76 Thompson, R.S. "Product Differentiation in the Newspaper Industry: A Hedonic Price Approach." *Applied Economics* 20, no. 3 (1988): 367–376.

11.3.2 Conjoint Analysis

Another tool to identify a consumer's valuation of product characteristics is through conjoint, or tradeoff, analysis. Here, one weighs the various factors that contribute to customer value against each other. This is popular for measuring price sensitivity, both overall and for different customer segments, as well as consumer sensitivity to product attributes. It is discussed further in ▶ Chap. 9 Demand and Market Research for Media and Information Products and elsewhere in this book.

The methodology of conjoint analysis is to disaggregate a product's value for the contributions to value of each attribute. The fundamental principle holds that the value of a product is equal to the sum of the utilities which the consumers derive from all the attributes of the product. This enables the pricing of a product and its various add-on features.

Conjoint analysis works best for products that are considered by consumers on the basis of specific attributes, in contrast to products chosen according to their image, such as beer or cigarettes.[77] In the questionnaire stage, participants are asked to respond to different combinations of product attributes and the likelihood that they would purchase it, on a 100-point scale. The next step is the use of the statistical methodology of conjoint analysis to examine the respondent choices and calculate the utility for each level of each attribute. The algorithm for this statistical analysis is complex in terms of computations but software packages are available.

This methodology can also be used to identify customer segments with different price sensitivities and attribute preferences, and helps identify the combination of prices and attributes to target them. A particular group will be tested for different combinations of attributes at different price levels to gauge what the impact of different prices would be; for example the effect of a price adjustment of 10% up or down for that attribute, and then pricing the attribute accordingly.

11.4 Strategies to Keep Prices Above Cost

11.4.1 A Company's Goal of Reducing Consumer Surplus

Many viewers would be willing to pay for a TV program they currently get free. But they don't have to. The difference between WTP and actual price is the consumer surplus.

▶ Figure 11.3 shows schematically the total amount of value (in terms of aggregate WTP) which viewers get. Users are ranked on the horizontal axis according to their WTP, which is depicted on the vertical to the demand curve. With free TV, price is $P = 0$ and the value to consumers is the entire triangle under the demand curve. If instead the TV is not free but by pay subscription only, then a price of P_{pay-TV} is charged. The number of users is then only Q_{pay-TV}. Overall value to the consumers is the trapezoid to the left of Q_{pay-TV}. They must pay the amount shown by Area A, the product
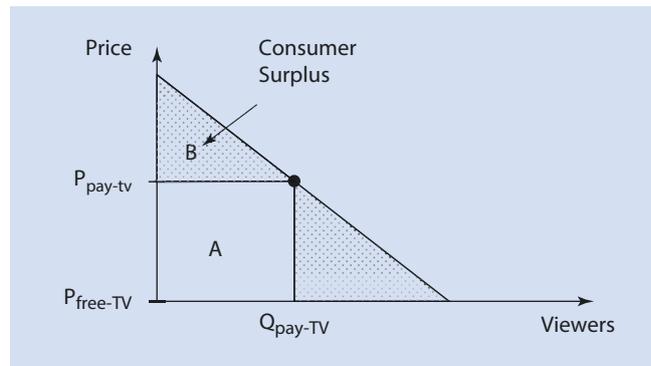
Fig. 11.3 Consumer surplus

of price and quantity. Area B is the consumer surplus—what they would have been willing to pay but did not have to.

In information products, the consumer surplus is often quite high, especially where competition exists, where exclusion is impossible, and when payment collection is difficult. Then the service might even be free in terms of direct payment. In such a situation, the providers of the service, such as TV broadcasters, will seek advertisers. But there are strong reasons for a media company to prefer direct sales to audiences rather than indirect sales to advertisers. The value of a viewer to a TV broadcaster is about 10 cents an hour in terms of advertising revenues, but the value of the TV program to the viewer could be about 50 cents an hour.[78]

In television, pricing is enabled through technology options. If there is an ability to grant selective access through encryption, a price can be charged. That price might be P_{pay-tv}. At that price, the consumer surplus is much smaller.

11.4.2 Strategies to Maintain P > MC

The fundamental struggle in most pricing of information products is to maintain prices above the low MC. This is perhaps the most critical task of media managers when it comes to pricing. There are several basic options and they are discussed in the following.

11.4.2.1 Integrate Information with Hardware

When information is bundled with a unique hardware device, one can charge for it because it would not be easily available to users who do not buy or subscribe to the device. By creating a mechanism for exclusion and access, it becomes possible to charge a price above MC. When the devices are registered to specific individuals it also becomes possible to price-discriminate among them.

11.4.2.2 Create a "Lock-In" of Customers

Making it difficult for customers to switch to another provider enables a provider to charge a higher price. A customer lock-in can be created by contractual commitments, loyalty

77 POPULUS. Last accessed July 28, 2011. ▶ http://www.populus.com/files/Conjoint%20 Introduction_1.pdf.

78 Avrahami, Ram. "Cost of Time and Attention in Mass Communication Systems." *ProQuest Dissertations & Theses Global.* 2008. Last accessed June 17, 2017. ▶ http://ezproxy. cul.columbia.edu/login?url=http://search.proquest.com/docview/304650587/accoun tid=10226.

programs, or brand-specific training. Another way to create a lock-in is to get customers to invest in the supplier's technology by their participation in customization. Customers thereby raise their own switching costs if they want to get out. In order for a seller to successfully lock-in customers, the customers will require concessions to agree to be locked in, and the seller must invest in lock-in through upfront discounts.

How high could the price be above MC and still discourage switching? If customers' switching cost (including the hassle of change itself) is lower than the present value of future higher prices charged to them, then they would switch. This means that the future extra profits that a seller can earn from a customer equals the total switching costs. As Hal Varian points out, one can therefore value a company's entire customer base by calculating its customers' switching cost rather than calculating the revenue, cost, and revenue streams.[79]

11.4.2.3 Bundling

Often a product is only offered as a part of a bundle of several products and services, and the price of the bundle is usually lower than the sum of the individual prices.[80] In 1963, George Stigler (later a Nobel Prize winner in Economics) observed that selling products in bundles without the option of purchasing the components separately was actually a way to allow the seller to price discriminate and to reduce consumer surplus.

For example, cable TV companies will not let customers subscribe to the channels of their choice only, but rather to a bundle ("tier") of channels. Why would selling only a bundle make business sense? The reason is that different customers value different channels differently. Consumers may hold a low value for one good but high value for the other. By pricing the products separately, the company would either underprice some of them for some customers and overprice them for others. But by bundling them into a single price, it would capture most of the WTP.

Example: The Pricing of Pay TV Channels
Assume two viewers 1, 2; and three pay-TV channels *X, Y, Z*. Assume a set of WTP by the two viewers.

Channel	X	Y	Z
WTP_1	11	6	2
WTP_2	2	6	11

Pricing Options
A: Charge same median price ($6) for each channel.
B: Charge the maximum WTP for each channel ($11, 6, 11).
C: Bundle and charge total WTP ($19) for a bundle of all channels.

The company seeks the strategy that maximizes its revenues, while leaving consumer surplus—the money left on the table—as low as possible.

Strategy A (unbundled, same price of $6)
- Viewer 1 selects channels *X, Y*:
  - unbundled revenues: $X + Y = 6+6=12$;
  - consumer surplus: $(11 – 6) + (6 – 6) = 5$.
- Similarly for Viewer 2.
- Therefore, total revenues: 24; and consumer surplus: 10.

Strategy B (unbundled, max WTP for each channel, $11, 6, 11):
- Viewer 1 selects channels *X, Y*:
  - bundled revenues: $X + Y = 17$
  - consumer surplus: $(11 – 11) + (6 – 6) = 0$.
- Similarly, viewer 2.
- Therefore, total revenues: 34; consumer surplus: 0.

Strategy C (bundled, all channels); total WTP $19:
- Viewer 1 selects bundle *X, Y, Z*;
- bundled Revenues: *X, Y, Z* = 19;
- Consumer Surplus: 0.
- Similarly, for Viewer 2.
- Therefore, total revenues: 38; consumer surplus: 0.

C—the bundling strategy—is the optimal strategy, with total revenues highest (at 38) and a consumer surplus of 0.

(Note that such a strategy is possible only if the consumer has no alternative provider who would price differently, such as offering pricing scheme A or B.)

The internet has disparate effects on bundling. It makes disaggregation more feasible by providing consumers with the ability to break out of bundles and pick and choose. But it also creates more possibilities for bundling by providing a more convenient technology to do so.

Case Discussion

Bundling

An encyclopedia is a bundle because one cannot buy a single volume or a single entry. In addition, *EB* also sold a variety of higher-level product bundles. One such bundle, offered in 2007 as a competitive response, combined the three full encyclopedias (the 32-volume *EB*, the *Student Encyclopedia*, and the *Elementary Encyclopedia*). The edition included both collegiate and student editions of the *Merriam-Webster Dictionary and Thesaurus*, as well as collegiate, student, and Britannica editions of the *EB* Atlas and timelines. In total, the package included upward of 100,000 articles, 22,000 photos, 2523 Atlas maps, 555,000 dictionary and thesaurus entries, and 166,000 links to high-quality sources. Additional special features included Explore and Virtual Note Cards (which let the customers participate interactively on tours, while giving them the ability to take notes on them), Brainstormer (which allows the customer to look at a topic more comprehensively), and Homework Help Desk (which helps students with assignments).

The price of the bundle was significantly below the sum of the separate elements, with the discount estimated at $500. But *EB*'s bundling pricing strategy did not turn things around. The reason is that to be a successful bundler one must be able to offer at least some elements with a considerable inelasticity of demand, that is where customers are fairly insensitive to price. Otherwise they will not care enough to buy a bundle that includes such an element. In the case of *EB*, no such element seemed to exist anymore.

79   Shapiro, Carl and Hal Varian. *Information Rules: A Strategic Guide to the Network Economy.* Cambridge, MA: Harvard Business Press, 1998.

80   Noble, Peter M., and Thomas S. Gruca. "Industrial Pricing: Theory and Managerial Practice." *Marketing Science* 18, no. 3 (1999): 435-454.

11.4.2.4 Establish Market Power Through Monopoly

In a monopoly market, one firm dominates the industry. This firm has a strong influence over the market price. To gain market share, the firm might engage in mergers. It might try to drive out rivals through superior price, product, and marketing. It might have a legal monopoly through a unique patent or an exclusive license.

The constraints on a monopolist's pricing power are market demand conditions and legal rules. Even a monopolist cannot make people shell out more than their WTP, which is defined by the utility of the product to them. How would such a monopolist set prices? If there are legal constraints against price discrimination or arbitrage (reselling) among customers is possible, then the monopolist would charge the same high price to each customer.

But, if the price is too high, there will be fewer buyers. If the price is too low, the firm leaves money on the table. The monopolist maximizes profit when MR = MC. The point defines a quantity sold and a price. In contrast, the pricing for a competitive firm would be P = MC. The difference in the price creates a "supernormal profit," also known as the monopoly rent. The situation where a monopolist can engage in price discrimination is discussed further below.

11.4.2.5 Participate in an Oligopoly

In an oligopoly, an industry has only a few producers. They each recognize that their price depends on their own actions and those of their rivals. They are not merely price-takers of a market-determined price. In an oligopoly, companies tend to be rivals but not price competitors. Non-price competition focuses on other strategies for increasing market share, such as advertising, innovation, and marketing. Each firm must consider the likely reactions of other firms when making its own pricing decisions. This can quite possibly lead to co-operation. The price interdependence between the major firms leads them to act jointly either by agreement or do so tacitly. For the reasons we discussed earlier, the economic characteristics of media and communications often lead to oligopoly.

In contrast to the situations of either competition or monopoly, where an analysis of optimal prices is relatively straightforward, the intermediate situation of oligopoly pricing is much harder to analyze.

In one scenario, the oligopoly firms collaborate to charge the monopoly price. They then split the joint profit.[81] The main problem is that such a price collusion is illegal. A second problem is that it is hard to keep a partner in the collusion from cheating by charging a slightly lower price in order to raise sales.

Two firm's competitive responses to one another's price changes crucially affect the absolute sizes of the two price elasticities. This relationship is called the cross-price elasticity:

$$\text{Cross-elasticity}(X,Y)$$
$$= (\text{Change in quantity of } X / \text{Change in price of } Y)$$
$$\times (\text{Price of } Y / \text{Quantity of } X).$$

Where cross-elasticity is high, the two firms are competitors because one company's price affects the sales of the other. Their products are substitutes. In contrast, where there is no impact the two firms seem to serve different markets. The US Department of Justice has been using cross-elasticity as a way to define markets for anti-trust purposes. Products are in the same market–that is, they are substitutes—when a price change for one product (or firm) impacts the sales of the other. When a price increase for CD players significantly raises sales for MP3 players, they are substitutes and in the same market. If Blu-ray DVD player sales are unaffected, they are in different markets. And if the sales of another product actually rise, such as in the case of CD discs themselves, they are complementary goods.

11.4.2.6 Game Theory

Game theory is often applied to the analysis of oligopoly pricing. Game theory models look at oligopolistic behavior as strategic moves and counter-moves. A firm in an oligopoly uses the analysis in order to take into account the reasoning of other firms and analyze their strategic behavior. From a management perspective, game theory forces a firm to analyze its own strategic alternatives and to assess how each competitor will respond. We discuss game theory in ▶ Chaps. 8 Entertainment Law and Regulation and 14 Strategy Planning in Media and Information Firms.

Co-operative games are games in which the participants co-ordinate their pricing strategies. In non-co-operative games, they do not co-ordinate formally, but each firm takes the other firm's likely response into account. A "Nash equilibrium" occurs when each player sets her best strategy in anticipation of the expected strategy of her competitor, and neither can gain by a change, when they factor in the other's response to their change.

However, price collusion, whether co-operative or tacit, is difficult if there are many firms in the industry or if the product is not standardized. It is easier if there are only a few firms. But even then, it pays for each firm to "cheat" on its partner in collusion, lower its price, quietly granting discounts to gain market share, and increase profits. To enforce collusion, the other companies, especially through a "price leader" firm, will threaten retaliatory pricing to hurt the maverick. Entry deterrence also needs to be maintained in order to keep out potential new rivals.

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81 The French economist Antoine Augustin Cournot, an early contributor to oligopoly theory (nineteenth century), analyzed that situation.

Case Discussion

Game Theory

When setting initial prices, *EB* at first charged customers a high price for the CD-ROM edition, $1,200 (the same price as a printed set of books), and then a more realistic $200), while Microsoft Encarta charged $120, dropping to $100. After facing losses, *EB* realized that it could not price its products higher than its competitors. It underpriced Encarta at $90, then at $50 and $40 when Encarta lowered its prices to $45 and $37.50. ▣ Table 11.6 shows a comparison of prices of *EB* and Encarta (sales data is hypothetical).

The Nash equilibrium was reached in 1995 when Encarta was priced at $110 and *EB* cost $200. The subsequent price war hurt both companies. Even without co-operation they could have predicted the competitive response to their own price reduction, and refrained from making it (assuming no additional major rivals in the market).

▣ **Table 11.6**   The pricing of *Encyclopaedia Britannica* and Encarta CD-ROMs

Year	Encyclopaedia Britannica			Encarta		
	Price	Sales	Revenues	Price	Sales	Revenues
1994	$1200	2,000	$2,400,000	$120	150,000	$18,000,000
1995	$200	100,000	$20,000,000	$110	200,000	$22,000,000
2000	$90	180,000	$16,200,000	$100	120,000	$12,000,000
2007	$50	230,000	$11,500,000	$45	170,000	$7,650,000
2008	$40	150,000	$6,000,000	$37.5	150,000	$5,625,000

11

11.4.2.7 Leader Pricing

Price leadership is the strategy of a dominant firm in the market to initiate a price change, expecting other firms to follow. It is often an element in oligopolies. Symmetrically, the other firms are price followers.

"Signaling" is often used in oligopoly markets because it allows members of an oligopoly to co-ordinate prices without explicit agreements. Co-operation is possible when the players interact repeatedly and they can continuously observe other participants' behaviors. The internet shortens the intervals between interactions and makes signaling as well as checking on compliance with a fixed price easier.[82] (This means that the internet does not always increase competition and lower prices; it also makes the enforcement of tacit collusion easier.)

Universal Music Group was the largest distributor of global music in terms of sales. In 2003, it announced that it was lowering the suggested retail price on CDs by $6, from $19 to $13. This squeezed the profit margins of retailers. The Universal move would make sense only if rivals also followed, because otherwise retailers would lower their sales effort for Universal's music and concentrate on its rivals instead, since the profit margins of servicing their products were higher. But Universal's move was not followed by its three main rivals. Normally, the other companies set their price near each other. But the other firms (Warner Music, Sony BMG, and EMI) did not follow. In consequence,

Universal soon raised its prices. This caused a 2005 investigation by the New York State Attorney General Eliot Spitzer to determine whether the companies colluded in the pricing of music.[83]

Another example of price leadership can be seen with DVD players. In 2002, Wal-Mart and Target initiated a major price cut to establish price leadership for DVD players.[84] In 1997, a DVD player cost approximately $600–1000. After Wal-Mart and Target's price cuts, prices spiraled downwards. Specialty retailers such as Circuit City had to follow, which included making several changes in their operating model in order to remain competitive, such as replacing commissioned sales personnel with hourly rate pay and dropping prices to match competitors.[85]

11.5 Price Discrimination

For information and digital products, being adept in price discrimination is perhaps the most important skill in pricing. As we have seen, a single price may well be too low to cover

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82 Oligopoly Watch. "Signaling and Oligopolies." May 18, 2003. ► http://www.oligopoly-watch.com/2003/05/18.html.

83 Leeds, Jeff. "Pricing of Downloaded Songs Prompts Antitrust Subpoenas." *New York Times*. December 24, 2005. Last accessed June 17, 2017. ► http://www.nytimes.com/2005/12/24/business/pricing-of-downloaded-songs-prompts-antitrust-subpoenas.html.

84 Pogue, David. "State of the Art; DVD Players Under $100: What Price a Bargain?" *New York Times*. February 7, 2002. Last accessed June 17, 2017. ► http://www.nytimes.com/2002/02/07/technology/state-of-the-art-dvd-players-under-100-what-price-a-bargain.html.

85 Heller, Laura. "High Tech Goes Low Price: Mass Contributes To Commoditization- Annual Industry Report, Top 150: CE & Entertainment." July 7, 2003. Last accessed July 27, 2011. ► http://findarticles.com/p/articles/mi_m0FNP/is_13_42/ai_105160292/.

overall costs. It will lead to an undercharging of some users below their WTP, while overcharging others and thus losing them as customers. Since different consumers value a product differently, a firm will try to charge them different prices accordingly. Price-discrimination means to consider pricing via assessing value to different users and charging each of them based on that value.

There are multiple price discount structures, such as:
- trade discounts to favored retailers;
- quantity discounts;
- promotional allowances;
- locational discounts;
- loyalty programs[86];
- price reductions to seniors or students.

Generally, to charge different prices to different customers requires their segmentation from each other. Preventing resale—arbitrage—is essential for price discrimination. Discounts can be given to categories of potential buyers whose ability to pay is generally lower, such as seniors.[87] Airlines are masterful in price differentiation because they have an effective enforcement mechanism for segmentation. Tickets are tied to an individual, partly for security reasons but also, conveniently, for purpose of price differentiation. The potential resale of discounted tickets is rarely possible.

Economists speak of three types of such differentiation. First degree price discrimination is selling the same product and same quantity to each user at different prices. Second degree price discrimination means offering different prices to users based on the quantity they purchase. Third degree discrimination is to change different prices to different categories of consumers, such as students.

While the term price discrimination has an odious sound, it also has positive aspects. For example, it may provide the product to people who would otherwise not be able to afford it at the higher uniform price. It also enables production which otherwise would not occur. Suppose a symphony orchestra where the symphony is in deficit at the uniform price of $30, and even more so when the price is raised or lowered. Instead, it decides to charge students a lower price and engage in price-discrimination. Similarly, many of the audience who bought $30 tickets would be willing to pay more. This is their consumer surplus. If part of such consumer surplus could be collected through charging them a higher price, the show could go on.[88]

Figure 11.4 shows differentiated WTP. It is a graphical representation of three customers and three prices. If we set a single price (P_{JOE}), it would be too high for Pam but a
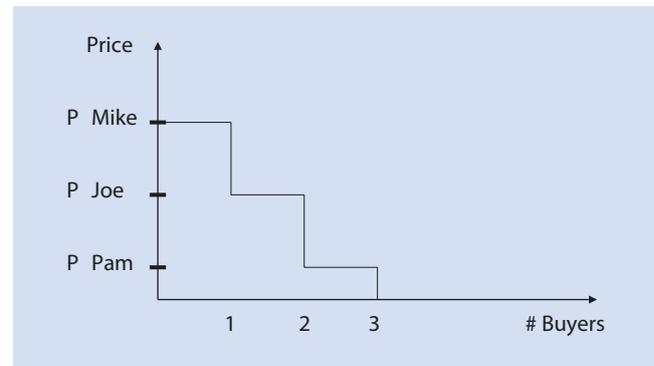

Fig. 11.4 Willingness to pay

bargain for Mike. Differentiated prices would eliminate both discrepancies.

For the seller, there are several negatives to price differentiation. They include the cost of maintaining different prices and of segmenting markets to prevent reselling, with the low-price customers selling the product to high price customers. There is also a likelihood of consumer resentment. In addition, it may well be a violation of consumer protection and competition laws.

Another problem is that if customers get used to a discount they will resist the regular price next time. Some furniture stores, for example, have year-round "sales," because buyers expect a discounted price and will wait for them. Cable TV companies will offer a broadband service at a low introductory price. But when they are later confronting a subscriber with a low offer from a telecom company, they will prolong the introductory price to match the competitor. Price differentiation hence may invite bargaining behavior. When price discounts are given freely, they can transform a regular customer into a difficult customer.[89]

And it is easy to offend loyal customers by taking them for granted while enticing fickle customers.

11.5.1 Optimal Price Discrimination

Given the information sector's fundamental characteristics of high fixed costs and low MC, price discrimination is the key to media profitability.

Assuming that a firm could legally engage in price differentiation, how should it optimally set different prices? If there is a different price elasticity among different consumer groups, it would charge a higher price to the group with the more inelastic demand and a lower price to the group with a more elastic demand. Price elasticity (change in demand in

86 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.
87 DeJong. "How Price Discrimination Will Be Different in the Online World." *University of Virginia Darden School of Business*. Last accessed July 28, 2011. ▶ http://faculty.darden. virginia.edu/gbus885-00/Papers/PDFs/DeJong%20-%20PriceDiscrimination.pdf.
88 Caves, Richard E. *Creative Industries: Contracts Between Art and Commerce*. Cambridge, MA: Harvard University Press, 2000.

89 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Table 11.7   Price elasticity and price

Customers	Price elasticity	Price
Average Joe	−1.0	50
Must Have Mike	−0.1	500
Pennysaver Pam	−10	5

response to price), time elasticity (length of time allowable to make purchase), and time volatility (consumer response to price change over time) are key components of price discrimination techniques.[90]

The basic rule is known as Ramsey Pricing. This states that optimal price discrimination follows the inverse elasticity rule. The price given to a consumer is the price average divided by the price elasticity of demand of that consumer or consumer group:

$$P_i = P_{average} / \eta_i$$

Users with a more inelastic demand would be charged a price higher above MC, and those with a more elastic demand would receive a price closer to MC.

In this example (Table 11.7), we see three consumers and their respective price elasticity of demand. They will each be charged different prices for the same good. Average Joe has a price elasticity of 1.0; suppose he is charged a price of 50. Must Have Mike desperately wants the good and so his demand is inelastic. He would be charged with the highest price of 500 since he really needs the good. Pennysaver Pam is frugal and price sensitive. She would only be charged a price of 5 (50/50) as long as it covers the MC.

11.5.2 Versioning

First-degree price discrimination is difficult to implement because sellers typically do not have information on the preferences of individual users, so they must try to get consumers to self-select themselves by purchasing different quality versions.[91]

An example of this could be found in the sale of books. A book can be published as a hardback or a paperback. Usually the hardback will be published first, and then the paperback will follow. That price difference is much larger than the cost difference.

Another way to let consumers self-select is through offering discounts that require some effort to collect. Price-sensitive customers might be offered a discount coupon that must be sent in.[92] However, only about 2% of all coupons are redeemed. Those, presumably, are among the most price sensitive consumers.[93]

Another example would be movie release sequences. Movies are first released in theaters, and seeing a film on the big screen has the highest perceived value. The cost of seeing a movie in the theater ranges from $10 to $20. With each subsequent release, the price of seeing the movie drops. Discount theaters would price it at $8 per person, pay-per-view would price it at $4, and video rentals would cost $3.

The practical number of versions is often three. Sometimes this is called "Goldilocks pricing," in other words not too hot and not too cold. It utilizes people's aversion to extremes. By having three different versions at a low, medium, and high price, low-end buyers may trade up to a higher priced model. People often avoid the cheapest option or the most expensive option, thus making them inclined to pick the medium-priced option. Adding an expensive version raises the demand for the medium-priced version because it looks like a good deal in comparison with the expensive one. Behavioral economists call this the isolation effect.[94] A choice looks more attractive next to a costly alternative than it does in isolation.

The price difference of versions is only loosely related to the actual difference in the cost of producing them. An example is the provision of stock market information. A subscription for $50 per month might get real-time quotes. For $8.95 per month the user gets stock information with a slight delay. The cost of production and distribution are near identical. Similarly, airlines reduce the attractiveness of a low-price option by placing otherwise unnecessary restrictions on economy class tickets. IBM placed a chip in its cheaper printers to slow them down. Federal Express sometimes plans routes to avoid delivering standard packages before 10 am. Software packages may come in three types: professional edition (higher price), consumer-oriented regular edition (lower price), and student edition (lowest price). In all cases, the companies degrade the quality of the service or product, so that they can charge more for a premium version.[95]

90   Jallat, Frédéric and Fabio Ancarani. "Yield management, dynamic pricing and CRM in telecommunications." *Journal of Services Marketing* 22, no. 6 (2008): 465-478.

91   Shapiro, Carl and Hal R. Varian. *Information Goods*. Boston: Harvard Business School Press, 1999.

92   Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

93   Consumers that are even more price-sensitive will not even utilize the coupons.

94   Tellis, Gerard J. "Beyond the Many Faces of Price: An Integration of Pricing Strategies." *Journal of Marketing* 50, no. 4 (October 1986): 146-160.

95   Varian, Hal. "Versioning Information Goods." *Digital Information and Intellectual Property*. January 23, 1997. Last accessed June 17, 2017. ► http://people.ischool.berkeley.edu/~hal/Papers/version.pdf.

11.5.2.1 Case Discussion

Versioning

EB offered distinctly different versions of its product, each with a very different pricing. Its versions were:

- *Encyclopaedia Britannica Ultimate*. This combined the three full encyclopedias (the 32-volume regular *EB*, the 16-volume *Student Encyclopaedia*, and the 16-volume *Elementary Encyclopaedia*). The edition offers both collegiate and student editions of the *Merriam-Webster Dictionary and Thesaurus*, as well as collegiate, student, and Britannica editions of the *EB Atlas* and timelines. The bundle was available in a print version or a DVD version. The price of the bundles was significantly below the sum of the separate elements. The print version was priced at $2500.
- The *Deluxe Edition* was a package that includes the entire 32-set of

books together with other reference sources such as *Year in Review*, *Merriam-Webster's Collegiate Dictionary*, a thesaurus, a world atlas, and more. The print version cost $1600.
- The regular *Britannica print edition*, 32 leather-bound volumes, which was priced at the premium level of $1,400.
- EB's *Compton's Encyclopedia*, with 26 volumes aimed at high-school students ages 10-17, was priced at $899.
- *The DVD version of the Britannica Ultimate Edition* described above, cost $450.
- *Britannica Student Encyclopaedia* (aimed at ages 8–12), 16 volumes, was priced at $449.
- *Britannica Elementary Encyclopaedia* (ages 5-8), aimed at entry-level

students learning to read and developing life-long study habits: 16 volumes priced at $440.
- The *DVD version of the Deluxe Edition*, described above, cost $350.
- A student-oriented *online learning bundle* was available at $130 a year, which included the main encyclopedia online along with a kids' version of the content.
- Subscription to *full online access* was priced at $75 a year.
- DVDs were sold a low price of $40, given the package's inconvenience.
- Mobile app access cost $15/year.
- A per-student per-year access price for school districts was priced at $0.25. Short summary articles (60,000) were available online and on mobile app for free.

11.5.3 Pricing of Quality

One way in which to differentiate prices is to offer different quality levels. In the online world, websites, portals, e-commerce providers, and streaming services must have some assurance of the quality of the product they provide to the end user. If that quality is low or erratic, user experience suffers and the website's reputation is negatively affected. This leads websites to negotiate with ISPs for higher priced "quality of service" (QoS) guarantees, which is a much stronger commitment than a "best effort" that does not mean much.

QoS typically involves differentiating network traffic based on priority, so that certain data gets through the network first.[96] It also means different speeds i.e., throughput rates. ISPs typically offer internet at different prices dependent on connection speed chosen by customer.

Companies such as banks, stockbrokers, or airlines need to ensure that their websites are reliable, and for that service quality they are willing to pay more. A similar quality issue arises for voice phone service over the internet, or for video conferencing where the packet transmission has to be "real time," in contrast to email or streaming movies, which can lag a little or be "bursty." Companies in need of communications that must be absolutely secure and reliable, such as stock brokerage firms, have therefore traditionally opted out

of the public (i.e. general) networks in favor of private (i.e. segmented and dedicated service), at a premium price. Other companies with huge data transmission requirements have also created or used private networks in order to lower the cost.

11.5.4 Second-Degree Price Discrimination

Second-degree price differentiation means different prices based on the quantity consumed. Customers with larger orders get a lower price as a quantity discount. The better deal is not necessarily based on efficiencies and lower cost. Similarly, repeat customers are given the incentive to return for a benefit that is a kind of discount, for example an airline's frequent flyer program. Large-scale buyers are typically more price sensitive than small ones, because even minor price differences add up to more money.[97] At the same time, servicing a larger account costs less on a unit basis. So, the cost difference justifies a price discount. The quantity price discount also encourages buyers to make larger purchases rather than smaller and more frequent purchases, shifting some of the cost-holding inventory to the buyer.

Conversely, high usage suggests a greater dependency on the product and hence a lower price elasticity. Such a

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96 Hoy, Nate. "QoS ("How can I solve outbound audio problems caused by too much traffic?")" *Vonage Forum*. Last accessed June 5, 2007. ▶ http://vonage.nmhoy.net/qos.html.

97 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

customer could therefore be charged more rather than less. Thus, companies such as IBM or Xerox have tied ancillary products or services to the hardware device, in order to change high-volume users more on a per-unit basic, since they are dependent on the product. This is done by raising the incremental price for usage above actual incremental costs. This is like charging only a little for the razor and a lot for the razor blades. Heavy shavers end up paying more.

One way to accomplish such price discrimination is a two-part pricing. There is one flat fee plus another fee based on usage. The user pays two separate charges for one service or product, one as a flat rate for participation and the other one for actual usage. Phone companies have a fixed basic charge plus added fees based on how many minutes (or buckets of minutes) are used, the changes having little to do with added cost.

An example of how to determine the optimal usage-based pricing is provided for Disney's theme parks. Disney had to figure out how much to charge as an entrance fee to the park (the basic charge) and how much to charge for the individual attractions inside the park (usage fees.) The first option was to charge a flat entry fee at the gate with no subsequent per-ride charge. The second option was to charge per ride with no entrance fee. The third option was to charge an entry fee plus per-ride charges. How to calculate the best pricing system?

The profit per user would be equal to the rides consumed multiplied by the price per ride, plus the entry fee, minus the cost of a visitor.

$$\pi = XP + E - C(X)$$

X = rides consumed / time

P = price per ride

E = entry fee

C = cost as a function of X

To optimize its profit Disney should charge the highest admission fee E so that the patron is just willing to enter the park,[98] and then set the price per ride equal to its MC (P = MC). The optimizing rule is to charge the monopolist price for entry and then charge the competitive price P for a ride. Even better for Disney would be a two-part pricing with two kinds of discriminations: the admission charge would have several types of discounts, based on age, group membership, prepayment from other countries, season, time of day, congestion, even weather. The price per ride would also differentiate, though according to congestion, with a possible priority lane pricing.

11.5.5 Third-Degree Price Discrimination: Differentiation by User Category

In a third-degree price discrimination scenario, different customer categories are charged different prices based on observed characteristics of their demand elasticity. Third-degree price discrimination can be applied to different geographic markets, product use markets, and customer types. For example, a student or a senior consumer will have a different WTP than a middle-aged consumer because of budget constraints and lower time constraints. Prices increase for consumer categories with a more inelastic demand and decrease for consumers with a more elastic demand. Consumer categories with a more elastic demand are better off with price discrimination.

There are several ways to segment a market. One is location. Grocery chains rank their locations by the intensity of competition. They charge more in rich areas (higher WTP) but often also in poor areas (lower competition). Selective pricing is frequent in international markets; Deutsche Grammophon, for example, sold its records in Europe at a price 50% higher than in America, where competition was higher. Japanese automakers did the same with their cars. To find profitable geographic market segments, companies must look at the relative competition in those sub-markets. It is often better to be a big fish in a small pond than a small fish in a big and crowded pond.

An example of segmentation based on customer class is the price for Microsoft's Windows suite. For Version 10 it was $199 for the professional edition and $119 for the home edition, while it was free for students.[99] Segmentation by time is practiced by theaters and airlines. Theaters have midday matinees at lower ticket prices to attract retirees, students, and part-time workers. Restaurants often increase prices for a dinner service over those for lunch because price elasticities are higher for lunch, which tends to be a repeat business. Similarly, a firm will introduce newer models partly as a way to price-discount the previous models, even if they are virtually identical. In semiconductors, Intel releases a new microprocessor at a premium price, and immediately discounts the predecessor chip which is still highly useful.[100] In the advertising market, television and radio stations charge a "preemptible" rate at a low price to make sure they are not left with a perishable inventory of advertising space. Other firms seeking advertising space can get the remaining slots later, with the prices being based on supply and demand.

Segmentation by time can be based on consumer demand. Demand for airline tickets is highest on Mondays and

98   Oi, Walter Y. "A Disney Dilemma: Two-Part Tariffs for a Mickey Mouse Monopoly." *Quarterly Journal of Economics* 85, no. 1 (February 1971): 77–96.

99   OnTheHub. "Windows 10 Education for Students." Last accessed June 17, 2017. ► http://onthehub.com/download/free-software/windows-10-education-for-students/.

100 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making,* 3rd ed. London: Prentice Hall, 2002.

Fridays. Other industries that cannot save inventory, such as hotels, TV station advertising minutes, and so on, engage in peak-load pricing in order to shift usage to less busy periods. This smoothes out peaks and valleys of consumption and increases the efficiency of utilization. Segmentation by time is often part of a release sequence. It can separate high WTP consumers from low WTP consumers. If segmented by time, the product would first be sold only to Must-Have Mike, later at a lower price to Average Joe, and lastly at the lowest price to Pennysaver Pam.

In price discrimination, the key question concerns the price elasticity of different consumers or consumer categories. However, few customers would volunteer to give up information on their willingness to pay if it will be used to raise the prices they are charged.

Competitors' pricing reduces the ability to price-discriminate but also steps it up as a way to meet competition. Retailers increasingly engage in flexible pricing, using pricing software that analyzes customers and other variables and assigns individualized prices. They monitor pricing schemes based on customer loyalty, and then analyze patterns of purchases and effects of pricing strategies.[101] As a consequence, product prices may fluctuate on a daily basis. For example, at the building products company Boise Cascade over 12,000 items change price daily.

11.5.5.1 Case Discussion

> **Segmenting**
>
> *EB* uses segmenting according to age, through targeted products. *Britannica Discovery Library* is aimed at three- to six-year-olds and sells for $100; *Encyclopaedia Britannica Elementary* targets entry-level students aged five to eight with the goal of instilling study habits, and is priced at $440; *Britannica Student Encyclopaedia* is aimed at children aged seven to twelve, at $449; and its *Compton's Encyclopedia* targeted ten- to seventeen-year-olds, at $899.
>
> Let us suppose that the managers of *EB* estimate that a $5 price cut will increase
>
> sales among the eight- to ten-year-olds segment (i.e. for parents of children in that age segment) by 1500 subscriptions. We can calculate the elasticity:
>
> $\%\Delta P = -5/30 = -.16$
> $\%\Delta Q = 1500/7000 = .21$
>
> Elasticity $= .21/-.16 = -1.3$
> This shows an elastic demand.
> Using the CM formula (see the earlier discussion in this chapter) we find the increase in users required to offset a $5 price cut:
>
> $-(\Delta P)/(CM + \Delta P)$
> $-(-5)/(21 + (-5)) = .25$
>
> A $5 price cut will therefore create 21% more users, but requires 25% more users in order to break-even. Such a $5 price cut for the eight- to ten-year-olds segment is therefore not profitable. If anything, the numbers indicate that a price *increase* would raise profits, even with a smaller number of buyers.

11.6 Strategic Pricing

Strategic pricing is the use of a product's price as part of a broader and long-term company strategy to position itself in the market. There are several major types of strategic pricing:

- skim/(premium)pricing;
- penetration (value) pricing;
- experience pricing;
- complementary product pricing;
- leader pricing;
- life cycle pricing.

11.6.1 Skim ("Premium") Pricing

Skim pricing refers to using high prices in order to "skim the cream." It works when the revenue from high end clients exceeds the revenue from the middle or lower end buyers. It means that the demand is inelastic. Skim pricing may be used for luxury items in order to build a premium reputation brand. Premium products do not compete on price. They aim to create a high-quality image for the firm. Examples are Godiva chocolates or Rolex watches. This must be distinguished from a monopolist's high price. Skim pricing is a policy by a competitive company, as a way to differentiate itself.

A second scenario is to charge a premium price for the initial period after the product's introduction, so customers who want the new product first pay more. This is known as sequential skimming, starting with a high price and gradually lowering it. We discussed it earlier as a time-sequencing strategy to price discriminate. It is also known as slide-down pricing. Some users have a high need to get the product early and are willing to pay more. Savvy buyers will wait for the price to drop. The company can

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101 Kay, Emily. "Flexed Pricing." *Datamation*. February 1, 1998. Last accessed June 26, 2012.
▶ http://www.datamation.com/entdev/article.php/601761/Flexed-Pricing.htm.

time-sequence its marketing focus too, concentrating on the different buyer groups with their different price elasticities one at a time. The sequential approach also enables it to ramp up production gradually and move down the learning curve and scale to lower cost. It is often used for electronic devices, where, following Moore's Law, cost (and price) decline at a rapid rate.

For skim pricing to work, several conditions are required. Customers are not highly price sensitive, economies of scale are moderate, and competition is low.[102]

11.6.1.1 Case Discussion

> **Premium Pricing**
>
> *EB* practices premium (skim) pricing with its print edition. It provides a high-quality product priced substantially above its rivals. *EB* sold its print edition for $1400 in 2008,[103] a price higher even than it had been in 2000, despite the competition from CD-ROMs and Wikipedia. Parents are eager to provide a quality education to their children. *EB* grasped this and convinced parents that their product was an investment in their children's future opportunities. Similarly, *EB* also persuaded relatives and others that its encyclopedia was a worthy and classy present for special occasions. *EB*'s value proposition relied on two key factors: content and look. The content was of high quality. Its authors were authoritative. The look of the product was distinguished. Whether actually used or not, it visibly proclaimed "only best for my child."[104]
>
> In 1994, *EB*'s competitor, Microsoft, priced its Encarta CD-ROM at $120. *EB*, in contrast, introduced its CD-ROM to the market at the price of $1200, the same as its print edition. But this skim pricing proved far too high. In 1995, the price of *EB*'s CD-ROM was lowered to $200, in 2000 to $90, in 2007 to $50, and in 2008 to $40.
>
> Thus the premium pricing strategy did not pan out for *EB* with its CD-ROM edition because there it faced competition, an elastic consumer base that switched to cheaper products, and a product with substantial economies of scale—not meeting any of the three conditions for a potentially successful skim pricing strategy.
>
> For the print version, *EB* similarly engaged in skim pricing. It charged $1200, while its competitors charged a much lower $300–500. *EB*'s price did not drop; in fact it was raised to $1400. *EB*'s perspective was that if it priced the encyclopedia lower, it would cheapen the brand. Here, the skim pricing strategy worked. There was a market with price insensitivity for a product that proclaimed "only the best," whether for a child or for a college library, and whose quality was not matched by a print competitor. The economies of scale in print runs are not particularly high. Thus, *EB* could maintain a premium price, but the sub-market was not large enough to sustain the organization's large overhead.

11.6.2 Penetration ("Value") Pricing

A second major price strategy is penetration pricing, which means setting a low price in order to gain market or to discourage new competitive entry by others. An example was satellite radio, where each of the two US competitors, XM and Sirius, tried to drive its rival out of business by charging a low price. But neither of them succeeded: their costs escalated, as did their losses. Both companies faced bankruptcy. Finally, they merged and then raised the price.

Penetration pricing is favored in the following circumstances, which are the mirror images of the conditions for skim pricing. First, customers are price sensitive. Second, economies of scale are large. A low price can build volume and reduce cost through scale and accumulated experience (the "learning curve"). Third, there are positive externalities (network effects) that raise the value of the service as its user base grows. There is a snowball effect as consumers' benefit increases while costs decline.[105]

There are downsides to penetration pricing. It may be expensive in terms of foregone revenues. The firm must therefore balance its desire for high short-run profit based on a relatively high price with long-term profits based on market share.[106] A second problem may be image. Prices tend to signal a quality level. Therefore, low-priced products can often be viewed as low quality, which deters potential customers. Third, the success of penetration price strategy depends on rivals not lowering their own prices. For example, penetration pricing will not be followed by an incumbent where the new rival is only a minor threat.

A step beyond penetration pricing is loss leader pricing. A company prices a product very low in order to attract buyers for its other products or services. The seller uses this method to build customer traffic. Free software and apps (freeware) to consumers is used in order to increase sales by commercial providers of services to the same consumers.[107]

Another reason is to get consumers to sample a product and then hopefully engage and keep buying the same product at a higher price level. For example, a free three-month subscription is offered to get the user to sample a service. It often requires an action to cancel. Just by inertia many subscriptions are maintained.

102 Spann, Martin, March Fischer, and Gerard J. Tellis. "Skimming or Penetration? Strategic Dynamic Pricing for New Products." *Marketing* Science 34, no. 2 (2015): 235-249.

103 Melcher, Richard. "Dusting Off The Britannica." *Bloomberg.* October 20, 1997. Last accessed June 17, 2017. ▶ https://www.bloomberg.com/news/articles/1997-10-19/dusting-off-the-britannica.

104 Boudreau, John W., Benjamin Dunford, and Peter M. Ramstad. "The Human Capital Impact on E-Business: The Case of Encyclopedia Britannica." In *Pushing the digital frontier.* Eds. Nirmal Pal and Judith M. Ray. New York: Amacom, 2001.

105 Dewatripont, Mathias and Patrick Legros. "Mergers in Emerging Markets with Network Externalities: The Case of Telecoms." In *Le Nouveau Modèle Européen.* Eds. P. Magnette and E. Remacle. Brussels: Editions de l'université de Bruxelles, 2000.

106 Farrell, Joe and Paul Klemperer. "Coordination and Lock-In: Competition with Switching Costs and Network Effects." In *Handbook of Industrial Organization, Vol. 3.* Eds. Mark Armstrong and Robert H. Porter. Amsterdam: North-Holland, 2007.

107 Huber, Peter. "Two Cheers for Price Discrimination." *Forbes.* (September 27, 1993), 142.

In 2007, Amazon started selling its most popular titles as e-books on its Kindle tablet device for $10, which was significantly lower than the prices charged by traditional bookstores,[108] and even below the cost that Amazon paid the publishers for the license. In other words, Amazon lost money on each sale. Why would it do so? It was trying to drive traffic to its site and to sell its Kindle tablets, of course. But it also wanted to create the standard for e-books and to promote e-book reading more generally. Giving consumers a simple and uniform price would make the e-book experience user-friendly and eliminate reader anxiety.[109]

Another variation of penetration pricing is complementary product pricing. In this method, the core product is priced low when complementary items such as accessories, supplies, and services can be priced with a higher premium. The classic example is selling a cheap razor and an expensive razor blade or selling a cheap camera and expensive film, as Polaroid does.[110] Amazon's Kindle followed the same model. In the case of early radio or today's iPhone, the opposite tack was taken: the content is free, in order to induce a purchase of hardware.

11.6.2.1 Case Discussion

> **Penetration Pricing?**
>
> Penetration pricing was part of *EB*'s decision, in 2008, to offer a free online edition with ads as its only source of revenue. This was successful in creating much heavier traffic than before, but it turned out that the ads were few and that the model was economically unsustainable.

11.7 Other Types of Pricing

11.7.1 Flat Rate Versus Usage-Based Pricing

Flat-rate pricing—"all-you-can-eat"—is the predominant form of pricing on the internet. In economic terms such pricing is often inefficient since it encourages wasteful overusage and because it discriminates against low-usage customers by charging them a high price relative to usage. It can lead to the 20% of users who account for 80% of traffic being subsidized by the others, while clogging up the network for everyone, lowering quality and raising uncertainty.

But flat rate pricing is easier to administer than usage-based charges. And many users tend to prefer flat rate prices because they remove the need to keep track of their consumption and to ration it. For internet access, in 1996 AOL was the first provider to switch to affordable flat rate pricing. Over the next year, usage per person tripled and demand surged ahead of supply. AOL was barely able to expand fast enough to keep up.[111] Another consideration in evaluating the efficiency argument is whether the payments based on usage are in fact cost-related or a way to price discriminate. If the incremental cost imposed by a user doubling her consumption is minuscule because the last-mile and network core connection are underutilized yet the user is charged double the price, then the economic arguments invoking MC pricing are flawed.

It should be noted, furthermore, that a flat rate does not necessarily mean a low rate, except for heavy users. If an airline offered unlimited flying on its routes for $20,000 a year, few consumers would be interested but some business travelers would jump at the option.

The Bell Telephone System conducted experiments during the 1970s to gauge preferences in order to determine the strength of demand for flat pricing. Over 60% of people who made very few calls nevertheless chose the flat rate plan even though they would have saved money with the variable rate plan.[112] The desire for simplicity and predictability is often stronger than the desire for a cheaper price. Similarly, when using the internet, users dislike keeping track of minutes spent online or bytes transmitted. It is the rare mobile customer who knows how much, his cellphone use costs per minute.

Flat rate pricing makes billing predictable and it provides protection against unexpected large bills. For the same reason, many providers offer complex pricing, so as to make the real price less transparent. But this can backfire once users have experienced unexpected high bills. One study of cellphone consumers in Canada shows that pro-actively matching customers' usage patterns with the rate plans that are optimal for their needs reduces customer churn, even if short-term profitability is lower in terms of revenues. Loyal customers are also important as they make positive referrals to others.

The economics of efficient resource allocation conflict with strong consumer preferences for simplicity and the value to them of avoiding transaction costs. Because of the advantages on both sides, intermediate arrangements are often offered as flat rate plans with various caps, baskets,

108 Amazon found that a book that would sell 100,000 copies at $14.99 would sell 174,000 copies at $9.99. Amazon said the lower price ($10) was justified because consumers expected a significant discount relative to a print copy because there was no printing. Also, there are no overprinting issues, no lost sales owing to lack of stock, no storage fees, and no secondary market (i.e. no opportunity to resell). Francis, Diane. "Amazon's tactics not novel." *National Post*. August 5, 2010. Last accessed June 17, 2017. ► http://www.pressreader.com/canada/national-post-latest-edition/20100805/282368330937114.

109 Bishop, Todd. "Amazon: Why $9.99 e-books are better for everyone, including Hachette." GeekWire. July 30, 2014. Last accessed June 17, 2017. ► http://www.geekwire.com/2014/amazon-9-99-e-books-better-everyone-including-hachette/.

110 Noble, Peter M. and Thomas S. Gruca. "Industrial Pricing: Theory and Managerial Practice," *Marketing Science* 18, no. 3 (1999): 435-454.

111 Odlyzko, Andrew. "Internet pricing and the history of communications." February 8, 2001. *AT&T Labs – Research*. Last accessed August 2, 2011. ► http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf; Fishburn, Peter C., Andrew M. Odlyzko, and Ryan C. Siders. "Fixed Fee Versus Unit Pricing for Information Goods: Competition, Equilibria and Price Wars." *First Monday* 2, no. 7 (July 1997). ► https://doi.org/10.5210/fm.v2i7.535.

112 Odlyzko, Andrew. "Internet pricing and the history of communications." February 8, 2001. *AT&T Labs – Research*. Last accessed August 2, 2011. ► http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf.

buckets, and tiers, which are flat up to their ceiling and then cost more for the overage.

In the online world, Apple applied the single-price model. The firm uses a price of $0.99 per song for all types of music. Music rights holders can also sell at $1.29 or $0.69 per track, but no further variation is permitted.[113]

Usage-based payment requires the ability to monitor activity. Online connectivity makes usage-based pricing more readily possible. As an example, the Swedish appliance maker Electrolux offered free washing machines to all 7000 homes on the Swedish island of Gotland under a "pay-as-you-wash" system. The smart washers provide feedback to a billing system. In effect, it is a home-based laundromat system, without coins or prepaid cards. In another example, General Electric (GE) offered a jet engine (the GE90 series) that was more fuel efficient and powerful output, but expensive to maintain. Instead of selling the engine to reluctant airlines, GE leased it on the basis of hours flown, the price including the maintenance. "Power by the hour" became popular because the airlines did not have to worry about unexpected expensive maintenance.[114]

11.7.2 Regulated Retail Pricing

In many cases media pricing is regulated by government, especially for telecommunications and cable TV service. Wireline telecoms frequently have a *retail* consumer price regulation, including the requirement to offer services in rural low-density, high-cost areas at the same price as in metropolitan areas. In European countries and Japan, governments set a monthly TV viewing charge payable by viewers, called a license fee or viewing charge. In India, the Telecom Regulatory Authority also sets the prices of cable, pay-TV, and satellite broadcasting.[115]

Also often regulated are wholesale prices charged by network providers, with market power over essential network elements for competitors who must use these network elements. This is particularly the case for telecom and ISP wholesale prices, but it can also affect the price of content.

In 2010, Ofcom, the UK's independent regulator of the communications industry, ordered the satellite broadcaster and channel provider BSkyB to reduce the wholesale price it charged its rivals Virgin Media and BT for the Sky Sports 1 and Sky Sports 2 channels by more than 20%. In the USA, such prices are not regulated as to a specific number, but a vertically integrated provider must offer such channels in a non-discriminatory fashion to rival platforms.

In various countries, including the USA, there are also "compulsory licenses," where music performers or channels may perform music or create variations, but must give notice and make payments to the rights holders, to the songwriters, and in some cases to the artists. This relates to recordings, radio stations, and online music channels. The price of the compulsory license is set by a government agency, in the USA the Copyright Royalty Board. For recordings, this license fee was 9.1 cents per song or 1.75 cents per minute of playing time. For commercial online music channels, it is 0.19 cents per unique listener per song.

At what level should one set such a regulated price? One governmental approach to set prices is to enable the company to earn a "fair profit," not more but also not less. This is the "rate-of-return" system. Prices are set at a level that permits the provider of the service to achieve a reasonable return on its invested capital, plus compensation for legitimate operating expenses and for the depreciation of its assets. Together, these elements—reasonable return, expenses, and depreciation—result in a "revenue requirement," which defines the service prices.

The rate-of-return formula to set price P is

$$P = \text{RR} / Q = \left[E + d + (V - D)R \right] / Q$$

Where:
  P = price per unit of service
  RR = approved revenue requirement
  Q = quantity sold
  E = operating expenses, including taxes
  d = depreciation rate
  V = investment
  D = accrued depreciation
  R = allowable rate of return on net capital
  $(V{-}D)$ = rate base
  $(V{-}D)R$ = the total profit allowed on rate base

There are problems applying this formula. Each of its items is based on the somewhat flexible judgments of accounting, and many of the numbers are very big. The way the formula works out is that there are often incentives to overinvest in capital (V), to underdepreciate it, to be wasteful in operations (E), and to shift profits into expenses through generous salaries for top executives (also E). It creates few incentives to reduce cost and is complicated to administer.

An alternative is price cap regulation. This method has become popular in telecoms around the world when state-owned operators were privatized in the 1980s but maintained market power to set monopoly prices. Because there had been historically no accounting for their invested rate base, which in any event was not put up by private investors, the rate-of-return approach could not be readily used. Instead, a simple price cap formula was used, which controls prices

113 Stone, Brad. "Making Sense of New Prices on Apple's iTunes." *New York Times*. April 7, 2009. Last accessed June 17, 2017. ▶ https://bits.blogs.nytimes.com/2009/04/07/making-sense-of-apples-itunes-new-prices/.

114 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision* Making, 3rd ed. London: Prentice Hall, 2002.

115 Kohli-Khandekar, Vanita. "Why price regulation for TV?" *Business Standard*. August 17, 2010. Last accessed June 17, 2017. ▶ http://www.business-standard.com/india/news/vanita-kohli-khandekarprice-regulation-for-tv/404713/.

rather than profits. The firm will then have an incentive to be efficient because it can keep its cost savings, at least in theory.

Price cap regulation allows prices to change according to the formula

$$P_{t+1} = P_t + I + P$$

P_t is the price in period t, I is inflation, and PF is the productivity factor that a firm is expected to generate annually.

However, there are problems with price caps. They work only if P_t is already a reasonably efficient price, because otherwise the formula merely perpetuates an inefficient one. If handled inflexibly, the system can lead over time to either huge monopoly profits if prices are very high to begin with, or to ruin companies if they are being squeezed too hard in productivity requirements. There are fewer incentives to invest, but more incentives to lower quality. Moreover, the determination of productivity factor can be subjective and political. To deal with these problems, adjustments are needed, and they must be in reference to some standards of "fair profit." In the end, price caps become de facto similar to the rate-of-return system.

Another alternative for setting prices by regulation is called yardstick pricing. In the cable TV industry, prices for the monopoly franchise territories had to be similar to those prevailing for the cable franchises that had more than one provider and were thus competitive.

11.7.3 Regulation of Wholesale Prices Among Networks

The prices charged by a producer or distributor to a retailer that deals directly with end-users is often called a wholesale price, and the difference called the wholesale discount. This is true for digital services just as it is for shoes. The prices that different networks in a chain of interconnected networks pay each other for taking or servicing each other's traffic are also wholesale prices, typically called interconnection prices. They are widely used in telecom, internet, cable, and for large users who resell service or enhance them.

Options for wholesale pricing include negotiated prices, bill and keep (peering), and regulated pricing. The latter can be based on a profit-based price or on cost-based price.

Negotiated pricing means that networks bargain for the price they pay to each other. The price reflects the relative bargaining strength of the two sides of the negotiation. Those with a monopoly position in an essential element of the network can get a more favorable price. At the extreme, the holder of a monopoly essential link could extract the entire profit from the system, at least until an alternative rival emerges attracted by the high profits. Alternatively, the interconnection price is zero (also known as bill and keep, sender keeps all, or peering), when neither of the two interconnected networks charges the other for accepting and servicing its traffic. This system is useful when the traffic and costs between the entrant and the incumbent are roughly balanced. It is administratively easy to manage. Each company has an economic incentive to increase the efficiency of its own network. But there is also the incentive to unload the transmission to rivals as fast as possible to avoid the cost of servicing it.

In the third scenario, that of regulated wholesale pricing, party holds substantial market power and does not negotiate with rival service providers that interconnect. Indeed, it often avoids servicing the traffic of those networks to drive them out of the market. In those situations, government agencies would set regulated wholesale prices. By setting them low they would help small and weak companies, where the traffic flow is imbalanced, to perpetuate and increase the competitiveness of a market. In contrast, by setting interconnection prices high they would help protect a dominant company, but also enable the setting of conditions on such a company such as upgrades in investments. Thus, regulators used their power to set interconnection prices historically as a major tool to accomplish and finance policy goals such as low-priced rural services.

In Germany, nine telecom competitors filed a complaint with the European Commission (EC) that the incumbent national operator Deutsche Telecom (DT) was charging them higher wholesale prices than it was charging its own retail customers. The competitors who by necessity had to use essential elements of DT's network were charged prices that were so high that they could not compete against DT in the consumer retail market. This type of pricing is known as margin or price squeeze – charging relatively high wholesale prices and low retail prices. The EC issued DT a low fine of €12.6 million and ordered it to stop its squeeze. DT's wholesale prices then became regulated by the German telecom regulatory authority based on a strict standard.

Cost-based regulation needs to be in reference to cost, which requires a clear definition of that concept. As we discussed earlier in this chapter (as well as in ▶ Chap. 13 Accounting in Media and Information Firms), cost is a slippery concept, often used pragmatically to justify the ends sought. There are two approaches, actual cost (historic), or hypothetical cost (forward-looking or best practices).

Actual cost was the original US governmental approach to cost-based prices. The FCC established a system called ARMIS (Automatic Reporting Management Information System) to track the costs, and these figures were the basis for the regulated prices that the network companies could charge each other for carrying traffic.[116]

The subsequent US governmental approach, in support of competitive entry, was for a while to set prices not based on actual (or historical) cost, but on hypothetical "best practice", or "forward looking" costs (known as Telecommunications Element Long Run Incremental Cost, or TELRIC). These costs are lower, thus leading to lower interconnection prices, which favors the smaller new entrants and hence competition. (This is also the approach in Europe and Japan, where it

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116 Noam, Eli M. *Interconnecting the Network of Networks*. (Cambridge, MA: MIT Press, 2001), 69-117.

is known as LRIC.) The procedure is to calculate what costs should be, based on current best practices and technology.

There are several arguments for using this approach. Interconnecting carriers (often competitors) should not have to pay for the past inefficiency of incumbent phone company monopolies by covering its high costs. They should pay only competitive prices. But what are these, given that competition does not exist?[117] Some cost figures were therefore determined by various engineering models, known as proxies. They determine the standard cost of serving customers within a geographic area, based on population density, terrain, and regulation. Financial assumptions such as the economic life of the facility, the cost of capital, allocation of common cost, and the adequate levels of universal service subsidies are also needed to determine total investment costs. As one can imagine, all this is not an easy task, especially since the results affect payments of billions of dollars, and the nature (and survival) of competition. In consequence, they are hard-fought in regulatory battles and courts.

A more fundamental problem with such forward-looking cost is that with access prices, competitors might not invest in their own alternative facilities if the alternative is a network element provided to them as a right at a low price.

Entrants prefer forward-looking costs because they prefer charges to be based on the least-cost, most efficient network technology as long as costs are declining over time. Incumbents have an alternative favored system, that of an "efficient components pricing" rule, under which the interconnecting entrants would have to compensate the incumbent not only for actual cost but also for all of its profits foregone because of the competitive entry.[118]

Fights over regulated pricing can be quite vicious. The results make a big difference. Comparison of costs derived in 1999 from three different engineering-based cost models, applied in Utah. They found the average total loop cost per month to be, respectively, $16.51, $18.11, and $15.67. The difference may seem small (16%), but the impact in dollar terms was quite large. It was enough to double profit margins or to reduce them to zero or negative.

11.7.4 Transfer Pricing

In big firms, various divisions of the same company buy and sell from each other. For example, Disney-produced films are bought by Disney's ABC TV broadcast network.

Films by Warner Brothers use Warner Music's songs. How do these various divisions of the same company "pay" each other? These payments are known as transfer prices.

Why does the transfer pricing method matter? Is it not simply shifting money from one pocket to the other? Internally, an efficient transfer pricing can create better operational efficiency by providing a clearer picture of costs and profits of the various activities and corporate divisions.[119] Externally, transfer prices can be motivated by a desire to understate reported profits. The incentive is to manipulate transfer prices in order to shift profits away from projects where they must be shared. In the film industry, there has historically been the incentive to overload transfer payments in order to reduce a profit that would have to be shared. A still more prevalent incentive exists to use transfer prices to shift profits to low-tax jurisdictions. A company would do so by having an input from the low-tax jurisdiction priced very high internally, thus lowering the profit achieved in the high-tax jurisdiction. Because such transfer prices could otherwise be set arbitrarily, tax laws often limit how transfer prices can be set.[120] Most countries' tax systems require the trading between two associated companies to be conducted on an "arm's length" basis.[121] However, the reality is another matter. How would one determine the arm's length price unless it is a commodity that is widely traded?

How would a firm determine its internal transfer prices? The options are for such transfers to be free, or to be cost based, or to be market based, or to be set by upper management, in a quasi-regulatory way.

The market price is often the starting point from which the internal transfer price is calculated, followed by a variety of adjustments.[122] For example, if NBC charges the unrelated cable company Charter $1.50 per subscriber per month for the channels NBC, MSNBC, and CNBC, then this would be the arm's-length price that it would charge its own sister company Comcast.

Another option is a discounted or adjusted market rate price. This method discounts the market price by eliminating certain costs that exist for external deals but not for internal ones, such as the cost of negotiation, the cost of risk for uncollectible debt, and so on. NBC might then discount the Charter price of $1.50 by, say, one-third of an internal transfer, if it can justify the difference.

117 Noam, Eli M. *Interconnecting the Network of Networks*. (Cambridge, MA: MIT Press, 2001), 69-117.

118 Thus, if the firm invested in $1 million in a network element it should receive a reasonable profit on it, including compensation for the lower price and profit caused by it having regulation force it provide the elements to its competitor. The economic logic for this has been in dispute. If accepted, would prevent competition based on the mandated sharing of network resources.

119 KPMG. "Transfer Pricing for the Telecommunications Industry." 2006. Last accessed June 20, 2007. ► http://www.kpmg.ca/en/industries/ice/documents/TransferPricingForTelecomIndustry.pdf.

120 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

121 KPMG. "Transfer Pricing for the Telecommunications Industry." 2006. Last accessed June 20, 2007. ► http://www.kpmg.ca/en/industries/ice/documents/TransferPricingForTelecomIndustry.pdf.

122 Baldenius, Tim, Stefan Reichelstein, and Savita Sahay. "Negotiated versus Cost-Based Transfer Pricing." *Review of Accounting Studies* 4, no. 2 (June 1999): 67-91.

A third major option is a cost-based transfer price where one division pays the other based on the cost of producing the product, but below the market price.[123]

11.7.5 Protection from Price Variations: Hedging

Often, buyers or sellers would want to protect themselves from the risk of changing prices. Such protection is called hedging. Some tools for hedging are options, futures, forwards, and swaps or derivatives.[124]

A futures contract is a contract to buy a commodity or security on a future date at a price fixed today. Forward contracts are custom-made contracts, and unlike futures are not traded in a market. Forward contracts are most commonly done with currency; for example, if a company's chief financial officer believes interest rates will rise, she could make a forward rate agreement with a bank. This could occur if a company that plans to buy another firm soon expects that interest rates will rise between now and then. Companies can purchase futures contract to effectively lock in today's interest rate.

A TV network firm might consider forward contracts if it knows that it will require significant transatlantic transmission capacity in a future month, owing to a major sports event such as the Olympics. Similarly, a telecom firm might fear that prices will fall in the near future. By selling a telecom capacity future at today's price, rather than at a possibly lower price in the fall, it can protect its downside.[125]

A short hedge is hedging risk by selling futures. This is what a telecom company is offering to the TV network. A long hedge is hedging risk by buying futures, which is the TV network's strategy. Those who believe the price will rise in the future will buy it at today's lower price. Similarly, a call option gives its owner the right to *purchase* an underlying asset at a set price within a set period of time. A put option gives the owner the right to *sell* an underlying asset at a set price within a set period of time. The striking price or exercise price is the price at which one has the right to buy or sell the asset.[126]

Pricing of options is usually determined through the Black-Scholes model, a fairly complex formula, but easy to use with computers when several relevant parameters are available. It is discussed in ▶ Chap. 7 Intellectual Asset Management.

11.8 Legal Aspects of Pricing

11.8.1 The Ethics of Pricing

Companies are not entirely free in choosing their pricing since government and society also play a role in the pricing that is set beyond direct regulation.

In the first instance, transactions must be voluntary and not forced on a desperate party by another, such as on a man dying of thirst. Laws restrict the exploitation of duress, or of dependency in the cases of medical drugs, or of payphones in emergencies.

The second level of ethical and legal constraints deals with transactions with unequal information about the exchange. An example is the selling of a product with a hidden defect known to the seller. Laws and liability rules lead to disclosure, which affects price.

The third level of ethical constraints states is more complex. It deals with the limits of profits. Under a notion of moral constraints, a seller, it has been argued historically, should take only a fair profit from the sale of necessities. In medieval society, profiteering was considered a mortal sin. Traders were morally obliged to charge a price close to the cost. But this admonition was not matched by reality. Sellers and traders often priced substantially above cost, which explains the wealth of some families and cities. Under Soviet Communism, charging a price higher than the official price was a criminal act, even if the state did not supply the good. In some cases, profiteers were put to death.

The notion of the just price is hard to define, still harder to operationalize, and even harder to enforce.[127] The concept depends on many variables that change over time.[128,129] Psychological experiments survey people's reception of fairness in changing prices. The results show an asymmetry. It is generally considered fair for a firm to raise prices or cut wages when its profits are declining. It is also considered fair to maintain prices at the same level even though production costs are falling. But it is considered unfair to take advantage of rising demand by raising prices.[130] Raising prices on necessities such as housing rents or medical drugs is considered profiteering. For that reason they are sometimes controlled by price regulation.[131]

123 ACCA. "Transfer Pricing." Last accessed June 17, 2017. ▶ http://www.accaglobal.com/us/en/student/exam-support-resources/fundamentals-exams-study-resources/f5/technical-articles/trans-pricing.html.

124 Brealey, Richard A. and Stewart C. Myers. *Principles of Corporate Finance.* (New York: McGraw-Hill/Irwin, 2003), 758.

125 A market for the multilateral trading of telecommunications bandwidth has emerged. Exchanges and brokers, as mentioned, include Arbinet, Band-X, InterXion, RateXchange, and Invisible Hand. Keppo, Jussi. "Pricing of point-to-point bandwidth contracts." *Mathematical Methods of Operations Research* 61, no. 2 (June 2005): 191-218.

126 Rendleman, Jr., Richard J. *Applied Derivatives, Options, Futures and Swaps.* Malden, MA: Blackwell Publishing, 2002.

127 Davidson, Kirk. "In search of fair prices." *Marketing News* 31, no. 12 (1997): 4.

128 de Roover, Raymond. "The Concept of the Just Price: Theory and Economic Policy." *The Journal of Economic History* 18, no. 4 (December 1958): 418-434.

129 Gielissen, Robert. "Perceptions of Price Fairness: An Empirical Research." *Business & Society* 47, no. 3 (2008): 370-389.

130 Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. "Fairness as a Constraint in Profit Seeking: Entitlements in the Market." *The American Economic Review* 76, no. 4 (September 1986): 728-741.

131 Heilbroner, Robert. *The Making of Economic Society*. Upper Saddle River, NJ: Prentice-Hall, 1962.

11.8.1.1 Case Discussion

11.8.2 Legal Constraints

> **Does it Face Ethical Constraints in its Pricing Decisions?**
>
> Should *EB* have a moral obligation to provide access to its encyclopedia to public schools in poor areas for less than the regular price of then $1400 per set? Or to its online service at a lower than regular price?
>
> *EB* entered into an agreement with three Florida educational agencies by which 25% of middle and high school students were granted free access to *EB*'s web encyclopedia, Britannica Online. This agreement was the first of its kind in the USA.[132] *EB* was paid $353,000 to provide up to 1 million Floridians with free access to Britannica Online for a year. The students could be in public schools (up to 225,000 K-12 students of the total 1.1 million), community colleges, state universities, and public libraries.[133] Beyond the free service, schools were able to buy *EB* access at a discounted price of $0.25 per student rather than the annual access price of $495. For example, a school with 1000 students would have to pay $250.
>
> Can this pricing policy by *EB* be explained primarily as a good business strategy, or is it motivated by social concern?

In Western liberal democracies and market-based economies, legal constraints on pricing include:

- anti-trust laws prohibiting price fixing and discrimination;
- international trade laws;
- laws about vertical price fixing (resale price maintenance, RPM) laws;
- laws about anti-predatory pricing laws and anti-dumping trade laws.

11.8.2.1 Price Fixing

In the USA, the Clayton Act of 1914 prohibits agreement among firms aimed at price fixing and its close cousins, restriction of output and market division of territories or customers. Similar prohibition are set in the UK Competition Act 1998, which prohibits agreements between businesses which prevent, restrict, or distort competition. Agreements that are likely to be prohibited include those which fix prices for goods or services, limit production, divide markets, and discriminate.[134]

Article 101 of the EC Treaty prohibits agreements among firms to fix prices or share markets.[135] Article 102 prohibits firms in a dominant market position from abusing their power (e.g. via predatory pricing aimed at removing competition). The Japanese Anti-Monopoly Law (JAML) was enacted in 1947 as part of the Economic Democratization Policy introduced by the occupation forces. Originally based on US anti-trust laws, in time it acquired features unique to Japan. China's Anti-Monopoly Law (AML) came into force in 2008, drawing from elements of both US and European Union (EU) competition laws, though it is more closely tied to the EU model.[136] Officially, the AML targets all companies equally. There are, however, many ways in which the Chinese authorities can use the law to discriminate against foreign companies.

In the USA, there are several ways for harmed competitors, customers, or suppliers to seek remedies, including:

- A court order such as a cease-and-desist order for pricing practices by the relevant government agency or court.
- In private anti-trust lawsuits, a winning complainant can get three times the actual damages plus attorney fees.
- Rivals can be forced to collaborate with competitors or suppliers by granting patent licenses or by stopping certain marketing tactics.[137]
- Rivals that have a chronic history of violations might be broken up to enhance a competitive market structure.

Some pricing practices are banned outright. For example, in the USA price agreements among competitors are not allowed. Price discrimination, RPM, below-cost pricing, dumping, or pricing fixing are also mostly prohibited.[138] Under the anti-trust laws (governed mostly by the Sherman Act of 1895) a firm could be split up if it engages in unfair pricing practices. In the past, firms that have been split up include the Hollywood studios from their film theaters, the telecom giant AT&T, and the dominant NBC radio company. Microsoft and IBM narrowly escaped. The Sherman Act states that a firm can be fined up to $10 million and individuals can be fined up to $350,000. There is also a possible prison sentence of up to three years.

In US anti-trust cases, price fixing was long regarded as per se illegal, even if it was owing to benign motives such as trying to stabilize a volatile market that created apprehension among potential buyers and among workers.[139] But today, courts will consider an initial cost benefit analysis before applying the per se rule. An example is the case of

132 Olson, Renee. "FL Schools, Public Libraries Jointly Adopt Britannica Online." *School Library Journal* 43, no. 10 (October 1997): 18.

133 Florida Times Union. "Online Encyclopedia Will Give Students Link To Information Service." August 18, 1997, A5.

134 Business Link. "Competing Fairly." Last accessed May 23, 2011. ▶ http://www.businesslink. gov.uk/bdotg/action/detail?itemId=1073792322&type=RESOURCES.

135 European Commission. "Antitrust Overview." Last accessed June 17, 2017. ▶ http:// ec.europa.eu/competition/antitrust/overview_en.html.

136 US-China Business Council. "Competition Policy and Enforcement in China." September 2014. Last accessed June 17, 2017. ▶ https://www.uschina.org/sites/default/files/ AML%202014%20Report%20FINAL_0.pdf.

137 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

138 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

139 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Broadcast Music Inc,[140] in which 4000 authors and composers were allowed to issue non-exclusive rights for their musical compositions in a block (a "blanket license"). Radio stations were required to take a blanket license to an artist's entire repertoire, as well as that of thousands of other composers. The price for the license was based on the advertising revenues. The TV network CBS challenged this system as illegal price fixing by the composers. The courts found that the collective arrangement had efficiencies as it reduced transaction costs, and thus could be justified. Furthermore, individual composers could sell licenses outside the blanket license.

Related to price fixing is its necessary instrument, the exchange of price information among competitors. This is not unlawful per se but courts have set certain conditions:

- Data does not disclose individual transactions or customers
- There is no disclosure of present or future information
- The data is available to the public
- There is no coercive mechanisms to pressure members to adhere to price schedules
- There are legitimate business reason for the exchange of information

The general problem is that uniform prices across competitors can mean two radically different things: either harmful collusion or the opposite, perfect competition. Rivals can reach the exact same price in order to stay competitive. In the USA, courts held that "parallel behavior" by competitors is itself insufficient to prove a price-fixing conspiracy. One must find evidence for secret meetings, calls, letters, or other direction co-ordination to find a conspiracy. Parallel market behavior that cannot be explained except as the product of concerted action can also be a factor.

In the *Matsushita* case, several Japanese consumer electronics firms set their prices in the USA below those in Japan. The claim was that they aimed to drive US firms from the market, and later raise prices. But the courts decided that there was not enough evidence for a conspiracy, and that there were enough independent business justifications for the parallel pricing.

Collusion has also been suspected in the digital music business. The US Department of Justice and New York State in 2005 began investigating the major music companies about the uniform price of their digital music tracks. Later, Apple was challenged, along with the music companies, over their price uniformity (typically $0.99 per track). Two-thirds of the world's online music was being sold by a handful of music firms at the price set by Apple.

Apple was also charged, along with major book publishers, for raising the prices of books. After Apple's iBooks Store opened in 2010, prices rose for new-release e-books by about 17%. This led the Justice Department and 33 state attorneys general to sue Apple and five major publishers for horizontal price-fixing. In 2013, a US District Judge ruled against Apple. Apple lost the appeal in the Supreme Court in 2016 and had to pay $450 million in damages and attorney fees. This is discussed in ▶ Chap. 12 Distribution of Media Information.

The question is whether prices rose because of price fixing, or because Apple provided the publishers with an alternative to Amazon, which depressed prices below market level. Apple argued that, in fact, its entry energized competition, and thus lowered price levels.

The problem was Amazon's fight with the publishers. Amazon held close to 65% of the e-book market and 40% of the total book market. The publishers, losing bargaining strength, rallied consumers to their side even though their goal was to keep consumer prices high. Publishers sold their digital works to Amazon on the same wholesale model, with the same wholesale prices used for print. Amazon sold new book releases and bestseller for $9.99, even though these books typically sold in hardback for $26 to $35. Amazon's goal was to accelerate e-book sales. Publishers, though they collected the same wholesale price whether for print copies or e-versions, feared that in time a dominant Amazon would press them for much cheaper wholesale prices.

To keep prices at $9.99, Amazon had to absorb substantial deficits. By 2009 it was covering $2, $5, and $7 losses on the sale of nearly every copy of the most popular titles.[141] Enter Apple. In contrast to Amazon, Apple operated a different model. Whereas Amazon used a wholesale model in which it set its own retail prices, Apple operated on an agency model. It took the same 30% commission for books, on whatever price the publishers charged. Apple had a "most favored nation" arrangement with publishers, which gave it the right to match the price at which any e-book was being sold by another retailer, Amazon for example. If Amazon priced a book at $9.99, Apple could then sell that book at $9.99 too, and the publisher would make only 70% of $9.99 from Apple—that is, $7 instead of the $12 or $15 wholesale price it would get for that book from Amazon.

The publishers therefore had to push Amazon to get off its low price of $9.99. Macmillan's CEO John Sargent, leading the industry, gave Amazon a choice. Amazon could switch to agency (i.e. a percentage cut-off whatever price the publishers chose), or it could stay on the wholesale model. In that case, Macmillan would then window all its digital new releases, releasing them gradually. Amazon then pushed back: it removed the buy buttons on all Macmillan books. This exercise of market power led to very negative publicity. Amazon, having flexed its muscles, agreed to switch to the agency model.

When the iBooks Store opened, most of the five major publishers' new-release books were priced at or near the

140 Broadcast Music, Inc. v. CBS, Inc. 441 U.S. 1 (1979). ▶ https://supreme.justia.com/cases/federal/us/441/1/case.html

141 Parloff, Roger. "Second Bite: Can Apple clear its name in the ebooks drama?" *Fortune*. December 2, 2014. Last accessed June 17, 2017. ▶ http://fortune.com/2014/12/02/apple-ebooks-litigation/.

$12.99 or $14.99 price caps, not at Amazon's $9.99. For the publishers this was a positive ending, but for consumers it meant prices higher than at Amazon's subsidized $9.99.

11.8.2.2 Resale Price Maintenance

For much of a century, any agreement by which a supplier set the prices at which retailers could resell its products to consumers has been per se illegal in the USA. In 1911, RPM by a manufacturer was determined to be unlawful in the *Dr. Miles* decision. Congress, in 1937, permitted RPM in the Great Depression, but in 1976, under pressure from consumer groups, Congress repealed this law. RPM was illegal again. But not for long. More recently, in the 2007 case of Leegin Leather Goods, the US Supreme Court eliminated the automatic ban on RPM in favor of a case-by-case approach. It decided that vertical price restraints are not per se illegal but shall be viewed within their circumstances.

In Australia, the existence of RPM is illegal regardless of its effect on the competition.[142] In Japan, on the other hand, Sanhai System (Japanese RPM), established in 1953, allows owners of copyrighted material to set the minimum retail price of products such as CDs, records, cassettes, books, magazines, and newspapers.[143]

According to the EC's Guidelines, RPM falls under a "hardcore restriction" and is therefore illegal. In 2010, the EC softened this stance: it might be possible for RPM to be exempted through efficiency arguments.[144] Major leading cases decided against RPM have involved minimum prices by Bowers & Wilkins for loudspeakers and by Yamaha for musical instruments.[145] RPM is thus, in theory, illegal in Europe. However, in practice it is present and legal for most book sales, where it is known as fixed book pricing agreements. These exist in most EU countries,[146] as well as in Japan, South Korea, Argentina, and Mexico. The public policy rationale is to protect small bookstores from competition by large chains, which compete against them through price discounts to consumers but do not offer the same level of service and variety.

11.8.2.3 The Law on Price Discrimination

In the USA, no price discrimination is permitted for commodities of similar "grade and quality." (Only products are covered but not services). It is also illegal to provide indirect price rebates through differentiated fees for handling, processing, and so on. There are two legal defenses against charges of price discrimination: cost justification (the lower price is based on actual cost reductions owing to volume) and in order to meet the price offered by a competitor.

In the USA, the Robinson-Patman Act of 1936 made it unlawful to discriminate in pricing in order to restrict competition or create a monopoly. But the US government has not prosecuted price collusion under the act since 1977.[147] This is partly owing to the numerous price "deals" offered.

In 1996, the lingerie company Victoria's Secret was sued in a class action lawsuit by a customer for issuing her a catalog with inferior discounts compared with those offered to a male co-worker. She lost and was held accountable for the company's legal fees for pursuing a frivolous legal action. The lawsuit set the precedent that retailers can discriminate between potential and existing customers for undisclosed business reasons. Also in the 1990s, the bookselling industry sued the major publishers, as well as the largest book retail chain Barnes and Noble, for price discrimination. The lawsuits were settled and the publishers promised to change their discount practices in order to not alienate the booksellers.

Price discrimination by dominant manufacturers is prohibited in Europe by a "hardcore provision" as an abuse of market power (if market power is present) for which no exception or justification is possible. Examples of EU/EC price discrimination cases include the 2015 Disneyland Paris case, where the theme park had to stop charging different prices online to different nationalities.[148]

11.8.2.4 Predatory Pricing and Dumping

Predatory pricing means selling below cost in order to eliminate a competitor. The basic elements of predation are prices set below MC and a subsequent recoupment of the losses by raising prices once the competition has dropped out.[149] Yet an anti-predation rule that is too strict might ban favorable price reductions that are not actually predatory and which benefit consumers. Conversely, anti-predation rules that are too lax might allow monopolists to emerge and protect their turf.[150] Because price cutting is typically a benefit to consumers, and because there is a fine line between predatory pricing and promoting a business, courts have been reluctant to rule against companies that have lowered prices and been accused of predatory pricing.[151]

There is a fine line between predatory pricing and promoting a business. In 2008, Amazon.com introduced "daily deals," a radical price cutting offer to catch customer attention. Amazon offered popular music albums at significantly

142 OECD. "Policy Roundtables: Resale Price Maintenance." 1997. Last accessed June 17, 2017. ▶ http://www.oecd.org/competition/abuse/1920261.pdf.

143 Nippop. "Saihan Seido - Japan's Resale Price Maintenance System." Last accessed May 23, 2011. ▶ http://nippop.com/features/Saihan_Seido___Japan_s_Resale_Price_Maintenance_System/.

144 Botteman, Yves. "(Minimum) Resale Price Maintenance Under the New Guidelines: A Critique and a Suggestion." *Competition Policy International.* June 14, 2010. Last accessed June 17, 2017. ▶ https://www.competitionpolicyinternational.com/minimum-resale-price-maintenance-under-the-new-guidelines-a-critique-and-a-suggestion/.

145 European Commission. "Roundtable on Resale Price Maintenance." October 13, 2008. Last accessed June 17, 2017. ▶ http://ec.europa.eu/competition/international/multilateral/2008_oct_resale_price_maintenance.pdf.

146 Except for the UK, Sweden, Ireland, Czech Republic, and Poland.

147 Weiss, Robert M., and Ajay K. Mehrotra. "Online Dynamic Pricing: Efficiency, Equity and the Future of E-commerce." *Virginia Journal of Law and Technology* 6, no. 2 (2001). Last accessed July 28, 2011. ▶ http://www.vjolt.net/vol6/issue2/v6i2-a11-Weiss.html.

148 Brunsden, Jim and Duncan Robinson. "Disneyland Paris ditches pricing policy." *Financial Times.* April 15, 2016. Last accessed June 17, 2017. ▶ http://www.ft.com/cms/s/0/e472eec2-031b-11e6-af1d-c47326021344.html#axzz4IkcDRxz3.

149 Hemphill, C. Scott. "The Role of Recoupment in Predatory Pricing Analyses." *Stanford Law Review* 53, no. 6 (July 2001): 1581-1612.

150 Edlin, Aaron S. and Joseph Farrell. "The American Airlines Case: A Chance to Clarify Predation Policy." *IDEAS.* January 9, 2004. Last accessed August 1, 2011. ▶ http://ideas.repec.org/p/wpa/wuwple/0401003.html.

151 Federal Trade Commission. "FTC Staff Comment to the Honorable Demetrius C. Newton Concerning the Alabama Fuels Marketing Act." January 29, 2004. Last accessed May 29, 2007. ▶ http://www.ftc.gov/be/v040005.shtm.

discounted prices of less than $5, when regular prices were about $15–20. Amazon also offered weekly "Friday Five" promotions in which an assortment of five different albums sold for the price of one.[152] But is an aggressive price discount illegal predatory pricing? The US Supreme Court stated that "there is a consensus among commentators that predatory pricing schemes are rarely tried, and even more rarely successful."[153]

It is not easy to apply predatory pricing laws to information sector companies, because it is difficult to determine what "below cost" is when MCs are naturally very low. If the requirement for predatory pricing is "below MC pricing," it will rarely be met. An international example is the French ISP Wanadoo. From 1999 to 2002, this subsidiary of the national telecom incumbent France Telecom (now Orange) priced its broadband service at a loss, allegedly to drive out competition. Its market share peaked at 72% of broadband and 90% of digital subscriber (DSL) lines. In 2003, Wanadoo was fined €10.35 million by the EC for predatory pricing, and the judgment was upheld by the European Court of Justice.[154] (However, the tiny size of the fine relative to the company's revenues (just ~0.25% of one year's revenues) is not exactly a strong deterrent.)

Dumping is a method similar to predatory pricing. It occurs when a foreign manufacturer undercuts domestic prices below its costs or below its price in the foreign market in order to gain market share in the domestic market.[155] Remedies for international predatory pricing are to impose tariffs on violating firms equal to the difference in their price and a "fair price" plus damages. Unlike predatory pricing laws, US anti-dumping laws are aimed at protecting US businesses rather than consumers. The standard for dumping is much less rigorous than US laws on predatory pricing. It only needs to be shown that low pricing is harming domestic businesses. Economists have argued that this is detrimental to the economy as a whole since low prices are beneficial to domestic consumers. The World Trade Organization (WTO) determines what remedies are available to countries and it handles disputes over the legality of anti-dumping laws.[156]

In 2000, the US Congress passed the Byrd Amendment, which directs anti-dumping tariff revenue to go directly to the harmed US companies rather than to the government. This would help these companies while also raising their incentive to complain. Subsequently, the EU, Canada, Japan, India, Mexico, and other countries brought a case to the WTO to oppose the amendment claiming it causes economic damage to their exports to the USA. In 2002, the WTO ruled that the amendment violated WTO rules.[157] It was repealed by Congress in 2006.[158]

11.8.2.5 Anti-Bundling

There are restrictions against "tie-ins," in which a buyer needs to commit to the purchase of other products and services as a condition to getting a product they desire. In the film business, for a long time the strong distributors of major movies required the theaters to also commit to less popular films. Restrictions against block booking by film distributers were therefore instituted in the USA by law.

Bundling has been a major issue in cable TV, where cable firms do not offer individual channels but only blocks of channels (tiers). In most countries, there are several tiers of channels which must be taken as a bundle, in an arrangement known colloquially as *prix fixe*,[159] with access to higher tiers requiring initial subscription to the lower ones. In Hong Kong, in contrast, viewers can select and pay for only the channels they want. In Canada, digital subscribers can buy channels individually or have significant savings on a "5 pack," a "10 pack," or a "15 pack" of their own choosing.[160] Several countries have instituted "a-la-carte" rules, where viewers can pick and choose among the channels rather than be required to get a bundle.

In the USA, Kevin Martin, when serving as the Chair of the FCC, advocated the mandating of "a-la-carte" unbundling option for channels. Under Martin, the FCC concluded that a pure a-la-carte choice can often yield lower prices for consumers than bundling, while still generating sufficient revenue to cover network costs.[161] This contradicted the findings of the very same agency under Martin's predecessor, the more free-market-oriented Michael Powell. At that time, the FCC had concluded that requiring cable operators to make channels on a segmented basis would make more consumers worse off. Consumers would have to pay more than they pay under bundling. Such unbundling arrangements would also hurt niche and smaller channels which would not be subscribed to if they were not part of a bundle.[162] Therefore a-la-carte and themed tier requirements would diminish the quantity, quality, and diversity of programming available to viewers. This would cause many program networks to fail.

152 Entertainment Marketing Letter. "Entertainment amidst Economic Crisis: the Greatest Consumer Value vs. 'The Least Important bill.'" October 15, 2008, 1-2.

153 Matsushita v. Zenith Ratio Corp., 475 U.S. 574 (1986). ► https://supreme.justia.com/cases/federal/us/475/574/case.html.

154 European Commission. "Antitrust: Commission welcomes judgment of the Court of Justice in French broadband case." April 2, 2009. Last accessed February 18, 2009. ► http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/147.

155 Congressional Budget Office. "Antidumping Action in the United States and Around the World: An Analysis of International Data." June 1, 1998. Last accessed May 30, 2007. ► https://www.cbo.gov/sites/default/files/105th-congress-1997-1998/reports/antidump.pdf.

156 World Trade Organization. *A Handbook on Anti-Dumping Regulations*. New York: Cambridge University Press. 2003.

157 World Trade Organization. "DS217: United States – Continued Dumping and Subsidy Offset Act of 2000." Last accessed June 17, 2017. ► https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds217_e.htm; Wikipedia. "Byrd Amendment." Last updated November 11, 2016. ► https://en.wikipedia.org/wiki/Byrd_Amendment.

158 Blustein, Paul. "Senators Vote to Kill Trade Law." *Washington Post*. December 22, 2005. Last accessed June 17, 2017. ► http://www.washingtonpost.com/wp-dyn/content/article/2005/12/21/AR2005122102074.html.

159 FCC. "Report on Cable Industry Prices (2016)." October 12, 2016. Last accessed June 17, 2017. ► https://www.fcc.gov/reports-research/reports/cable-industry-prices-reports/report-cable-industry-prices-2016.

160 McCain, John, and Kevin Martin. "TV Served a la carte." *Los Angeles Times*. May 25, 2006. Last accessed July 6, 2012. ► http://articles.latimes.com/2006/may/25/opinion/oe-mccain25.

161 FCC. "Further Report on the Packaging and Sale of Video Programming Services to the Public." February 9, 2006. Last accessed June 17, 2017. ► https://apps.fcc.gov/edocs_public/attachmatch/DOC-263740A1.pdf.

162 Hughes, Siobhan. "Senate Panel Rejects 'A La Carte' Television Programming." *Dow Jones Newswires*. June 28, 2006.

In the USA, the Consumer Union, the retiree lobbying group AARP, and evangelical groups all supported a-la-carte pricing. The "pro-family" advocates wanted to give control to parents so they could determine what went into their homes.[163] This would enable groups to organize and single out a particular channel for a boycott. On the other side of the debate were cable multiple-system operators (MSOs) as well as expensive channels such as ESPN that feared many users would drop them. Cable MSOs pay ESPN over $6 per month per subscriber, and include that cost in the subscription price for the major tier of channels, whether the subscriber is interested in sports or not. At the same time, many of the very small channels also opposed a-la-carte, for the abovementioned reasons put forth by Michael Powell.[164] In the end, FCC Chairman Martin's proposal did not garner sufficient political and regulatory support, and died.

Another instance of unbundling by law exists for telecoms. There are unbundling requirements in several countries on telecom companies with market power, under which they must offer elements of their local network loops that reach the end-user also to rival ISPs without requiring them to get a full bundle.

11.8.2.6 Case Discussion

> **_Encyclopaedia Britannica's_ Competitor Violates Anti-Trust Laws**
>
> After 1993, *EB* encountered significant rivalry thanks to the rise of Microsoft's Encarta. Microsoft had launched a "Encarta series," comprising dictionaries, an atlas, encyclopedias, quotations finder, and a thesaurus, all on a single CD-ROM. This competed against *EB*'s and other encyclopedia companies' CD-ROMs.
>
>   Microsoft sold Encarta to its customers bundled with their purchase of Internet Explorer and its Windows operating system. This disadvantaged other encyclopedias. The same bundling policy by Microsoft created problems for applications software more generally. Whereas Encarta was already part of what consumers bought in order to operate their PC, to get other encyclopedias users had to make an additional purchase and install it. The US government and the EU Commission brought anti-trust actions against Microsoft. A federal judge ruled in 2000 that this bundling policy was a violation of anti-trust laws since it discouraged competition. The judge went as far as ordering that the entire company had to be broken in two: an operating systems company and an applications company.[165] Eventually, however, the company managed to avoid this. But in Europe the company was subject to strict conditions and to large fines.

11.9 The Futures of Pricing

11.9.1 "Free"?

Online guru Steward Brand popularized the idea that "information wants to be free," free in content and free in price. But on the other side of the equation, media and digital companies, as well as many creators, want information to be relatively expensive so that that it can pay for its often costly creation. This is a key tension in the media environment.

Many information products move to a free model, that is to a zero price. This has been called "Freeconomics."[166] The "free" but advertising-supported model, however, is often not enough to support a service. Many media firms have found that paid subscriptions, in addition to advertising, are needed. It has also been observed that giving away content for nothing works best for big firms with a larger user base for advertisers,[167] or where the firm offers complementary services to commercial customers, who then pay in order to be able to reach the consumer user base that is clustered around the free service. Their model can be described as a three-party system: a third party pays to be part of a free exchange market set in place between the first two.[168] This has been the arrangement in commercial radio and television for a long time.

Newspapers have struggled to find pricing models for their survival. The *New York Times* established a paywall for content in 2011, after seesawing from free to pay to free and then to pay again. The company allowed a free article quota of 20 articles per month, subsequently reduced to 10. The paywall is fairly easily avoidable through the use of multiple browsers or email accounts, but in all such pay arrangements a company should not let the perfect be the enemy of the merely good. *New York Times* pricing for unlimited access to articles ranges from $15 to $35 per month, depending on the viewing platform (for smartphones it is $15 per month.)[169] There are substantial discounts for students, teachers, and others.

In 2015, 79% of US newspapers with a circulation of over 50,000 used a digital subscription model. 62 % of papers used a metered system in which some articles are free before users

163 Kenney, Jeannine. "Statement of Gene Kimmelman Vice President, Federal and International Affairs Consumers Union on The Consumers Having Options in Cable Entertainment (CHOICE) Act." *ConsumersUnion*. June 7, 2006. Last accessed August 1, 2011. ▶ http://www.consumersunion.org/pub/campaignmedia/003526.html.

164 National Cable and Telecommunications Association. "Cable Programmers' Perspectives on A La Carte." May 15, 2006. Last accessed August 1, 2011. ▶ http://www.ncta.com/ContentView.aspx?hidenavlink=true&type=lpubtp11&contentId=3180.

165 Adams, Richard. "Online: Reviews: Bill." *The Guardian*. November 2, 2007, 7.

166 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ▶ http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

167 The Economist. "Media's Two Tribes." July 1, 2010. Last accessed June 17, 2017. ▶ http://www.economist.com/node/16486717.

168 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ▶ http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

169 Filloux, Frederic. "NY Times 'Fair' Price." *Monday Note*. March 21, 2011. Last accessed June 17, 2017. ▶ https://mondaynote.com/nytimes-fair-prices-69114de00db5.

have to pay, 12% use "freemium" models (most articles are generally free, some premium articles need to be paid for), and only 3% require a subscription for most or all of the content.[170]

Mass-circulation newspapers tend to be free. Firms seeking a large scale do not follow the premium strategy of a pay model. Japan's *Yomiuri Shimbun*, the most widely distributed newspaper in the world, Germany's *Bild*, and France's *La Croix* offer free access to online content. In contrast, premium papers such as France's *Le Monde* and *Le Figaro* or Israel's *Haaretz* charge for expanded content and regular updates.[171] They believe that providing content for nothing and stuffing it with ads diminishes its value in the eyes of the reader. The most likely to charge a hefty subscription price are financial papers whose audience is relatively price insensitive and for whom accurate information delivered rapidly is of great value. Thus, the *Wall Street Journal* and the *Financial Times* charged $20 per month. In Germany, *Handelsblatt* costs, for digital-only subscribers, about $35, and in Japan *Nikkei* costs about $40.

Publications lose online readers when they adopt a paywall. Even the simple registration requirement reduces visitors by half.[172] But both free and pay models have their success stories. The internet makes a variety of new approaches possible. Prices can be differentiated. Different content tiers can be created at different price levels. A basic tier is free and advertising-supported. For more information or a higher grade of performance, a subscription is necessary. This model—known as freemium—has become popular to the point of emerging as the main way to conduct business for internet news content companies. Companies using it include LinkedIn, DropBox, Box, Splunk, and Spotify.[173] A major challenge is to decide how many features of a product should be free and how many should be paid for.

The new technology makes it possible to provide multimedia content with video and audio. Content can be unbundled. In the past, print publications were a collection of news items, analysis, photographic material, essays, and so on. This can be sold in pieces, such as per-article or per-section, including archived materials that in the past had almost no commercial potential. These schemes have not worked well yet, except for academic research articles, but when the payment mechanism is greatly simplified more people will use it, as they do for on-demand films.

A common strategy is to bundle the print version of a newspaper or magazine with its online version, incorporating extras such as hotlinks, archived materials, and chats. Once print customers become more familiar with the online delivery, it will receive a greater push and its price will be raised as a standalone offering.

For many online services, free models have emerged, helped by rapidly falling costs. Examples are email, search, maps, storage, large file transfer, video sharing, music, photo/video/document editing, games (ad-supported casual), and many more. Models co-exist. Google is offering free directory assistance. At the same time, companies such as AT&T still charge for directory assistance.[174] Google is not being altruistic: it gains valuable information from these free phone calls. Google might profit more from its free service than AT&T does from its pay service.

11.9.2 Case Discussion

> **Online Models**
>
> Did advertising-based pricing work for *EB*? *EB* tried to support its online version through ads, but this reduced the cachet of the brand and it did not work out in terms of user demand and hence advertising revenues. Let us look at *EB*'s potential ad revenue. In 2002, when *EB* tried to go the ad-supported route, the cost per 1000 impressions for educational/reference websites was $15.53, and the number of unique visits to its website was about 6 million per year. Back of the envelope analysis: *EB* could have charged about $93,000 per ad that was being served to each unique visitor once. Just to cover its fixed costs of about $10 million, the company would have needed to serve each unique visitor over 100 ads per year, while maintaining the price per ad despite the clutter, and despite the glut of other advertising platforms, and the rivalry from advertising-free Wikipedia. Not surprisingly, the ad scheme failed.

11.9.3 Micro- and Nano-Pricing

Micropayments are used for small payments where other forms of electronic payments, such as credit cards, are too expensive or cumbersome, typically less than $10–20.[175] Micropayments are largely focused on the purchase of virtual goods and digital content, such as social gaming and online media products.

The main microtransaction systems in 2017 were alipay (China, 49% market share in that country),[176] and in

170 Williams, Alex T. "How digital subscriptions work at newspapers today." *American Press Institute.* February 29, 2016. Last accessed June 17, 2017. ▶ https://www.americanpressinstitute.org/publications/reports/digital-subscriptions-today/.

171 Hall, Emma. "Lessons for U.S. Media From European Paid-Content Plays." *Ad Age.* Last accessed July 5, 2012. ▶ http://adage.com/article/global-news/lessons-u-s-media-european-paid-content-plays/142319/.

172 The Economist. "Media's Two Tribes." July 1, 2010. Last accessed June 17, 2017. ▶ http://www.economist.com/node/16486717.

173 Kumar, Vineet. "Making "Freemium" Work." *Harvard Business Review.* May 2014. Last accessed June 17, 2017. ▶ https://hbr.org/2014/05/making-freemium-work. For more freemium examples see here: ▶ http://www.freemium.org/category/freemium_online/.

174 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired.* February 25, 2008. Last accessed June 17, 2017. ▶ http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

175 Kniberg, Henrik. *What Makes a Micropayment Solution Succeed.* Master's Thesis KTH, Institution for Applied Information Technology, Stockholm, 2002.

176 iResearch Global Inc. "Market Shares of Main Players in China Online Third-Party Payment Market in Q 2014." July 2014. Last accessed July 17, 2017. ▶ http://www.mightythings.co/wp-content/uploads/2014/09/alipay_01.jpg

the USA PayPal (78%), Apple Pay (1%), and Google Wallet (4%). Applications vary widely. An example for an application is Apple's music store iTunes. Users can download songs for which the prices are set at $0.69–$1.29 per song. Users can choose to pay with a credit card, debit card, or PayPal.[177]

Cost is a major reason why micropayment transactions have lagged. When compared with larger transactions, micropayment transactions have a higher proportional cost associated with them. The time required for entering the information of an account or card is another obstacle. But with mobile phones, transactions have become simple and universally available, and transcend the restrictions of cash.

The greater ease for micropayments, however, creates a backlash. Even if the payment is small, "free" and "almost free" are very different markets in the perception of users.[178] This psychological perception is one of the reasons for the problems of adoption of micropayment application. Consumers often have negative feelings toward them. It appears to be part of a takeover of the free sphere by economic transactions. It may be economically efficient, but consumers want to tune out of having to make decisions with a meter ticking in their head.

Blendle is a pay-per-view platform backed by Dutch and German newspaper publishers. It lets users make micropayments for articles (0.19–0.39 cents). But few users seem willing to do so. In the Netherlands, Blendle only managed to get 1.2% of the population to join the service, of whom only 20% actually pay for content. Micropayments force consumers to determine the value of each story before agreeing to pay for it. The *Winnipeg Free Press* was the first newspaper to try the micropayment business model in North America. Users pay 21-cents per article or a flat monthly fee. However, rarely were readers willing to pay. The market price for articles is quite low. Micropayments also reduce the element of discovery. Consumers who are forced to pay per story will rarely invest in content they do not seek out.

Given consumer resistance, micropayment systems as a whole have failed in the past. BitPass, Digicash, and Millicent are just three that failed over security concerns and mental barriers for paying for online content. CoinTent is a pay-per-view system that partnered with epicurious, GQ, and others to paywall content. It allows users to make micropayments (5–25 cents for articles). milliPay is a Swiss company that makes fraction of a cent transactions possible, and is testing out with European regional newspapers. Hipay Mobile is a platform that lets the user select different payment methods, including SMS, landline, and prepaid cards. It particularly targets people without bank accounts. SatoshiPay, founded in 2014, uses micropayments of fractions of cents.

The next step is nano-transactions. Today, the environment in which information exists and operates is becoming increasingly complex and decentralized. There are vast interconnections of devices and facilities for storage and processing. Servers and websites interact with each other. Machine-to-machine transactions are accelerating, such as with automobiles transacting directly with highways, or smart appliances dealing with e-commerce and electric utilities. A nano-payment system would charge each packet or group of packets for transmission, access, processing, and so on, and that packet would be able to pay the fee, based on an e-wallet it carries.

Some might think that all packets must be treated equally for technical reasons, but actually individual packets can be treated quite differently. With identification, information streams become much more like airline transport. The passengers can be individualized and a strong price differentiation can be maintained. Video entertainment packets could receive discounts over voice packets and streaming in real time might require a premium. There can also be differentiation according to technical quality and security.[179] Such automatized nano-payment systems are not yet operational, but with added computing and transmission power they will emerge in the future.

11.9.3.1 Case Discussion

> #### How Could *EB* Use Micropricing?
>
> *EB* could introduce a pay-per-read system with micropayments for the unique elements of its content. This would maximize value to users, since by using a micropayment system they could just pay per usage. Moreover, *EB* could offer specialized services such as an artificial-intelligence process that can identify information in response to direct questions, such as "What were the effects of railroads in the twentieth century?"
>
> For *EB*, what are the advantages of micropricing when it can simplify operations by offering a package subscription deal? There are different types of potential users, ranging from frequent general readers, to specialized-interest ones, to occasional users. By offering both subscription pricing and micropricing, *EB* can cater to a broader set of customers. *EB* would have to pay attention to the risk of losing a considerable number of subscription customers to on-demand pay per use. In order to offer both types of pricing simultaneously, these must be placed strategically so that light users are guided toward the pay-per-read system and heavy users toward subscription payment.

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177 Apple. "iTunes Music" 2011 Last accessed August 1, 2011. ▶ http://www.apple.com/itunes/whats-on/.

178 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ▶ http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

179 Eli Noam, US Patent 7203657, *A General Packet-Based Payment and Transaction Method and System, 2007*.

11.9.4 Voluntary Pricing

Voluntary pricing mechanisms often exist. They are based on social reciprocity, community spirit, generosity, and guilt.

Offering a good freely is often part of a social exchange. Actions create good will and a co-operative exchange. If you borrow my car today, you might help me move my couch next month. Transaction theory suggests that there are many benefits to a social exchange outside a traditional market transactional framework.[180,181]

One such non-traditional transaction is to make payment voluntary and flexible, based on the ability of the buyer and the value she has derived. In one experiment, customers could determine their own prices within a range, with the minimum being $5 and the maximum being $18. The recommended amount is $8. The majority of people paid slightly over the recommended amount. Only 14.5% paid the minimum. However, the average payment tended to decline with the number of purchases,[182] suggesting that the spirit of voluntarism might not be sustainable for routine transactions.

An application of micropayment technology is to provide methods for voluntary payments, such as a donation platform. Flattr is a microdonation provider for online content. Users can credit their accounts with small amounts (minimum $2) monthly, which is then allocated to websites based on how well they "flattered" (liked) them. An average user tips 15 cents. ChangeTip is another microdonation provider for online content.

11.10 How Firms Organize Their Pricing Function

11.10.1 Setting Pricing Policy

Tactical pricing is short-term oriented and based on the current market situation and customers. It must respond flexibly to competition and demand. Strategic pricing, on the other hand, is set with the perspective of overall profitability, marketing, and positioning. As Thomas Nagle points out, the problem that firms face is when tactical pricing takes over. Managers and sales people, partly motivated by sales quotas and targets, may become too flexible and offer price concessions that are "customer specific." They engage in bargaining. But the result will often be, as mentioned, to transform "good customers" into "difficult customers."[183] Pricing strategy then dissolves into a series of ad-hoc deals. Instead of discounts, companies should provide options with different prices. A price-sensitive buyer can then be offered a lower-priced

option that comes with a lower quantity or quality. Rather than lowering the price, the seller should provide a menu of price–feature tradeoffs. These options should be set in advance, with a clear menu of choices and prices. "Instead of flexible pricing for a fixed product the firm should offer fixed prices for flexible offerings."[184] This also gives customers an incentive to be honest about their needs and issues rather than be strategic in their communications as part of a bargaining process. Discounts can be given to certain customer categories, but these should be set in advance, be transparent, and follow clear criteria. For example, educational institutions might get a discounted price.

What this means is that pricing should, in principle, not be done at the level of the sales force, but organized on a strategic and central level as an important management decision. Companies must therefore establish pricing groups or committees—including representatives from finance, marketing, sales, and strategy—to co-ordinate pricing, including on a global scale. When sales run lower than expected, the committee should review the pricing policies and alter them, if necessary, rather than provide price exceptions. More fundamentally, it might also decide to modify the product and its features or to launch a new advertising campaign.[185]

11.10.2 Pricing Strategies Over the Product Life Cycle

As products (and firms) progress through their life cycle, their pricing strategies must change over time.[186] In the first or introduction stage of a product, potential buyers are relatively price insensitive. Some buyers will seek to be early adopters, while others will use price as a proxy for quality. Development costs will have been high and will require recoupment. A firm might therefore opt for the high-price skim pricing strategy. But in other early situations, where network effects and economies of scale are high, the opposite makes sense: penetration pricing in order to gain market share.

In the second stage, that of growth, sales increase rapidly. Profits are driven by expanding demand. On the other hand, rivals enter, too. Prices become competitive and brands matter. With active competition the firm again has two major options: to differentiate the product through product design, marketing, and a high price; or to take a cost leadership through superior operations and set a low price.[187] It will aim for a larger volume but a lower profit margin per unit. Thus, in this stage of growth, either skim pricing or penetration pricing makes sense depending on the goal and ability to differentiate either in product or in its cost.

180 Coase, Ronald H. "The problem of social cost." *Journal of Law and Economics* 3 (October 1960): 1–44.

181 Williamson, Oliver E. "The economics of organization: The transaction cost approach". *The American Journal of* Sociology 87, no. 3 (1981): 548–77.

182 Regner, Tobias and Javier A. Barria. "Do Consumers Pay Voluntarily? The Case of Online Music." *Journal of Economic Behavior & Organization* 71, no. 2 (August 2009): 395–406.

183 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making,* 3rd ed. London: Prentice Hall, 2002.

184 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making,* 3rd ed. London: Prentice Hall, 2002.

185 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making,* 3rd ed. London: Prentice Hall, 2002.

186 NetMBA. "The Product Life Cycle." June 3, 2004. Last accessed August 1, 2011. ▶ http://www.netMBA.com/marketing/product/lifecycle.

187 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making,* 3rd ed. London: Prentice Hall, 2002.

In the maturity stage, there is still competition, and consumers are more price sensitive. Prices fall and profit margins decline. Weaker firms drop out. One major strategy is to gain market power and use it for a higher price. A related strategy is oligopolistic co-ordination with other firms to keep prices high.

In the decline stage, markets are saturated, new products have emerged, consumer behavior changes, and unsold inventories are high. Price cuts seem the logical response, yet with lowered demand average costs per unit will increase, and the price cuts will be matched by these rivals and are not likely to be effective. Alternatively, the firm could keep the old price and harvest its product given its familiarity, brand reputation, and consumer loyalty. In such a situation, once the price-sensitive users have dropped out, the firm might even raise the price! An alternative strategy is a retrenchment that includes a gradual exit from the product or market. Still another alternative is to consolidate market share and thus be able to raise prices. The firm needs to be pro-active rather than wait it out. But then again, if it were truly anticipatory it might not be in that predicament in the first place.

11.11 Conclusions

11.11.1 Case Discussion

> **Conclusions**
>
> It is, of course, difficult for a business to compete with a rival that sets its price at zero. Technology and community dynamics have enabled easy, cheap competition to *EB*'s premium product. As a result, the only way for a pay-service to survive in the future is to provide substantial value benefits over free alternatives. Consumers may be willing to pay for a premium quality product or a better fit with the user's need. This might derive from the prestige of authors or from an investment in graphs, maps, and so on.
>
> Has *EB* been able to compete with free? The answer is no. In 2012, it announced that after 244 years and 7 million sets sold, it was no longer printing new editions of its flagship encyclopedias. Its focus would shift to developing more comprehensive digital content (whatever that might mean).[188] This followed a continuous decline of over two decades. In 1990, the company peaked with 120,000 sets of encyclopedias sold. By 1996, that number had dipped to 40,000 and by 2010 to 8500. The final 2010 edition (all 32 volumes) was sold on its website at a price of $1400 until the stock of 4000 volumes sold out.[189]
>
> How could *EB* have handled its dilemma? There were a number of options to consider.
>
> *Premium strategy*. Technology enabled cheap and easy competition to *EB*'s main product. The response to "free" may be "better," "easy," and "prestige." Consumers may be willing to pay for the premium image, premium quality, and convenience. Thus, one way to survive would have been to provide substantial value benefits over free alternatives. But this is difficult, and *EB* did not persuade enough people that it was worth the money.
>
> *Differentiating the product*. One differentiation might have been quality. Another differentiation might have been a better fit to high school student needs than Wikipedia's one size fits all. There might have been signed selective articles by luminary authors to raise the intellectual prestige, and an extra editorial budget for graphs, maps, photos, and other complementary material. This would have been in line with its traditional premium brand strategy. One online blog observer, Andrew Hayword, wrote: "Britannica is, quite frankly, the gold standard and is universally acknowledged. In developing countries, it is still the brand that people tend to go to first. Wikipedia is increasingly seen as a 'corrupt' source of information and is not totally reliable." In response, Jimmy Wales, Wikipedia's leader, scoffed that "when it comes to breadth of coverage, Britannica
>
> is a puddle to Wikipedia's sea and the web's ocean." *EB* generated $11 million in revenue and featured one language. Wikipedia, on the other hand, generates $60 million in donations, has 284 different languages, 19 million articles, and 82,000 editors.[190] *EB* could have turned this weakness around as a strength and presented itself as selective and careful, a gourmet meal instead of supermarket.[191]
>
> *Product extension*. *EB* could have branded new products with the "Britannica" name. It could have expanded its product line by creating targeted editions and focusing on customization by creating supplementary materials for different age groups. To some extent, it tried to go that route. It offered a *Britannica Student Encyclopaedia* which primarily targeted students in grades three through six. Similarly, there were editions for high-schoolers and college students.
>
> *Bundling*. *EB* did this with its Deluxe Edition, a comprehensive package that included the entire 32-set of books together with other reference sources such as *Year in Review*, *Merriam-Webster's Collegiate Dictionary and Thesaurus*, a world atlas, and so on. However, for effective bundling at least one element of the bundle must have generated a powerful and fairly inelastic demand.

188 Encoh, Nick. "Your Tome is up … Encyclopedia Britannica Ends its Print Edition After 244 Years as it Fully Embraces Digital Age." *Mail Online*. March 13, 2012. Last accessed June 12, 2012. ▶ http://www.dailymail.co.uk/news/article-2114646/Encyclopedia-Britannica-cut-print-edition--244-YEARS.html.

189 Manjoo, Farhad "Expensive, Useless, Exploitative." *Slate*. March 15, 2012. Last accessed June 17, 2017. ▶ http://www.slate.com/articles/technology/technology/2012/03/the_encyclopedia_britannica_was_expensive_useless_and_exploitative_i_m_glad_it_s_gone_.html; Encoh, Nick. "Your Tome is up … Encyclopedia Britannica Ends its Print Edition After 244 Years as it Fully Embraces Digital Age." *Mail Online*. March 13, 2012. Last accessed June 12, 2012. ▶ http://www.dailymail.co.uk/news/article-2114646/Encyclopedia-Britannica-cut-print-edition--244-YEARS.html.

190 del Castillo, Michael. "Britannica App Can't Get No Love." *UpStart.com Business Journal*. March 26, 2012. Last accessed June 12, 2012. ▶ http://upstart.bizjournals.com/companies/media/2012/03/26/encyclopaedia-britannica-wins-appy-gets-totally-overlooked.html.

191 Bray, Hiawatha. "Enter Britannica." *The Boston Globe*, March 31, 2009. Last accessed June 17, 2017. ▶ http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

Customization. Customization of its encyclopedias and content was a way forward for *EB*, if it could market supplementary materials for different age groups and interests. *EB* tried to do so, but the price was too high when rival information was available for nothing online from multiple sources.

Copy its rival. Another strategy is to emulate Wikipedia's model by allowing subscribers to contribute to and improve any article, but with quality control by editors who are identified by name. This would deal with the problems created for Wikipedia by the free editing of its content.[192] For example, in 2011 the lawyers in a class action lawsuit were accused of editing pages on Wikipedia in order to reduce the credibility of the lawyers on the other side.[193] To deal with ideological attacks,[193] Wikipedia had to lock or restrict the editing of articles on certain persons and subjects in order to prevent "editorial vandalism."[194]

Focus on niche markets. *EB* could focus on its primary market of schools, libraries, and those users who depend on reliable information.[195] *EB* could then target segments which would highly value a paid-for version of its content over a free alternative. Parents of 2nd–12th graders are a good potential market. For their schoolwork and research projects, the *EB*'s level of detail would have provided an extra benefit. These strategies would have allowed for highly differentiated schemes based on demands across grade levels. They would have also catered to a very large potential market, as there are about 45 million 2nd to 12th grade students in the USA alone, and hundreds of millions worldwide. *EB* would have created differentiation value for these products relative to free alternatives with age-appropriate information, guaranteed authenticity, fast

delivery, and perhaps inclusion of online research documents that would assist student with paper formatting, writing, and organization. These strategies therefore combine versioning and third-degree price discrimination (the varying of price by customer segment). *EB* followed such a strategy by offering a *Britannica Student Encyclopaedia* aimed at ages seven to 12 ($449), *Compton Encyclopedia* (ages ten to 17), as well as several lower-priced CD-ROM or online packages aimed at students.

Wait for Wikipedia's own decline. Inevitably, Wikipedia's exponential growth slowed in time.[196] The number of articles added daily declined from 2200 in 2007 to 1300 in 2009 to about 800 pages in 2016.[197] Inside Wikipedia, "Deletionists" and "inclusionists" competed for control, internal fights dividing the organization as the deletionists predominated. It became increasingly difficult to make a successful edit. Normal users were often excluded. Wikipedia is often in the news because of inaccuracies. Its focus has consequently shifted from growing its content to ensuring its accuracy.[198]

Adopt the advertising model. In 2008, *EB* put its content online with free access. According to Ian Grant, its UK general manager, "the site was free at one point … but perhaps we were too far ahead of our time then. We had no commercial model, our servers crashed with all the traffic to the site, and the changes didn't work at all. This model was introduced by the new owner at the time, who felt we had to adapt to the internet, and it took us years to recover from this. [I am] not convinced that the free, ad-supported model for the consumer website would work. Advertising can be hard to come by and undermines the value proposition."[199] In another example, the well-known German encyclopedia

Brockhaus tried to survive with a free and advertising-based model for its encyclopedia. It, too, failed. Expansion by mergers with other traditional encyclopedias, both English language and others, does not overcome the fundamental problems, only enlarges them. Yet another possibility would be to merge with Wikipedia itself, probably becoming part of the latter, as its pay "Wikipedia Britannica Plus" brand.

Yet this approach did not work either. Wikipedia's had grown by 2015 to over 36 million articles, of which more than 5 million were in English. Wikipedia's monthly visitor base was 500 million individual readers in 2014; Britannica Online had 112,000 articles and received only 2 million views.[200]

Five days after the closing of the print version was announced, *EB*'s smartphone app, an effort to get on new platforms, won a Appz Award. However, would 80,000 articles of the app, at $1–2 per month, be enough to compete against the free Wikipedia with its millions of entries?[201] In 2016 the app itself became free and the subscription access cost $15 a year. Access to 60,000+ articles was free of charge. Estimates for 2016 app downloads were less than 5000. Most of the company's revenue now comes from the institutional market, such as schools and universities, rather than the consumer market. Thus, an app is not likely to be very successful.[202]

Changing its business model was not new to *EB*. Its business model and pricing have changed several times in its history. From 1768 to 1771, for example, it consisted of weekly pamphlets bought separately. But in the current age, Encyclopedia Brittannica's management did not exhibit the necessary foresight and determination to change course and to carry a venerated analog brand into the digital age.

192 Tobin, Ariana. "Founder Jimmy Wales Says Wikipedia Offers Insight into Cultural Dynamics." *St. Louis Beacon*. March 26, 2011. Last accessed April 4, 2011. ► http://www.stlbeacon.org/arts-life/neighborhoods/out-and-about/109144-jimmy-wales-visits-wustl.

193 Schonbrun, Lawrence W. "Wikipedia Wars." *Huffington Post*. March 30, 2011. Last accessed April 4, 2011. ► http://www.huffingtonpost.com/lawrence-w-schonbrun/wikipedia-wars_b_842819.html.

194 Bray, Hiawatha. "Enter Britannica." *The Boston Globe*, March 31, 2009. Last accessed June 17, 2017. ► http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

195 Bray, Hiawatha. "Enter Britannica." *The Boston Globe*, March 31, 2009. Last accessed June 17, 2017. ► http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

196 Johnson, Bobbie. "Wikipedia approaches its limits." *The Guardian*. August 12, 2009. Last accessed June 17, 2017. ► http://www.guardian.co.uk/technology/2009/aug/12/wikipedia-deletionist-inclusionist.

197 Wikimedia. "WMCharts." Last accessed June 17, 2017. ► https://tools.wmflabs.org/wmcharts/wmchart0002.php.

198 Johnson, Bobbie. "Wikipedia approaches its limits." *The Guardian*. August 12, 2009. Last accessed June 17, 2017. ► http://www.guardian.co.uk/technology/2009/aug/12/wikipedia-deletionist-inclusionist.

199 Charlton, Graham. "Q&A: Ian Grant of Encyclopedia Britannica UK." *Econsultancy*. February 10, 2009. Last accessed June 17, 2017. ► https://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk/.

200 Channick, Robert. "Encyclopedia Britannica Ends Print Run." *LA Times*. March 14, 2012. Last accessed June 12, 2012. ► http://articles.latimes.com/2012/mar/14/business/la-fi-britannica-ends-print-20120314.

201 Charlton, Graham. "Q&A: Ian Grant of Encyclopedia Britannica UK." *Econsultancy*. February 10, 2009. Last accessed June 17, 2017. ► https://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk/.

202 Sword, Alexander. "Encyclopaedia Britannica: How a Print Company Embraced Disruptive Innovation in Publishing." *Computer Business Review*. May 19, 2016. Last accessed June 17, 2017. ► http://www.cbronline.com/news/cloud/encyclopaedia-britannica-how-a-print-company-embraced-disruptive-innovation-in-publishing-4898586/.

11.11.2 Conclusions on Pricing

Pricing is one of the most important tasks for an information sector firm.

Media firms may send in their lawyers to protect their property rights from unauthorized usage. However, even if they could get rid of the pirates, competition will still drive down the price for most content that is not truly unique. Price deflation can occur owing to high production and commoditization competition. Low MCs lead to pricing below breakeven prices. Without differentiation, a firm will not be able to sustain itself economically. Innovations in technology and content are the greatest differentiators. However, such technology or content originality are difficult to sustain for long periods. Rivals will catch up or leapfrog.

One alternative is to seek market power or organize price stability and higher prices through a cartel. This, too, is not likely to endure owing to competitive and legal challenges.

Refinement of pricing offers a way out of this dilemma. There are numerous approaches to set prices-as we have seen. Some pricing policies are market-strategic—such as to gain market power. Other pricing policies deal with the problem of covering high fixed costs, such as through price differentiation and by maintaining prices above MC.

What is the impact of technology? On the positive side, we now have new technical tools of internet connectivity, local people meters, measurement software, cookies, and wireless connectivity, which all provide powerful methods of near-instant feedback. Thus, measurement of sales and the impact of prices can be increasingly real time, global, disaggregated, and with larger samples.

Technology also creates tools to identify, segment, and customize users, usages, price elasticities, and prices. It enables inserting micropayment systems into websites and apps and instituting algorithmic hedging techniques.

In that environment, what would be the optimal pricing strategy for sellers? It would be to price at each individual buyer's willingness to pay as long as it is above long-term MC. This requires knowledge of customers, as well as the market power to avoid competition and control over arbitrage. Yet such ability is growing with the sophistication of data mining, e-commerce, and large media platforms.

The least desired pricing for the seller is to be in a commodity situation—a competitively set market price at a short-term MC, and below average cost. With such commodity pricing, the likelihood of survival is poor. Major strategies to prevent this situation—where long-term superior cost efficiency is not available—would be consolidation and product differentiation by innovation. The alternative is to design and protect pricing systems that enable firms' prices to remain above cost. (It should be noted, though, that any quantitative analysis is a useful tool but not a substitute for a manager's and buyer's experience and insights of markets. Judgment and analytics are essential complements.)

Even with the advanced tools of gauging consumers and markets it is harder to set prices today, because of the rapidly changing environment with fragmented buyer markets, and with much greater choice, more buyer information, and globalization of buyers and rival sellers. At the same time, the fundamental economics of information and digital products are shifting, with the trends of rising fixed costs and declining MCs, which make pricing more complicated and risky.

Pricing methodologies and their integration into operations, product design, and marketing are evolving and are subject to rapid innovation and flexibility. Whereas pricing used to be a fairly quiet activity, it is becoming a key competence for managers in the information economy, and one with enormous significance for firms as they translate products into profits.

11.12 Review Materials

Issues Covered

In this chapter, we have covered the following issues:

- How to organize the pricing function of a company.
- Whether to implement cost-plus pricing.
- How to strategically price a product.
- How to use MC analysis in pricing.
- How to use auctions for market-based pricing.
- How to use yield management and dynamic pricing when product demand varies.
- How price deflation of information products affects the industry.
- How inflation indexed pricing works.
- How value-based pricing works.
- How to measure the WTP.
- What factors affect price sensitivity.
- How to determine a product's value using the hedonic price approach.
- How to keep prices above cost when WTP decreases.
- How to create customer lock-in.
- How to determine optimal price discrimination.
- What the reasons for flat rate versus usage based pricing are.
- How regulation affects pricing.
- How governments regulate interconnection prices.
- How to use hedging to avoid price variations.
- Why predatory pricing exists.
- How firm internal transfer pricing works.
- What ethical constraint to pricing means.
- Why RPM often exists.
- How micro and nano-pricing have changed the industry.
- Whether the industry is moving to a model of "Freeconomics" in which the content or service are free.
- When markets fail.
- What the life cycle of pricing is.

11.12.1 Questions for Discussion

1. Explain the differences between cost-plus and value-pricing. Which is more appropriate for media products? Why?

2. What is a contribution margin? What are the pricing strategy implications for a product with a low CM? High CM? Which type of products are media goods likely to be?

3. Discuss some determinants of price elasticity. How might a firm enhance elasticity? Decrease elasticity? And why might it want to pursue either strategy?

What has been the trend in demand elasticity for consumer media products?

4. How should fixed costs figure into a media firm's pricing/output decision? What about MCs?

5. Under what circumstances is price fixing among competitors legal?

6. Compare and contrast controlled and uncontrolled methodologies for demand estimates. What are the strengths and weaknesses of each?

7. Why may price cutting during the product decline phase not always be appropriate? What are some alternative strategies?

8. How should MCs and distribution costs affect a firm's decision to bundle or unbundle goods? Why?

9. From a producer's view, what are the advantages of priority pricing for an information distribution network like a phone company? Empirically, what do we observe in the pricing structures for these networks?

10. Discuss the role of price signaling in the online marketplace. Does e-commerce always work in favor of the consumer?

11. Explain how nano-pricing will allow for highly differentiated pricing through user profile histories.

12. Explain the importance of network effects for information products. How might a firm take advantage of network effects?

11.12.2 Quiz

1. 1st Degree Price Discrimination is:
   A. Charging different prices for different quality levels of a product;
   B. Charging different prices for the same product to different users;
   C. Charging different prices for the same product depending on frequency of use;
   D. Charging different prices to different groups of consumers (i.e. college students).

2. Which is the most frequent form of price regulation for the telecom industry around the world today?
   A. Yardstick pricing;
   B. Rate-of-return pricing;
   C. Cost-plus pricing;
   D. Price cap regulation.

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3. A product has a high CM and high elasticity of demand. What price change is most likely to be profitable?
   A. A price increase, since high CMs suggest decreasing quantity sold to maximize profits;
   B. A price decrease, since high elasticity means that a price rise will create a very small drop in quantity sold;
   C. Uncertain, since high elasticity suggests that demand is unpredictable;
   D. Uncertain, since a price increase with high elasticity may offset a high CM.

4. Which is not an option for wholesale pricing?
   A. Micropricing;
   B. Negotiated pricing;
   C. Peering;
   D. Efficient component pricing;

5. Which of the following is not a feature of telecom element pricing (price regulation and similar)?
   A. Calculates the incremental production cost of adding a subscriber to a network;
   B. Uses forward-looking costs to calculate the costs of providing service at present;
   C. Often used to encourage competitors;
   D. Uses an engineering approach to analyzing the costs of the network.

6. The relationship between a futures price and spot price is:
   A. Spot price converges to futures price;
   B. Future price converges to spot price;
   C. Futures price diverges from spot price;
   D. The relationship can change depending on the commodity.

7. Which is not a characteristic of an information economy?
   A. Capacity constraints periodically bottleneck supply, which contributes to cyclical price increases;
   B. High fixed costs and very high MCs;
   C. Investment and overproduction leading to cyclical price collapses;
   D. Substantial economies of scale in the industry;
   E. There are no real capacity constraints for information economies.

8. Which factor makes exchange of price information among competitors illegal?
   A. Exchanging data on aggregated transactions;
   B. Exchanging data concerning past pricing decisions;
   C. If the data is publicly available;
   D. If the industry in question is concentrated.

9. Which one of the following is a weakness inherent in conjoint analysis?
   A. Can only estimate different WTPs across consumer groups, not each groups demand elasticity;
   B. Only works for items that consumers consider as a whole, not for products which are composed of attributes;
   C. Its surveys wind up placing too much importance on the tradeoffs consumers make among product attributes when purchasing a product;
   D. Does not formulate user preferences in terms of utility, an important concept in microeconomics.

10. Which of the following is a form of aggregation?
    A. Goldilocks pricing;
    B. Versioning;
    C. Site licensing;
    D. Ramsey pricing.

11. A flat fee is more profitable than a metered rate for a monopolist.
    A. True;
    B. False.

12. Incumbent telephone companies position regarding interconnection prices is:
    A. Prefer these prices to be based on the least cost, most efficient network technology as long as costs are declining over time;
    B. Contend that the most efficient provider will set the prices;
    C. Argue that future costs should be based on each incumbent's existing network technologies;
    D. Both A and B.

13. The optimal number of versions for a product is usually:
    A. Two;
    B. Three;
    C. Four.

14. A competitive equilibrium typically favors the producers charging on per use basis.
    A. True;
    B. False.

15. If differential pricing were not allowed, the low end of the market might not be served.
    A. True;
    B. False.

16. Problems associated with Ramsey pricing include:
    A. Arbitrage;
    B. High informational requirement to set different prices correctly;
    C. Customers not volunteering their WTP if it will increase prices;
    D. All of the above.

17. What does the break-even sales curve show?
    A. Quantities of price and quantity that produce a constant profit level;
    B. Loss in profit required to offset increased market share;
    C. Change in sales required to offset a change in marketing expenditure;
    D. Change in costs required for a zero profit level.

18. The C4 describes:
    A. The four principles of value pricing;
    B. Strategies for maintaining P>MC;
    C. The combined market share of the top four firms in an industry;
    D. The four phases of the product life cycle.

19. Flexible pricing allows companies to do all of the following except:
    A. Hike profit margins;
    B. Boost proficiency of managing sales transactions;
    C. Lower MCs;
    D. Lower inventory costs.

20. An example of an endogenous characteristic of consumer valuation is:
    A. Age;
    B. Zip code;
    C. Quality level purchased;

21. When a produces charges more to those who value the information the most, and less to those who value it the least, this is a form of:
    A. Versioning;
    B. Ramsey inverse-elasticity pricing;
    C. Mixed bundling.

22. Which one of the following element attempts to capture the value when bringing a product to the market?
    A. Shaping the product;
    B. Its promotion;
    C. Its distribution;
    D. Its pricing.

23. An important reason to identify costs is to be able to calculate an accurate CM.
    A. True;
    B. False.

24. Although at current sales volumes each product earns the same net profit, the effect on each of a change in sales volume is dramatically different. This is an example of:
    A. Incremental breakeven analysis;
    B. CM analysis;

C. Conjoining analysis;
D. Oligopoly pricing analysis;
E. Cost benefit analysis.

25. In which type of auction does the highest bidder wins, but the price paid is the second highest bid?
    A. English auction;
    B. Dutch auction;
    C. First-price sealed-bid auction;
    D. Vickrey auction;
    E. Spectrum auction.

26. "Call option" gives the owner the right to sell an underlying asset at a set price within a set period of time.
    A. True;
    B. False.

27. Predatory pricing is:
    A. Selling below cost (MC) to eliminate a competitor;
    B. The price is raised above the competitive level once the competition is eliminated;
    C. Fundamental elements include below MC pricing and recoupment;
    D. Must eliminate competition long enough for company to recoup its losses by charging artificially high prices;

28. Skim pricing or penetration prices are usually set in what stage of the product life cycle?
    A. Introduction stage;
    B. Growth stage;
    C. Mature stage;
    D. Decline stage.

29. Which of the following is *not* an approach to set prices?
    A. Penetration;
    B. Cost-plus;
    C. Dumping;
    D. MC;
    E. Bundling.

30. It occurs when a foreign manufacturer undercuts domestic prices below its costs or below its price in its home (foreign) market to gain market share in the domestic market. This is:
    A. Price deflation;
    B. Skim pricing;
    C. Predatory pricing;
    D. Penetration pricing;
    E. Dumping.

Quiz Answers

1. B
2. B
3. A
4. A
5. B
6. C
7. B
8. A
9. D
10. C
11. B
12. D
13. B
14. B
15. A
16. C
17. A
18. C
19. C
20. A
21. B
22. D
23. A
24. B
25. D
26. B
27. A
28. B
29. C
30. E

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