Firms compete with the other firms within their competitive neighborhood, which might include both firms operating in the same industry along with firms operating in other, but related, industries. However, the most important competitors for a firm are those within the same industry. Here, I focus on competition within an industry.

**THE RESULTS OF COMPETITION: WINNERS AND LOSERS**

As firms compete with one another, eventually a set of firms in the industry might gain a competitive advantage. Perhaps the firms gaining this advantage have greater skill, or were more ruthless, or were simply luckier.

As one group of firms gains an advantage, this places the other firms in the industry at a competitive disadvantage. One consequence for these now competitively disadvantaged firms is they will now take a smaller proportion of industry sales and lower profits.

If sales and profits fall to low levels for long enough, the firms at a competitive disadvantage might be forced to leave the industry. Perhaps because of falling revenue, some firms are not able to pay their creditors and, so, they might be forced into bankruptcy. Or, perhaps the owners of the firm see the writing on the wall—and fear they will never be able to earn high enough profits in the industry—and they voluntarily leave the industry. Every year countless thousands of businesses shut their doors as they fail to make acceptable profit for the owners.

As the losing firms exit the industry, the remaining firms—the winners—expand and take over the sales of the firms that have exited. Often, the winners—individually and collectively—find that their profits grow.
In short, competition creates winners and losers. The winners expand and grab a larger share of the market and find their profits grow. The losers see their market share fall, earn lower profits, and are often forced to leave the industry.

Yet nothing is given. A firm that appears to be on the brink of bankruptcy might find—to the surprise and delight of the owners—that some market shift has made their product suddenly popular. On the other hand, firms that have been successful for decades might find that changes in the whims of consumers or the introduction of a major innovation by a competitor leads to their rapid demise. In competition, all bets are off.

Some firms that were unable to win in straight-up competition might become small niche producers: staying in the industry by selling product lines that the larger firms have little interest in because these product lines give low profits and/or have only a small demand. But not every firm losing the main battle within the industry is able to remake itself as a niche producer: most firms that lose the main competition within the industry are forced to exit the industry.

Once the losers in competition have left, or found small and often low-profit niches within the industry, the firms that have won in competition now do battle among themselves. Today’s batch of winners might find themselves, sometime in the not-too-distant future, split into winners and new losers.

**THE INDUSTRY AFTER A PERIOD OF COMPETITION**

After a long period of competition, industries often experience a major decline in the number of competitors as the losers exit and many temporary winners drop one-by-one. Over time, a small number of relatively large firms come to dominate many industries.

These dominant firms, however, might share the industry with a handful of smaller niche firms specializing in a variant of the product that is less profitable than the bulk of what is sold in the industry. The large firms have little interest in producing these low-profit variants of the product and, so, they do not aim their competitive aggression at the small fringe firms. Collectively, though, these fringe producers account for only a relatively small share of industry sales.

Figure 1 illustrates the process involved in competition. Competition transforms an industry from one in which a large number of small firms dominate the industry to one in which a small number of large firms dominate the industry. A few small firms might survive as niche producers that earn a level of profits too low to interest the main winners in the industry.
COMPETITION AND MERGERS

Competition leads to fewer and larger firms as the winners expand and take sales away from loser firms. Competition—or the desire to win in competition—can also lead firms to merge with one another. As will be discussed below, larger firms can have advantages over smaller firms. These advantages can lead to higher profits and greater competitive abilities.

Firms, therefore, sometimes combine forces by merging. Part of the reduced number of firms in an industry and part of the increased size of these firms comes about simply because firms have merged in order to enhance their competitive powers and profitability.

THE ENTRY OF NEW COMPETITORS IN AN INDUSTRY

However, before a small number of large firms comes to dominate an industry, a process can be set into motion that counteracts this development.

In capitalism, businesses want profits. Moreover, they want high profits. When existing businesses are looking to increase their profits by expending into new industries and when entrepreneurs are looking for a good industry to enter, one of their goals is to find an industry in which the profits are high. These outsiders would like to enter such an industry and grab a part of those high profits.

High-profit industries attract a lot of attention from outsiders. Low profit industries, on the other hand, attract little attention.
EVOLUTION OF INDUSTRIES AND BARRIERS TO ENTRY

As competition within an industry occurs, winners expand and winners—individually and collectively—earn higher profits. These higher profits, in turn, attract attention from outsiders. The new winners find, much to their disappointment, that their success in competition (in particular, the resulting higher profits) leads outsiders to consider entering the industry. If outsiders do enter the industry, competition heats up, prices fall, and profits decline for all those operating in the industry.

Figure 2 illustrates this process. Competition does lead to a reduction in the number of competitors and some firms do get larger. But the higher profits of these firms attract the attention of entrepreneurs and firms outside the industry.

They enter the industry hoping to earn higher profits. But by entering the industry—and increasing competition—they drive down profits.

Here, then, is the dream for the current winners in an industry: to find a way to avoid the appearance of new entrants who bring greater competition to the industry and drive profitability down to the previous lower level. If new entrants can be kept at bay, firms in the industry might be able to earn high profits for much longer than otherwise would have been the case.

BARRIERS TO ENTRY

Firms want to earn high profits. Firms that have become winners in competition can find, however, that the high profits they achieve disappear as new firms enter the industry. As new firms enter the industry, competition increases and
EVOLUTION OF INDUSTRIES AND BARRIERS TO ENTRY

profits fall. Worse for the firms which once stood dominant in the industry, one or more of the new firms entering the industry might be talented or lucky enough to drive them out of business.

Not surprisingly, firms that have achieved a dominant position within an industry would like to find that outsiders find it impossible, or at least difficult, to break into the industry. In other words, these firms would like to benefit from “barriers to entry.” These firms might find they are lucky to be in an industry in which the barriers to entry are already high, or these firms might go out of their way to construct barriers to entry (where none existed before).

Barriers to entry (or, BTE) are anything that hinders the movement of firms into an industry. BTE reduce or eliminate the entry of new businesses into an industry.

Sometimes, BTE can be almost insurmountable: no new firms can enter an industry. Other times, BTE can slow down but not stop the entry of new firms. When BTE are low or nearly absent, new firms can enter the industry relatively easily.

SELECTED BARRIERS TO ENTRY

Many things function as barriers to entry. Below I will discuss only a few of the most important or interesting sources of BTE.

LEGAL RESTRICTIONS/REGULATIONS

Government (at the federal, state, and local level) sometimes grants to an individual firm the exclusive right to provide some good or service to buyers. For instance, the U.S. Postal Service is granted the exclusive right over regularly scheduled daily delivery and pickup of mail. In a more local context, a single firm might be granted the exclusive right to the food concession in a municipal stadium or a local college. As another example, for many years various local governments have granted to cable companies the exclusive right to provide cable service to some geographical area within a city.

PATENTS

Article 1, section 8 of the U.S. Constitution says: “The Congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”

This is done through the issuing of “patents.” A patent for an invention gives the patent holder the “the right to exclude others from making, using, offering for sale, or selling” the invention in the United States or “importing” the invention into the United States. In most cases, the term of a patent is 20 years from the date of the filing of the patent application. Patents are among the most valuable assets a firm can have.
The patent holder, and not the government, is responsible for protecting the patent. This might require the filing of lawsuits against those who have violated the patent. This adds an extra wrinkle to patent protection: a firm might gain patent protection for what it sells, but it might lack sufficient financial resources to defend its patent in court.

In exchange for the granting of a patent, the patent applicant must file with the patent office an explanation of how to make and use the invention in sufficient detail so that someone else would be able to copy what has been patented. But, of course, others cannot use this information until 20 years has lapsed from the submission of the patent application.

Not everything can be patented. Only inventions that are true novelties and “non-obvious” to people working in the relevant field can be patented. Nor does an innovator need to apply for patent protection. If the inventor does not want to make public information about the invention, the inventor does not have to get a patent. However, in such a situation anyone who discovers this “trade secret” on his own can make use of it without being subjected to lawsuits.

The patent system is designed to provide an incentive to inventors by giving them a 20-year period to make money from what they have patented. If others were permitted to copy someone else’s invention as soon as this invention was made public (because, say, no patent system existed) then investors might find others are able to make money off their invention and the inventor might make little. But with patent protection, the inventor knows he will be able to earn money if his patent is for something that people are willing to buy.

**ECONOMIES OF SCALE**

The production of some products benefits from “economies of scale.” Economies of scale exist when an increase in how much a firm produces (that is, an increase in the scale of production) gives rise to a lower average cost of production.

In an industry in which substantial economies of scale exist, and the existing firms have become large, they can often rest easy: new competitors generally start small and are unable to benefit from economies of scale. In this case, new entrants will find they have a higher average cost of production than that for those already in the industry. In this case, new (and therefore small) rivals find it difficult to compete against the large existing firms: they just cannot be price competitive given their larger average cost of production.

Economies of scale, then, can act as a barrier to entry. Not every industry benefits from economies of scale, but where substantial economies of scale do exist, the existing firms find they are often protected from the threat of new entry.

**ECONOMIES OF EXPERIENCE**

Over time, firms often find better and better ways to produce their product and, often, to lower production costs. This happens due to the experience managers
and workers gain in producing the good. Even if a given factory remains the same size and appears, to outsiders, as unchanged over time, this factory can often produce goods at lower and lower cost.

This process is known as “economies of experience” and comes from the process of “learning-by-doing.” If the advantages of experience in producing a good are significant enough, this experienced-caused lower cost can serve to create a barrier to entry. New firms, lacking this same production experience, will find they cannot compete as they might be unable to achieve the same low production costs as achieved by existing firms.

**FINANCIAL REQUIREMENTS TO ENTER INDUSTRY**

If you wanted to open your own mobile hot dog stand, you could start your business with a relatively small outlay of money. You can buy a new, top-quality hot dog cart for $5,000 - $7,000 dollars or buy a used one on ebay for less than $1,000.

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**Model # AR01-4**

Our hauling & pushing chrome-panel hot dog cart is 40” in width by 60” in length. All carts are manufactured according to State & County Health Department regulations. UL Listed M=26823.

**Standard Equipment Included:**
* One steam table with four 1/2-sized pans.
* Two ice chests.
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* 10-gallon freshwater capacity.
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Entering the mobile hot dog stand industry requires only a relatively small amount of money. Many people can, and therefore do, enter this industry. The mobile hot dog industry has few financial barriers to entry.

Many other industries are very different, as they require vast sums of money in order to enter the industry. For instance, to enter the auto industry you likely need billions of dollars. The same holds true for many other industries—so much money is required that very few outsiders can hope to enter the industry. A major financial requirement serves as a significant barrier to entry for many industries.
Sometimes a particularly hard-to-find resource or input is needed to produce a good or service. If a company can gain control or near control over this resource or input, it can create a barrier to entry for other firms outside the industry.

One classical example of such a process involved the Aluminum Corporation of America (Alcoa) when it successfully created such a barrier to entry over a hundred years ago in the aluminum industry. It was able to benefit from this created barrier to entry for many decades.

Aluminum was first discovered in 1807 but could only be produced at a very high cost and in small amounts. In 1886, a process for producing aluminum much cheaper than before was discovered. By 1894, Alcoa had acquired the patent for producing aluminum and could anticipate being able to earn good profits by selling the desirable metal until about 1910. However, Alcoa had bigger plans.

Aluminum is typically produced by using the mineral bauxite and using a huge amount of electricity. Alcoa set off to attempt to gain control of all the economically worthwhile deposits of bauxite and gain direct and indirect control over much of the large-scale cheap sources of electricity.

According to Richard Cowen, “Alcoa bought up three major mining companies operating in the best-known bauxite deposits in North America, which were in Georgia, Alabama, and Arkansas: Georgia Bauxite and Mining in 1894, General Bauxite Co. (in Arkansas) (1906), and Republic Mining in 1909. Not only did this ensure Alcoa's future supply of bauxite, it prevented any competitors from access to these resources. Any competitor would have to prospect for and find a new bauxite deposit (which would be further from the American industrial heartland at the time), bring it to production, and set up shipping facilities for it. Given that Alcoa's bauxite was coming from proven high-quality deposits, by cheap and established shipping routes, this immediately placed a substantial cost barrier in the face of any company even thinking of entering the aluminum industry.”

Alcoa also signed long-term contracts with large-scale electricity producers (largely hydroelectric dams) and became part owners of other large electricity producers in order to deny these sources of cheap and plentiful electricity to potential aluminum producers as Alcoa’s patent protection expired. They continued this strategy up until the 1950s.

ENTRY-DETERRING BEHAVIOR
Alcoa set out to create barriers to entry by gaining control over bauxite lands and large-scale, cheap sources of electricity. This provides one example of a

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1 Richard Cowen, Exploiting the Earth, found at the website:
   http://www.geology.ucdavis.edu/~cowen/~GEL115/115CH14aluminum.html
wider set of activities pursued by firms: to engage in activities designed to intentionally create BTE for their industry.

One method by which firms create a barrier to entry is to develop consumer loyalty and name recognition through advertising and marketing. For instance, for decades the cosmetics industry has massively advertised in order to establish its market presence and gain consumer loyalty and trust. This serves to make it more difficult for a new firm to break into this industry, as it must attempt to do so without having developed loyal customers and name recognition.

Less benignly, firms can—and have—acted in exceedingly aggressive ways when faced with new competition. This might involve starting a price war every time a new competitor enters their market, which might push prices so low that no one, not even the firms already in the industry, can earn adequate profits. This changed industry environment might persuade new entrants to reverse course and exit. Those contemplating entry into such an industry, in which new entrants are greeted by price wars, might have second thoughts about entering the industry. A history of price wars greeting new entrants, then, can serve as a barrier to entry into the industry as prudent entrepreneurs decide to look elsewhere for an industry to break into. Of course, when new entrants are not on the horizon, the existing firms in the industry might keep prices high enough to give them good profits.

Outsiders looking to enter an industry, hoping to grab part of the high profits earned by firms within that industry, might be understandably wary when they see firms inside the industry with larger production facilities than actually needed to serve the current market. The availability of such excess production capacity can signal to those considering entering the industry that at least one of the existing firms is willing—and able—to flood the market in order to drive down prices if a firm enters the industry from outside. So, too, a firm in the industry with large cash reserves, a large line of credit, or access to funds from outside the industry (as it is part of another division of the same company, say) is better able to pursue, start, and weather a price war.

This activity, of attempting to drive out rivals by the use of “too low prices” is called “predatory pricing.” In most cases, it is illegal today but firms have found ways to engage in similar, but legal, behaviors.

At other times, firms within an industry have pursued a legal strategy: sue the new firms for real or pretend violations of patents, copyrights, and other things. This strategy has been used to drive rivals out of business or to, at the very least, raise the cost of entering the business to very high levels.

NETWORK EFFECTS

The network effect was originally discussed in the context of early telephone companies. It was once the case that if you bought telephone service from one telephone company, you could only call people who were customers of that one telephone company. You would not be able to call the phones that were part of
the telephone network of a rival company. In this situation, everything else remaining equal, people were well advised to buy their telephone service from the telephone company with the largest network so they could be able to call the most people possible on their telephone. A large network gave the telephone company an advantage over rivals with smaller networks. New entrants into the telephone industry found they had great difficulty attracting consumers as they had a very small network. Large “network effects”—where customers derive a greater benefit from a company’s product the more other people use the same product—can provide a barrier to entry.

While not every product gains benefits from network effects, some notable recent products do. Social network platforms such as Facebook or Twitter have found network effects give them some protection from new entrants. Indeed, new social media companies often strive to obtain large numbers of users as soon as possible in order to benefit from network effects. Obtaining a large number of users might not only lead to increased revenue, it can (where network effects are important) lead to the establishment of a major barrier to entry.

**BARRIERS TO ENTRY AND PROFITABILITY**

With a high level of BTE, new competitors are unlikely to appear in the industry. As a result, competition within the industry is generally limited to firms already within the industry. No guarantee exists that firms in industries with high barriers to entry will be able to manage their competition so that each earns high profits, but they are more likely to achieve that result than if they were in an industry with low barriers to entry.

Arguably, high barriers to entry might be a necessary, but not sufficient, condition for the earning of high profits for an industry and for individual firms within an industry. Even more certain is that low barriers to entry are almost always associated with very low profits.

**BARRIERS TO ENTRY AND THE NUMBER OF FIRMS IN AN INDUSTRY**

One indirect (but imperfect) sign of high barriers to entry and one indirect (but imperfect) sign that high profits might exist in an industry is a small number of firms in the industry.

Competition leads to winners and losers. Barriers to entry restrict the entry of new firms into the industry. Over time, then, industries with barriers to entry will often end up with a relatively few firms. And, these firms will often earn profits higher than in other industries with low barriers to entry.

Over time, the number of firm in an industry might stabilize at, say, 5,000 if there are almost no BTE. In other industries, the number of firms might stabilize at 200 if moderate BTE exist. In still other industries, the number of firms might stabilize at five firms if high BTE exist.
A relatively small number of firms is not only an indirect (but imperfect) indicator that BTE and profits are high, it also independently contributes to a reduction in competition and to higher profits.

**EROSION OF BARRIERS TO ENTRY**

Moderate and high barriers to entry can give firms within the industry good profits. However, if profits are high enough in these industries, outsiders will try to find some way to enter the industry. As time passes, more and more outside firms find ways to break though the barriers to entry. The chance of earning high profits provides a strong incentive for outsiders to do what they can to break into a high-profit industry.

For instance, perhaps outsider firms find a way to produce the product cheaply with new technology. Alternatively, perhaps they innovate and find a somewhat different product that provides a very good substitute for the good/service provided by the firms behind the barriers to entry. In this way, the outside firm can enter the competitive neighborhood of the firms behind the BTE but still remain outside the industry protected by the BTE. Eventually, such an outside firm might drive the original industry out of business. On the other hand, more prosaically, patent protection might run out and new firms are now able to enter the industry.

Almost all barriers to entry are temporary. Eventually, outsiders overcome them or they disappear on their own. This might take many years—perhaps decades—but high-profit industries protected by high barriers to entry usually disappear.