Annex 1

Barriers to Entry

Most competition cases have to do with market power, and barriers to entry are necessary for market power. In some cases market power is created through mergers or agreements between competitors not to compete. In others the focus is on the abuse of preexisting market power through, for example, restrictive vertical arrangements and predatory pricing. In fact, most abuses of market power are attempts to preserve or expand market power.

Firms have market power individually or collectively when buyers do not have an adequate choice of alternative independent suppliers. In a free-market economy consumers may buy from any firm and since firms can, in general, enter any market. Thus there can never be market power when entry is easy. As soon as one firm or a group of firms attempts to raise prices or lower quality (or both) from competitive levels, a new firm can emerge to serve the market.

Not surprisingly, many cases turn on an assessment of barriers to entry. If barriers are high, market power is possible. If they are low, new entrants can be counted on to restore competitive balance. This chapter provides a guide to evaluating barriers to entry in competition cases.1

Consideration of barriers to entry can appear at two points in a competition case. The first is at the market definition stage. If the law dictates that relevant markets should be defined to include potential entrants (supply-side substitution), any analysis of barriers to entry will be necessary to determine which firms are in the relevant market.2 For example, in a merger of the only two firms in a country making automobile tires, makers of truck tires might be considered to be part of the relevant market— if they could easily switch to producing automobile tires should prices rise above competitive levels.

More commonly, however, the analysis of barriers to entry appears after the market has been defined. The question is: How likely is it that new entry would control uncompetitive behavior in the market? Even a firm with a large market share will have limited market power if a new company enters the market following any attempt to raise prices above competitive levels.3 A merger, even if it builds a firm with a large share, cannot lead to higher prices if such prices would attract new entrants. Even in cases in which barriers to entry are not technically required to justify antitrust action, analysis of barriers can be useful to screen out cases with few anticompetitive consequences. For example, the approach to predatory pricing adopted in the Canadian Competition Bureau's guidelines suggests that the bureau will investigate whether such pricing could work in the market in question.4 Predatory pricing is unlikely to be successful if attempts to recoup losses from a

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price war are frustrated by the entry of new firms (or even reentry of the victim).

Any analysis of barriers to entry involves two basic steps. First, the most likely entrants are identified. These could be firms in the same industry in other areas; firms in the same area but in a different (but maybe related) industry, upstream (supplier) or downstream (customer) firms vertically integrating either formally or through a strategic alliance with another firm, or firms new to the market. Barriers to entry, however, really mean significant impediments to firms thought most likely to enter. Other firms might face different barriers.

The second step is evaluating the magnitude of the barriers facing potential entrants.

DEFINITIONS

Discussion of barriers to entry is complicated by disagreements over a correct definition. The term barriers generally refers to conditions or behaviors that restrict the mobility of capital in and out of markets in response to realizations of above- and below-normal profits. This approach takes what are sometimes called exit barriers as a type of entry barrier, since anything that limits an investor’s ability to move capital out of an industry when profits are low will reduce interest in investing in that industry. This approach also considers only entry that brings capital into an industry and not entry by acquisition, which merely transfers ownership of existing capital. Since it does not change the number or size of those in the market, there is no reason to expect entry by acquisition to lead to lower prices.

In defining barriers to entry, the key question is: Will supracompetitive prices in the relevant market attract entry that will bring prices back down to competitive levels? If the answer is no, we have an impediment to entry.

Probably the first to undertake a careful study of barriers to entry, Bain (1968) considered barriers to be factors that permitted established firms to maintain prices above costs without inducing entry. He suggested that economies of scale, absolute cost advantages, product differentiation, and large capital requirements were barriers. Stigler (1968), however, saw barriers only in asymmetries between firms—costs that had to be borne by entrants but not by firms already in the industry. So while Bain concluded that economies of scale and large capital requirements were barriers, Stigler (assuming entrants had access to the same technology and capital markets) did not.

Where does all this leave competition authorities wanting to evaluate entry conditions? For competition cases four questions need to be answered:

- If prices rise above competitive levels, would this attract entry and bring new capital to the market?
- If there is entry, would it be of sufficient scale and scope to bring prices back down to competitive levels?
- How long would it take for prices to return to competitive levels?
- If there is no entry, if entry is not of sufficient scale and scope to push prices back down to competitive levels, or if it would take a long time for sufficient entry, what prevented more significant or rapid entry?

Both the Stigler and Bain definitions contribute to the antitrust treatment of barriers. With Bain, the focus is on what stops entry from eroding monopoly profits. Stigler’s approach, however, gives us a better idea where to look for barriers that will block entry—that is, to look for asymmetries between firms. So, for example, there should be no worries about economies of scale (as in Bain) deterring entry into the steel industry; rather, attention should be on the size of the sunk component of the initial investment. It is this amount, already in place for the incumbent but not yet for the entrant, that represents what the entrant puts at risk and what can ultimately deter entry.
WHAT ARE THE EFFECTS OF STRUCTURAL BARRIERS?

Some barriers are due solely to conditions outside the control of market participants—basic costs of production, adequacy of capital markets, and activities of governments and regulators.

Regulatory barriers to entry
Governments interfere with entry in several ways, some intentional, some not. Many regulatory barriers are not highly visible. Government policies often only indirectly affect the ease of entry, yet this can make all the difference between a market with high barriers and one with low barriers.

EXPLICIT REGULATORY BARRIERS. The most obvious and direct barrier to entry comes from regulatory restraints on entry. If it is necessary to obtain a special permit or license to operate in a particular market and securing such a permit is difficult or impossible, it is less likely that there will be new entrants to push prices down to competitive levels. Governments take control of entry for many reasons, some good and some bad.

Some regulatory barriers are explicitly directed at blocking entry. For example, many transportation markets have historically had entry regulations, although these have now been relaxed in many countries. When enforced, such regulations can be an absolute barrier to entry. It is still possible, however, that there are unregulated alternatives that will provide some market discipline. For example, in many cities regulated taxis compete with buses, private vehicles, car pools, and bicycles.

In some cases entry might require permits that are costless to obtain from regulators, but which take time to process. This regulation will not block entry, only delay it. Although some prefer the term “impediments to entry” for such restrictions, it must be recognized that they have much in common with barriers to entry—that is, they provide incumbent firms with some protection from competitive forces. Regulations that influence the use of some inputs can also become barriers to entry. Sometimes this is explicitly intended, sometimes not. For example, zoning restrictions may prevent an entrant from using the best sites for its business. And occupational licensing laws might force an employer to hire workers with credentials that are not needed to do the desired work. If such regulations raise the cost of serving a market and reduce potential profits, they will be a disincentive to entry.

Sometimes these restrictions are not equally applied to incumbents and entrants, as when incumbents avoid new, stricter regulations through some sort of grandfathering provision. The higher cost to new entrants protects incumbents from entry as long as they charge a price lower than the entrants’ costs. If regulations raise costs for all firms to the same extent, they may not permit incumbents to make positive profits without encouraging entry. Even so, they prevent entrants from driving prices down to competitive levels.

The classic example of government policies that favor incumbent sellers at the expense of potential entrants is in international trade. Potential entrants from other countries are frequently blocked from entry by tariffs, quotas, or other nontariff barriers. Tariffs were often imposed to generate revenues for governments with limited alternatives but have been used increasingly to protect domestic firms from foreign competition, typically at the expense of domestic consumers. In this era of globalization no review of entry conditions could be complete without consideration of the actual and potential role of foreign competition in the market and of the barriers to trade that might limit that role.

The general importance of explicit regulatory barriers to entry varies from country to country. Years of governmental control of mar-
kets in formerly centrally planned economies leaves them with many such restraints on competition, frequently the most significant barriers to entry. Since many of these regulations are no longer desirable, competition offices of these countries should push for reforms that will free up competition through new entry.

Implicit regulatory barriers. In many cases regulations that are adopted for reasons unrelated to entry or competition still limit the attractiveness of entry. Look at environmental policy, which can influence entry decisions in at least two ways. First, policies that mandate lower levels of pollutants in emissions or effluent impose costs on firms. Even if the costs are imposed equally on all, they reduce profits and make the industry less attractive to investors. Frequently, there will be a substantial sunk-cost component that firms cannot recover if they leave the market.

Second, environmental policy hurts entry if it favors established firms over new entrants. When tighter emission and effluent standards are adopted, it is not unusual for older plants to be grandfathered—or at least given a long time to comply. New plants, however, are typically expected to meet the higher standards from the beginning. This gives established firms an absolute cost advantage. They have scope to raise prices either through collusion or mergers without attracting entry.

Other examples of the ways that different public policies indirectly affect entry can be found in labor laws, bankruptcy laws, telecommunications regulation, and workplace safety laws.

Sunk costs
Sunk costs are costs that the firm cannot avoid by withdrawing from the market. They are a sort of entry fee since they represent the cost of entry followed by quick exit. Sunk costs are thus investments that are fully committed to the market once made and that have continuing value only if left in that market.

Sunk costs represent the investment put at risk by the entrant. As such, the size of sunk costs will clearly influence a firm's decision whether or not to enter. The prospective profits from successful entry must be weighed against the costs of unsuccessful entry. If sunk costs are zero, unsuccessful entry is not costly and entrants can be expected to respond quickly to profit opportunities in uncompetitive markets. Even hit-and-run entry can be profitable under these conditions. When such costs are large, however, potential entrants will be much more cautious.

Much of the recent rethinking about Bain-type barriers can be shown to involve examples of sunk investments. Dixit (1980) and Baumol, Panzar, and Willig (1982) showed that economies of scale driven by large fixed costs can discourage entry while allowing incumbents to earn supranormal profits, but only if part of the fixed costs is sunk. The extent to which product differentiation is a barrier to entry depends to a considerable extent on how sunk is the investment in brand names necessary to create the differentiation. Switching costs, often seen to impede attempts at entry, represent a sunk investment (for example, in acquiring information) required to make a particular buyer-seller relationship work efficiently (see Klemperer 1995). Finally, many so-called regulatory barriers are simply sunk-cost problems. If regulations do not block entry but merely attach conditions (for instance, testing for product safety), the cost of satisfying the regulations will be largely sunk.

Sunk and fixed costs. Not all fixed costs are sunk. Long-run fixed costs are costs that must be incurred for any positive level of output. If two cities are served by a bus line, the long-run fixed cost might be the cost of one bus. But if that bus can be sold at its purchase price (or its lease costlessly cancelled), then this fixed cost is not a sunk cost. Similarly, some of the price of rented space might be a fixed cost; if it is not possible
to operate from smaller premises as a firm reduces output, the lease is at least a partially fixed cost. If the lease can be cancelled at any time, however, this fixed cost is not sunk.\textsuperscript{18}

**Sunk costs and economies of scale.** Economies of scale exist when unit costs fall as output expands. It is the spreading of substantial fixed costs over many more units of output that is the main source of scale economies in many industries, though there can be others. If an industry is characterized by substantial economies of scale (relative to the size of the market), there will be room for only a few efficient firms, and this has led many economists to predict uncompetitive outcomes in such industries. If the market is "contestable," however, this need not be the case: if there are no sunk costs or other barriers to entry, potential entry can be expected to discipline pricing behavior (see Baumol, Panzar, and Willig \textsuperscript{19}). A firm or collusive group of firms raising price would quickly find itself displaced by an entrant offering lower prices.

Although there is a theoretical distinction between economies of scale and sunk costs, they are empirically related. Substantial economies of scale are frequently the result of large fixed costs associated with plant and equipment (among other things) combining with relatively constant marginal or variable costs.\textsuperscript{20} Some of these fixed costs will be sunk. Seldom can all assets assembled for entry be resold at cost or leases cancelled costlessly.

This distinction has important implications for the way competition officials should evaluate economies of scale as a potential barrier to entry. Attention should be particularly focused on the magnitude of the sunk-cost component of fixed costs—that is, economies of scale should be regarded as an indicator of the possible presence of substantial sunk costs.

**Sources of sunk costs.** Sunk costs can arise, for example, as part of investments in physical and human capital, and in the start-up losses necessary before operations become profitable. Most familiar are investments in specialized capital (machinery, for example) that has limited second-hand value. A robot programmed to perform one highly specialized function on an assembly line may be useless when removed from its place. Much of the money used to purchase that robot will be sunk. Similarly, a piece of expensive farm machinery might be designed for use with a particular crop in a particular location and might be worthless elsewhere.

The normal problems of dissolving a business will be aggravated and sunk costs magnified if there are not good resale markets for equipment freed up as a result of the entrant's departure from the market. This problem is likely to be greater in economies in which markets are just developing.

The costs of buildings and other structures can have a significant sunk component if they are custom designed or if they have a special location. A dam built as part of a hydroelectric generating facility is a clear example. A recent merger case in Canada provided evidence that meat-rendering facilities are so purpose-built that they are almost unusable for anything else. In such cases the resale value will be substantially less than the cost of building.

"Soft" assets, such as knowledge produced by research and development and brand names developed through expensive advertising campaigns, also have significant sunk components. Much of the learning and goodwill accumulated (at a cost) in the time spent in the market will be of no value after exit. In the same way customized computer software with limited application outside that for which it was written can represent a sunk investment.

Another important soft asset can involve regulatory approvals. In many cases regulations require entrants to obtain approvals before being allowed to supply a market—for example, food
and drug laws requiring that products are safe and effective. In contrast to regulatory barriers that absolutely prohibit entry, these laws attach conditions to entry that, while frequently offering social benefits, raise the cost of entry. Meeting regulatory conditions is costly and this spending is largely sunk.23

Less obvious, but still important, are sunk costs associated with human resources. Time spent planning and building a firm has a value that is lost should that firm exit.24 The same is true of education and training specific to a firm. In some industries recruiting, screening, and training employees are major undertakings; and these costs can be substantial even when labor is unskilled. In some low-skill occupations, such as newspaper or flier delivery, the employer’s challenge is in screening potential employees to find personnel who will be reliable and honest.

In emerging-market economies these problems are likely to be especially acute. Markets for various inputs are just being created and infrastructure is still underdeveloped. This can mean, for example, that a new entrant must manufacture many of its own inputs, arrange on its own to import other inputs, and give workers basic trade skills. In an industrial economy many such services could be provided more quickly and efficiently by specialized firms and schools. In an economy with less well-developed markets everything takes longer, and time is costly to the entrant.

Another, less frequently recognized sunk cost involves start-up losses endured by an entrant trying to establish itself in a market. Seldom can even a successful business claim to have earned profits from day one. More typically, firms go through a start-up period in which costs exceed revenues. Office or factory space is bought or rented, staff are put on the payroll, advertising begins, and some products are produced to show prospective customers—all before a single unit is sold. These losses are properly viewed as an investment to be repaid when sufficient business is attracted. They represent a sunk cost of entry, and when they are substantial relative to the prospective gains from successful entry, potential entrants will be discouraged.

Some industries have special features that make start-up losses large. For example, when there is a considerable element of learning by doing in production, output will often be marketed at less than cost to sell sufficient quantities to provide the needed learning (see Spence 1981). The difference between the price received for each unit and its current cost of production can be thought of as a sunk investment in future productivity.

Coordination difficulties involving customers can also make entry more difficult by extending the period over which a new entrant will have to endure losses before attracting sufficient business to break even. This arises when the value that customers put on a product (and therefore their willingness to buy) depends on how many other customers are buying that product. A simple example: in the “Southam” case the Canadian Competition Tribunal noted explicitly the importance of start-up losses as a sunk investment put at risk by an entrant into community newspapers. It also recognized that these losses are magnified by a coordination problem: advertisers want to advertise where others advertise,25 so attractive rates might not bring advertisers to a paper if they do not expect other advertisers to move as well. The only way for a prospective newspaper to deal with this is to begin with special low introductory rates and build business slowly. The tribunal referred to this as “establishing credibility.” Recognizing the importance of start-up losses as a sunk-cost barrier to entry was important to the entry analysis in Southam, because they were the only real barriers. Failing to view these costs as a barrier would have led to the conclusion that entry was easy.26
**Height of the sunk-cost barrier.** There is no way to know the precise point at which sunk costs are large enough to be a significant barrier to entry. In practice, data on sunk costs must be combined with information on all other barriers to decide on the likelihood of entry.

The contestability model views sunk costs as the cost of hit-and-run entry. If this was the kind of entry anticipated, the sunk costs required could be compared to the prospective profits from the "hit."

Most entry, however, is unlikely to be intended as the hit-and-run variety. In most cases entrants plan (or at least hope) to stay in the market. Sunk costs then matter because entry is risky. It might fail, leading to the loss of the sunk investment. In this model sunk costs are more like a ticket to a lottery that pays off well if the entry is successful. Thus the absolute level of the sunk cost alone would be a poor measure of the height of the sunk-cost barrier. What matters is the level of sunk costs relative to the prospective gains from successful entry and the probability that entry can be successful. For example, a sunk cost of $100 is minuscule for someone contemplating entry into the automobile manufacturing industry given that success there would result in annual profits of millions of dollars (and maybe much more). But $100 of sunk cost might be prohibitive for a corner lemonade stand that, if successful, would earn $25 a year.

Similarly, the more likely it is that the entrant will be able to secure a permanent place in the market, the less important is the size of the sunk investment. If success is certain, sunk costs are no different from other fixed costs. Thus sunk costs will deter entry only if they are large-relative to the prospective gains of successful entry.

**Information about sunk costs.** As with other barriers to entry, industry insiders (including consultants) are probably the primary source of information about sunk costs. Potential entrants, when asked to describe how they would go about entering the market, will frequently point to obstacles that can be interpreted as sunk costs. Industry insiders can also provide information about recent entry attempts, whether entry failed or succeeded. In many cases involving large-scale equipment and machinery (trans- portation equipment, for instance), there are organized resale markets with used-goods dealers or brokers who can provide useful information about resale values.

**Other structural barriers**
Apart from sunk costs, there are other structural factors that can give rise to barriers to entry.

**Absolute cost advantages.** Clearly, if incumbent firms have some absolute cost advantage over entrants, and entrants are aware of this, entry is problematic. The source of the advantage could be real in that it reflects the incumbents’ superior resources or skills; or it could be artificial, created by government policy or by anticompetitive actions taken by incumbents to disadvantage entrants.

One real absolute advantage comes from superior access to key natural resources, such as a rich mine or a prime retail location. Others derive from superior human resources, as in a management team that cannot be replicated by entrants. Steep learning curves can also give established firms absolute cost advantages. The greater experience of the older firms means that they have fine-tuned activities to achieve all possible efficiencies.

All absolute cost advantages give incumbent firms scope to raise prices above competitive levels before they attract entry. Although there is no good reason to punish a firm for being better than others at producing output, authorities have the responsibility to see competition work where it can to maximize market efficiency.
ECONOMIES OF SCALE. Economies of scale in production exist when the unit costs of production fall with increasing output. Economists since Bain have argued that economies of scale can be a barrier to entry because they make entry on a small scale expensive. Stigler asked why entry needed to be small scale: If the entrant had access to the same production technology as the incumbent, why could it not enter on a large scale? The contestability literature, moreover, describes a model in which economies of scale give the incumbent no ability to raise prices even a little above average costs. If it did, entry would be swift and the incumbent would lose its market.

Many entry, however, is not large scale, and most markets are not perfectly contestable. Firms probably choose to enter on a small scale for different reasons, many of them undoubtedly related to the risks associated with large-scale entry in markets in which some costs of entry are sunk and therefore not recoverable on exit. In addition, large-scale entry raises the probability of a more aggressive response by the incumbent.

Economies of scale then can be seen as a sort of marker or indicator that sunk costs or other barriers might be present. In this regard various proposals have been advanced to measure the extent of economies of scale in production. One, the minimum efficient scale (sometimes called the minimum efficient plant size) is generally defined to be the smallest fraction of total market demand that could be produced by a fully efficient firm (or plant). Estimates for an industry can come from econometric, engineering, or survivor studies. Survivor studies look at the sizes that have survived over an extended period in an industry and assume that survival is proof of efficiency.

The minimum efficient scale, however, does not directly measure any real barrier to entry. It also fails to provide some important information on scale economies of particular relevance to new entrants. It tells how big a firm must be to achieve all efficiencies but does not reveal how less efficient smaller firms will be—and this is crucial. Most markets do not comprise identical firms producing homogeneous products. There is usually scope for some firms to have higher costs than others, particularly if their products have a particular appeal for some buyers. In such a market there can be room for a higher-cost entrant as long as the cost penalty for subefficient production is not too high. An alternative measure is Salop's (1987) minimum viable scale. This measures the total sales an entrant would need to earn just enough profit to justify entry. This is not a purely structural concept, since its calculation will depend in part on assumptions made about market prices postentry. But it may be a better way to capture the significance of economies of scale to a potential entrant.

LARGE CAPITAL REQUIREMENTS. Entering some industries requires substantial capital. In some cases this is because there are huge economies of scale and large cost penalties for subefficient production, implying that efficient entry requires the capacity to serve a large part of the market. While this was a barrier to entry according to Bain (1968), it was not according to Stigler (1968) unless it could be shown that entrants had higher capital costs than incumbents did. Then, it would simply be an absolute cost advantage. But there is no reason to generally assume that incumbents have lower costs of capital than entrants. Of course, large capital requirements are frequently associated with substantial sunk investments, which likely frightens potential entrants and their financial backers. If there are no sunk costs, why should investors or lenders to a potential entrant worry about the size of the loan necessary to finance entry?

All of this depends implicitly and critically on the existence of well-functioning capital markets. If there are no capital markets, then clearly entry will occur only if the potential entrant has suffi-
cient resources of its own. Larger capital requirements make entry less likely, as fewer potential entrants will have the necessary resources.

In many developing countries and transition economies, capital markets are underdeveloped and financing entry can be a big problem. The lack of industrial infrastructure can exacerbate the problem. This means that the entrant needs even more capital, because it must be prepared to do more things, such as handle its own distribution, manufacture inputs, and so on. As a result, it is important for competition authorities reviewing a case to ask if the most likely entrants have sufficient resources to finance entry and, if not, whether they could raise the necessary funds.

Even when economies of scale and large capital requirements do not create entry barriers, the need to build large and expensive plants means that entry cannot be immediate. In many industries it can take a year or more from a decision to enter and the time that the plant is up and running. To the extent that competition authorities are concerned that the entry be swift (so that the market power has a short life), they have another reason to view potential entry as a less potent force in industries with these characteristics.

Response of incumbents to entry

Central in the potential entrant's calculation of expected profits from entry will be the response it expects entry to elicit from incumbents. If they accommodate entry by contracting sales, it will be easier than if they start a predatory price war to drive the rival out. Incumbents typically want the entrant to believe (rightly or wrongly) that entry will be met with an aggressive response. There are actions that incumbents can take that might send this message, some more credible than others.

Limit pricing. Limit pricing is the practice by an incumbent firm of pricing so low that, given the economies of scale in a market, there would be no room for an entrant if it believed the incum-
bent would maintain its preentry level of output after entry. Under this assumption, the incumbent could protect itself from entry by even a more efficient rival by choosing a low-enough price. With economies of scale, this limit price will still exceed the incumbent's average cost, leaving it with profits.

There are some objections to viewing limit pricing as a barrier to entry. First, limit pricing can work only if there are economies of scale, and maybe these are the real barrier. Another view is that the commitment to maintain output, however made, is the decisive barrier.

Another objection relates to the assumptions of the model, principally that the entrant believes the incumbent will maintain preentry output after entry (known as the Sylos postulate). Although many postentry duopoly outcomes are possible, the threat to maintain output will not be credible without something to back it up. Most duopoly models would predict some sharing of output in equilibrium, with the incumbent contracting to accommodate entry.

An objection related to the empirical relevance of the model may be more troubling. The limit-pricing model as usually described has one incumbent, but most industries have more than one firm. So, how robust is the model when there are multiple incumbents? The coordination required to make limit pricing work when there is more than one incumbent suggests that it will not be common.

Limit-pricing theories have become more respectable recently thanks to two important theoretical developments. The first recognizes that potential entrants seldom have perfect information about the incumbents they will face if they enter (see Milgrom and Roberts 1982a). That is, if the entrant does not know whether the incumbent is lean and efficient or fat and inefficient, and if entry would only be profitable against an inefficient incumbent, even a fat incumbent might set a low price to bluff the entrant into believing that it is efficient. Note again that there must be some other barrier, such as sunk costs, for this to work; otherwise, there is no cost to entering even if the firm must subsequently withdraw.

The second development involves recognizing that incumbents sometimes have ways to make their commitments to maintain output more credible. These theories focus on factors such as customer-switching costs, excess capacity, and matching terms offered by the entrant to keep customers.

Though these developments might have breathed new life into limit-pricing theory, they have not made a case for limit pricing as a barrier to entry. Rather, they only highlight the fact that something else, sunk costs or restrictive contracts, for example, are the real source of the barrier to entry.

**Predatory Pricing.** If the potential entrant believes that entry will be met with a predatory response, it may choose not to enter. The incumbent's problem is making the entrant believe this when it will usually not be a credible threat. Predatory pricing (setting prices so low that they could be profitable only if they induce exit followed by substantially higher prices thereafter) is a costly and sometimes risky way to compete. It is not clear who will win the price war—the incumbent, large firm charging below-cost prices on large volumes of units, or the small entrant who may sit on the sidelines, selling little and watching the predator lose money. Arguments like these, advanced by McGee (1958) and other members of the Chicago school of antitrust, have persuaded many that firms will not generally adopt predatory tactics and that it would therefore be irrational for entrants to expect such an aggressive response. More recent theoretical work, however, has provided important examples of environments in which predatory pricing might be rational and, therefore, something the entrant should worry about.
If the incumbent has deep pockets while the entrant is financially constrained, it can be profitable for the incumbent to adopt a predatory response to entry and for the potential entrant (knowing this) to refuse to enter. The capital market imperfection that leaves the entrant financially constrained could be based on information problems. If you cannot convince a potential lender that you have a terrific product, the lender might be reluctant to finance a price war. And many lending arrangements provide for the calling of loans if a borrower's financial performance is below expectations. Knowing this, an entrant with current activities in other markets supported by borrowed capital might put those at risk by entering into an expensive price war upon entry. Aware of this weakness, the incumbent might choose predatory pricing.

A firm that operates in multiple markets may introduce predatory pricing against a new entrant in one market, even if it can never fully recoup price-war losses with higher prices after the entrant retreats. The benefit comes from building a reputation for toughness that might deter entry in other markets in which the incumbent operates. Important to this theory is that information is not perfect. There is something about the incumbent that the entrant does not know. It could be that the incumbent thinks it unlikely that the incumbent will not be fully rational and value market dominance over profits. It could also be that the incumbent has such low costs that prices that look predatory are profit maximizing (and profitable) for the incumbent after entry (see Kreps and Wilson 1982; Milgrom and Roberts 1982b).

The aggressiveness of the incumbent's response to entry, whether predatory or not, will depend in part on its ability to target price reductions only toward those customers it is most likely to lose to the entrant. It is less costly to defeat an entry attempt if a firm need only cut prices to a few price-sensitive customers while maintaining high prices to others. If that is possible, the ability to target price reductions will enhance the credibility of incumbent threats to meet entry with an aggressive response.

As a result of this more recent work, it would seem that firms will sometimes be willing to adopt predatory strategies, and it is reasonable for entrants to fear this kind of response.

**EXCESS CAPACITY.** One way to make credible claims that a firm will maintain high levels of output after entry is to carry excess capacity that can be operated at low marginal costs. That way, a competitive postentry market could lead to prices so low that they do not allow the recovery of fixed costs. If some of those fixed costs are sunk, both firms can suffer losses. If it anticipates this result, the potential entrant will not enter.

The elasticity of demand plays a role, too. If lower prices greatly increase the quantity demanded, the extra capacity might be needed before prices fall too far. Once capacity is fully utilized, the downward pressure on prices is reduced. The kinds of markets in which entrants can generally expect the strongest (nonpredatory) response to entry are therefore homogeneous product markets with substantial postentry excess capacity and relatively inelastic demands.34

**Product differentiation and advertising**

Product differentiation is sometimes thought of as a structural characteristic of a market, derived from consumer tastes for variety. It is also occasionally seen as an endogenous strategic characteristic of a model, in which differentiation is created, usually through advertising, but also through other conduct such as reputation building.

The relationship between product differentiation and barriers to entry is complex and permits little generalization. In some cases differentiation seems to make entry more difficult; in others, it may make it easier.

That firms' products will not be seen as identical suggests that the incumbent might
have some first-mover advantages. For example, while the first firm in a market must convince buyers to try its new product, the second must convince those buyers that its product is even better. Whether the entrant’s task is easier or harder will vary from case to case.

Some first-mover advantages can be thought of as related to sunk costs. If customers must bear some cost in switching from one brand to another, they may need to be convinced by a substantial discount on price. The losses incurred to break through brand loyalty in this way can be interpreted as sunk investments in brand-name capital; if they are larger than the early investments the pioneering brand had to make to win its first customers, the incumbent might also enjoy an absolute cost advantage. A similar argument applies to the building of reputations for producing high-quality products and to reaching lower costs through learning by doing.

When differentiation is seen as a structural characteristic of the market, it makes entry less threatening to the incumbent. The added variety brought by the entrant expands market demand. Moreover, because the products are not identical, postentry competition will likely be less intense. Threats by the incumbent to indulge in predatory pricing will be even less credible; since the rival is selling a different product that some customers strictly prefer (at identical prices), predatory pricing will require even deeper price cuts. The other side of the coin, however, is that entry is less likely to push prices down to competitive levels in differentiated-product markets. So while the barrier may be less important, the discipline brought to the market by the threat of entry is less powerful.

Schmalensee (1978) and others have argued that, with product differentiation, incumbent firms can have an incentive to fill the product space with their own brands so that there is insufficient room for a new entrant. This is just a differentiated-products version of limit pricing, and it can be challenged the same way. Here the threat to maintain output with limit pricing is replaced by a commitment not to abandon unprofitable brands. Others have pointed out that this may also be a threat that is not credible (see Judd 1985). Again, to the extent that brand proliferation can deter entry, its effectiveness may be due to the presence of sunk costs.

Some economists have suggested that differentiation can be created by advertising and that this creates a barrier to entry (see Sutton 1991). It is difficult to assess this argument without knowing what advertising does to promote differentiation. If it simply builds brand-name identity by disseminating information about the product or contributing to the building of a reputation for quality, advertising can be treated like a sunk cost. Again, if later advertising is less effective than earlier, the entrant will also suffer from an absolute cost disadvantage.

Advertising is sometimes also viewed as an important competitive tool. For example, entry might be more difficult without the ability to use advertising to inform customers of the new product and, say, its low price. An expensive advertising campaign, however, can raise significantly capital requirements for entry, which could deter entry. In this case the real entry barrier is the lack of information about the new product in the marketplace and advertising expenses measure the height of this barrier. Thus advertising is still part of a solution to the problem, but its existence is a marker and measure of the barrier’s importance.

No general rule emerges about whether it is easier or harder to enter a differentiated-products industry. Although there are reasons to expect differentiation to affect the way firms attempt entry and others respond to entry, the evaluation of whether the differentiation raises extra barriers will have to be determined case by case.

**Vertical restraints**

In some markets vertical relationships between firms can complicate entry. An extreme exam-
people is industries that are fully vertically integrated. For example, suppose all manufacturers have integrated downstream into distribution. A new entrant with strong manufacturing skills may find that it has to enter distribution as well since rivals may not be willing to distribute its product. This can deter entry if it raises the level of required sunk costs or if it increases the capital requirements for entry. It might also force the entrant into areas where it is not competent, leading to an absolute cost disadvantage. Consider some other examples.

**Foreclosure and exclusion.** If the entrant needs inputs available only from a supplier vertically related (by contract or integration) to one of its competitors, it might fear that it will not be able to buy these supplies. Such exclusionary behavior might violate competition laws, but let’s examine the role it can play in deterring entry.

Recent theoretical work has demonstrated that some rational firms will refuse access or exclude competitors, even when they could sell to them at a high price. In other cases the input will be provided, but at prices so high that entry is unlikely to be successful.35

For this to be a serious problem, the incumbent needs to have a virtual monopoly on the supply of the input. This is not much of a problem in well-developed market economies. Where it does arise, however, is in many partially regulated network industries. This suggests that these problems might be more common in economies emerging from state control with many large firms still dominating important industries.

**Tactics to raise rivals’ costs.** Closely related to foreclosure behaviors are the strategies available to some incumbent firms to increase entrants’ costs. This theory is controversial since the actions a firm takes to raise its rival’s costs will often raise its own costs, and it is not clear how this can be profitable (see Salop and Scheffman 1986; Krattenmaker and Salop 1986; and Brennan 1988). The key to a successful strategy, then, is finding some way to raise rivals’ costs. Tactics that might work include buying up a scarce resource to raise its price to rivals, agreeing on new union contracts that will hurt entrants who employ more labor-intensive technologies, and adopting product standards that favor the incumbent’s product.

It is not clear that this theory says much that is helpful in analyzing barriers to entry in competition cases. If raising rivals’ costs has already been employed, there are simply higher costs for potential entrants than there would have been otherwise. In a sense it matters little how the entrant’s costs came to be. In evaluating the likelihood of entry, the important point is what those costs are.

Conditions are more interesting if the strategy has not yet been applied but there is concern that it might be adopted postentry to try to encourage exit. If potential entrants worry about this, it can make a difference. But with the concept defined rather broadly, there is no good understanding of when it can be effectively used.

**Contracts as barriers to entry.** As with vertical integration, some vertical contractual relations could disadvantage new entrants. In many cases the creation of a barrier to entry might not have been the specific intent behind the use of the contracts. Indeed, each contract can be an efficient response to market conditions.

Exclusive dealing contracts that require a customer to get all of its supply from a single seller, however, can effectively lock up a market. To block entry, exclusive dealing contracts will typically have to be relatively long term and cover a large chunk of the market. Otherwise, the entrant can build its market using unsigned customers and those able to extricate themselves from contracts.

Without necessarily being exclusive, many contracts are long term and make it more difficult for entrants to pick up business. For example,
when a firm signs a contract for the supply of an input and second-sourcing is impractical, it has effectively granted exclusivity. Some simple examples are auditing services, cleaning services, and the production of some specialized parts. These arrangements will deter entry by slowing the rate at which the entrant can pick up market share. This is important in the presence of economies of scale and sunk costs: it raises the sunk-cost investment of early losses without increasing in any way the gains from successful entry.

Not all exclusive contracts will create important barriers to entry. Those that are longer in duration, that include automatic-renewal clauses (sometimes called evergreen clauses) or that carry substantial penalties for cancellation (with evidence of strong enforcement by the incumbent) will pose greater problems for the entrant.

Tying contracts may also impede entry. Tying involves the requirement by a seller that to purchase one tying product, the buyer must agree to buy a second (tied) product from the same seller. The entrant can try to sell to customers who do not want the tying product or it can attempt to enter both markets. As with vertical integration, this can raise the sunk cost for entry, it will raise the capital requirement for entry, and it might put the entrant at an absolute cost disadvantage if it is not as efficient at producing the other product.

**What are the sources of information on barriers?**

If there is evidence that an incumbent has been very profitable over an extended period without losing a market share to entrants, it suggests that entry is not easy. However, if many firms have entered and some survived, barriers are not insurmountable.

If there are unsuccessful attempts at entry, it shows that there are investors willing to assume the risks associated with entry. They must believe barriers can be overcome. Their failure, however, suggests that there is something preventing success. Perhaps there is something about the industry that makes it attractive to unsophisticated potential entrants who will underestimate the costs of entry or overestimate the probability of success.

A market in which there has been relatively little entry and exit over an extended period of time is not necessarily protected by barriers to entry, however. An absence of entry and exit is consistent with a competitive industry in which firms keep prices close to costs. In such industries there may be no room for entry, particularly if the market is stable or declining.

**Market participants**

The principal participants in the market are frequently the most important source of information about barriers to entry. No one understands a market better than those in it—the sellers, buyers, and input suppliers. The danger, however, is that most will have some interest in how a competition case turns out, so their information must be filtered. Since their opinions might be influenced by self-interest, they should be encouraged to provide as much hard data as possible on:

- Market shares.
- The most likely entrants.
- General demand conditions.
- Entry and exit history of the market.
- Profitability of the incumbents over the past several years.
- Start-up costs and the fraction that is sunk.
- Economies of scale.
- Capital costs of entry and sources of financing.
- Time needed to build an efficient facility and acquire equipment.
- Importance of product differentiation and advertising.
- The depth of the incumbents’ pockets.
- Vertical restraints.
Some data might be available from independent sources, such as trade associations, trade publications, or statistical agencies. In many developing and transition economies, however, such information may not be available, and barriers to entry have to be evaluated informally. In these cases some guidance might come from a study of the same industry in other, similar economies in which better data are available.

As entry will be much easier with the support of the market, customers should be asked if they would be prepared to move their business to a new firm—and on what terms. They can also be asked about the extent to which they would actively seek to assist a new entrant by, for example, offering guaranteed contracts long enough to help the entrant cover most (or all) sunk costs. Again, customers might have an interest in the outcome of the competition action, so they should be asked for any hard evidence to support their answer. Evidence that buyers had supported entry in the past in this or other related markets would be useful.

**Potential entrants**

Potential entrants can come from many sources:

- Current customers or suppliers who vertically integrate.
- Firms active in the industry but in a different geographic location (even a foreign country).
- Firms active in closely related markets.
- New firms created to take advantage of market opportunities, possibly involving personnel with experience in the market.
- Firms with no close connection to the market.

Once the most likely potential entrants have been identified, they can be asked about their intentions to enter the market. Even if a firm is considering entry, it might be reluctant to share this information publicly. Hence, a lack of stated interest in entry should not necessarily be taken at face value. These firms can, however, provide a lot of information about what it would take to enter a market with some chance of success. If discussions with several potential entrants produces similar answers, the information is likely to be reliable. These firms should be asked not just about costs that constitute barriers to entry but about impediments that slow the speed with which they can enter (construction times, delays due to the need to get permits, and so on). Even when it turns out that there are no serious barriers to entry, if it will take any entrant at least, say, two years to have a product in the market, there may be a case for intervention by competition authorities.

The potential entrants should be asked about how they think the incumbents would respond to their entry. Do they anticipate a price war, accommodation, or something in between? This information can be hard to verify, but occasionally potential entrants can support their claim by reference to the behavior of the incumbents (or firms like them) in this or other related markets. That is, they might be able to provide hard evidence to support their view that the incumbent has a reputation for toughness.

**Experts**

There are various industry experts who can be useful to the understanding of barriers to entry:

- A consultant who works regularly in the industry.
- An academic who studies the industry.
- A senior employee from a company in the industry but not in this market.
- An official of a trade association.
- A former market participant who is now retired or who has moved on to other activities.30

If the industry is sizable and regularly goes to financial markets for support, there may be banks or investment houses that have good information about the industry's inner workings. The purpose of talking to such experts is to get unbiased information.

Another type of expert who might prove useful is one who can provide an engineering
study of the costs an entrant would incur building a new facility. The expert could be someone who has consulted or built in the industry before. This would obviously be preferable since the cost of commissioning a new engineering study to assess the costs of entry is likely to be large relative to the potential benefits.

A third type of expert, the economist, can also be helpful. The economist's role is to try to understand the structure and conduct of the market well enough to point investigators in the directions they need to go to find any barriers. The economist is not likely to be qualified to act as an industry expert, unless he or she has been studying the industry for some time. The economist combines data about the existence of some costs or behaviors with the theory that explains why some factors matter to provide a more complete description of the market. In this way, predictions can be more accurately made about the likelihood of entry.

**How High Are Barriers to Entry?**

A competition agency will always face the problem of combining information to answer the question: Is effective, timely entry likely enough that it will provide competitive discipline in the market? There is no precise way to answer this question—it will depend on what the agency views as effective, how quickly entry must be to be timely, and what level of certainty it is willing to accept as likely enough.

The American and Canadian approaches have largely viewed effective entry as that which would restore prices to competitive levels (or premerger levels) and see entry as timely if it happens within two years. Moreover, U.S. guidelines indicate that entry will be viewed as likely if it would be profitable at premerger prices and if the scale of entry is such that premerger prices could be sustained postentry.

Other agencies might choose to define these terms differently. For example, given the inherent problems in projecting the profitability of entry, an agency might decide to err on the side of nonintervention by deciding that it will view entry as sufficiently likely if there is some reasonable probability that entry could be profitable. Also, given the need for restructuring in many transition economies and the difficulty entrants face organizing resources quickly, their competition agencies might choose to go with a longer horizon for timeliness; for example, they might elect to require only that effective entry take place within three years.

These are not to be interpreted as specific suggestions to transition economies. They are meant only as examples of the different paths that enforcement might take. Each agency will have to decide how to define these terms, and the best approach here will depend on other aspects of competition law. If, however, the competition law of the country includes an efficiency defense that protects restructuring efforts, there may be no need for a different approach to measuring the height of barriers to entry.

A slightly different approach to measuring the height of barriers to entry recognizes that entrants (and antitrust officials) seldom know how profitable entry will be. The entrant will try to estimate preentry and postentry costs and to predict what share of the market can be earned at what prices, but this is difficult. If we do know how profitable entry would be if it succeeded, and how much would be lost if the entry did not succeed, one question can be answered: How likely must success be before the expected profits from entry are positive?

Consider a simple example. Suppose that an entrant knows that if it can capture a certain share of the market it will earn profits of $1 million. The entrant also knows that there is a chance its attempt to enter would fail because of high costs or consumer reluctance to switch brands, and that entry followed by a quick exit would leave it with losses of $500,000. Then, if the probability of success were equal to 33 per-
cent, entry would just break even, in an expected value sense. If the agency thought success more likely than 33 percent, it could interpret this as saying that the barriers to entry are not substantial. If entry was viewed as less likely, then the barriers would be significant. In this way, the break-even probability of success can be interpreted as a measure of the height of the entry barriers.

Of course, once the break-even probability of success is known, there is still the imprecise task of determining whether this is above or below what potential entrants see as the actual probability they face. The advantages of this approach are that it does not assume that potential entrants know with precision how profitable entry will be and it reminds us that the height of barriers to entry must always be measured relative to the prospective gains from successful entry.

**SUMMARY: A CHECKLIST**

What steps must be taken to evaluate barriers to entry in a typical competition case?

**Step 1: Market definition**

Buyers and sellers in the market are determined. This process will typically reveal other sellers who are just outside the market and who may well be the best-placed to enter should an opportunity arise. In some approaches to market definition, firms are included in the market if they can easily move into production. In such cases some consideration might have to be given to the costs of this adjustment, so the agency is considering impediments to entry even for firms within the market.

**Step 2: Market conditions and history**

It is important to determine whether the market is growing, stable, or declining. Entry will always be easier if market demand is growing. In fact, new production capacity can be expected to be added in such cases. However, industries in long-run decline are not attractive locations for new investment. They are likely already suffering from excess capacity.

The history of the market can be a good indirect source of information on barriers:

- Have incumbent firms been profitable in recent years?
- Have there been recent entry attempts, and with what success? Consistently high profits with no successful entry is a strong sign that important barriers exist.
- If there has been entry, from where did these entrants come? From the same industry in different geographic areas, closely related industries, large customers, or suppliers vertically integrating?
- How did incumbents respond to new entry—aggressively or passively? Have established firms been forced out of business by successful newcomers?

Of course, an industry's history will be less relevant if there have been important changes recently, for example, significant trade liberalizations, deregulation, or privatizations.

**Step 3: Structural barriers**

There are various structural barriers to consider:

- A good place to start is with regulatory barriers because they can be so conclusive that further study is not needed. Regulatory barriers to investigate include explicit barriers represented by required permits or licenses (or both) and by tariff and nontariff barriers to trade. These are usually obvious. Harder to measure are the many indirect regulatory barriers that deter entry only as a by-product of some other regulatory activity. Most often these regulations have the effect of conferring an absolute cost advantage on incumbents, such as when environmental regulations are tougher on new plants, or when safety regulations force firms to make larger sunk investments in safety equipment or training.
If entrants do not have access to the same inputs and technology at the same prices as incumbents, they will suffer an absolute cost disadvantage, which will hurt their ability to compete and reduce their incentive to enter. Absolute cost differences are more likely to be found in economies without relatively competitive input markets. Industry sources should be able to reveal what disadvantages entrants will have in any particular market. There are many possible sources of absolute cost advantages including ownership of unusually productive natural resources by incumbents (for example, the richest mines, the most fertile farmlands) and the possession of specialized human capital and intellectual property that is not easily duplicated.

- Sunk costs may be the most frequently important barrier to entry, at least in industrial economies. Sunk costs can come in the form of specialized machinery, buildings, intellectual property, and human capital, and of expected start-up losses. Sunk costs, like all barriers, must be measured relative to the prospective gains from successful entry.

- When capital markets are not perfect, the level of capital investment required to enter at a minimum viable scale or larger can be a barrier to entry. Therefore, the level of capital required and the ease with which the most likely entrants can get this capital should be studied.

- Because they can point to large capital requirements or substantial sunk costs (or both), it is always useful to study the economies of scale associated with producing for the relevant market. Large economies of scale, which necessitate large-scale entry, will also be important in predicting the reaction of incumbents to entry. Although they might be inclined to accommodate small-scale entry, they might be more threatened by large-scale entry, particularly if the market is not growing. In such a case the incumbents might be expected to respond more aggressively.

**Step 4: Behavioral barriers**

Again, there are a number of behavioral barriers to consider:

- How will the incumbent respond to entry? Is there any reason to believe it will be particularly aggressive, even predatory? Does it have a reputation for toughness? Does it have reason to build such a reputation—that is, does it want to use this market to send a signal to other markets? Has it been making threats to potential entrants? Does the incumbent have substantially deeper pockets than the leading potential entrants? Can the incumbent target price reductions to hurt the entrant at a lower cost to itself? Is the incumbent contractually committed to maintain its output through meeting-competition clauses? And, importantly, does the incumbent have the excess capacity necessary to meet market demand at lower prices?

- Is advertising important in this market? If so, is there any reason to believe that the entrant will have a more difficult time advertising effectively than the incumbent?

- Are there vertical restraints in the market that will make entry more difficult? For example, are all the customers tied up in exclusive contracts with existing sellers, and how long are these contracts? Do incumbents tie the purchase of this good to the purchase of some other that they control and for which there is no competition? Similarly, are suppliers of some critical input committed to the incumbents and not free to supply an entrant?

- Are there strategies, such as raising rivals' costs, available to the incumbents that they could use to encourage an early exit?

**Step 5: Other impediments to entry**

Are there other factors that will slow the speed of entry? Put another way, if entry is going to be
successful, how long will it take? It could take six months, one year, three years, or more to build a plant, train a workforce, and establish a distribution network—all of which must be done before any new competition is provided by the entrant. Some review of these other impediments is important to understanding the problem. It could well be that, even in the absence of any of the traditional entry barriers, entry is viewed as an insufficient check on market power simply because it takes so long to organize.

NOTES

1. A longer survey with more details of the theoretical literature and some review of empirical work on the topic is Geroski, Gilbert, and Jacquemin (1990).

2. This can be the case under the Canadian merger enforcement guidelines, for example, though supply-side substitution does not play as great a role in market definition under the current U.S. merger guidelines.

3. Of course, it is possible that firms will choose to lower service or quality levels at the same time or in place of raising price. All of these involve increases in the quality-adjusted price faced by buyers.


5. That said, in many cases the important barriers are specific to the industry and relate to structural or production conditions such as sunk costs. Large capital requirements in imperfect capital markets might be an example of a barrier that will affect some potential entrants (for example, small firms) more than others (for example, large firms).


   The concept of barriers to entry lacks clarity, and one is never sure what to do with it.... The most unfortunate part is that some economists and antitrust lawyers throw the term ‘entry barriers’ around like there is one accepted and meaningful definition when there is not.

7. This corresponds to what Geroski, Gilbert, and Jacquemin (1990) call “mobility barriers,” a term they prefer because of the lack of consensus on the definition of “barriers to entry.”

8. This is not to say that entry by acquisition cannot have important competitive effects in certain cases.

9. In his related concept of “mobility barriers” Gilbert (1989) suggested that a barrier existed if a firm earned rents as a consequence of incumbency.

10. In his related concept of “mobility barriers” Gilbert (1989) suggested that a barrier existed if a firm earned rents as a consequence of incumbency.

11. Typically, the entry regulation is combined with price regulation, and the industry may not even be subject to antitrust scrutiny.

12. Of course, the delay itself might be very costly for an entrant anxious to seize an important, but short-lived opportunity. If so, the delay is not just an impediment to entry since it could effectively prevent entry.

13. Though, to be clear, in most competition cases such costs will not constitute important barriers to entry. If entrants can pay the same extra costs as incumbent firms (and there are no other barriers) then merging or conspiring firms cannot raise price without inviting entry.

14. In some cases the restraints on foreign competition can even help the foreign firms, leaving
domestic consumers as the only losers. There is good evidence now that the voluntary export restraints imposed by the Japanese automobile makers under pressure from the United States and Canada actually raised the profits that Japanese firms made in North America by causing a shortage of Japanese automobiles and forcing prices substantially higher.

19. There are some other assumptions needed to create truly contestable markets, among them that the entrant can enter, undercutting the incumbent's price slightly, before the incumbent can react by lowering its own price. Together with an assumption of no sunk costs, this means that hit-and-run entry can be a profitable means for entrants to keep prices down to competitive levels.

20. In the usual jargon, average (or unit) costs are the sum of average fixed costs and average variable costs. With constant variable costs per unit, full average costs will fall as fixed costs are spread among a larger number of units.

21. A related problem can arise if the resale market is thin, that is if there are relatively few buyers and sellers at any point in time. Under these conditions, prices can fluctuate considerably depending on the extent to which current buyers outnumber current sellers or vice versa. This variability is another risk the entrant must bear.

22. If the conditions are not socially beneficial, the fact that they raise the costs of entry suggests a role for the competition authority to argue for the removal of the conditions.

23. In economies in which public authorities demand bribes to process applications for regulatory clearance to enter certain markets, bribes represent examples of such sunk costs.

24. If I spend one year planning and developing a new entrant when I could have been earning a salary of $100,000, then my forgone income can be viewed largely as a sunk investment in the new enterprise.

25. There are at least two reasons for this. One is that it is a safe strategy: if you advertise where your rivals advertise your advertising can be no less effective than theirs (abstracting from the content of the advertising). Even though you might be better off advertising elsewhere, moving your business involves some risk. The second is that consumers come to look for advertising in certain places, so if you move your business they might not find you. This encourages competing advertisers to cluster their advertising together. The same forces encourage antique shops,
jewellery stores, and automobile dealerships (among other types of retailers) to cluster.

26. Evidence was heard that these start-up losses were large relative to the possible profits from successful entry.

27. Because people employed in and around an industry can have a vested interest in the outcome of a competition case, one must always view the information provided through a lens of self-interest. I shall return to this point below.

28. While most of the previous discussion treated sunk costs as a category of fixed costs, sunk costs can in fact be variable up to the point at which entry takes place. That is, small scale entry can involve lower levels of sunk investment than large-scale entry.

29. Entrants need only be new to the market in question. They can be very large firms, perhaps even with similar operations in other locations.

30. In some countries inefficient bankruptcy laws give too little protection to lenders, making them reluctant to loan large sums. Without a high priority in bankruptcy, a lender’s contribution can effectively look more like a sunk cost, even if it is used to finance entry into an industry without sunk costs.

31. We should be careful not to exaggerate the problem, however. At one time, not that long ago, economists believed that economically, there could be only one long distance telephone network in any geographic area. Now many countries have very competitive long distance markets and competition is coming to local service as well.

32. As the purpose here is to review how to identify barriers to entry and not how to eliminate them, solutions to the network access problem are beyond the scope of this paper. But, in cases in which the denial is viewed to be inefficient there are at least two approaches that have been taken. The first is simply a regulatory instruction to provide access on reasonable terms. Since some network industries like telecommunications are regulated in most countries, this option is available in some cases. The second approach is to view the denial as an abuse of a dominant position (or a jointly dominant position if there are multiple incumbents) and to try to order the provision of access through competition law actions.

33. See the famous exposition of this model by Modigliani (1958).

34. If the products sold are homogeneous, the arrival of the entrant does not lead to an expansion of market demand.

35. One of the insights from this literature is that if a more efficient entrant comes along, there are efficiency gains to be made by supplying it with the critical input. The question is, can the incumbent capture enough of these gains to make it profitable to supply, or will the gains flow to the entrant? It is profitable to foreclose or to refuse to deal if the incumbent cannot capture enough of that new surplus.

36. In these cases buyers typically would look to one firm to supply all its needs of the product or service. Thus even if a contract is not formally exclusive, it may well be exclusive in effect.

37. And about many relevant issues in most competition cases. A much more detailed discussion of information gathering is provided elsewhere in this volume.

38. Even industry experts can have an interest in the outcome (for example, consultants can work for firms under investigation), however, so they should be selected and their information used carefully.

39. Here I am referring to an economist with general expertise in competition matters, not one who, based on past research, is an industry expert. That kind of expert I discuss above.

40. I am not suggesting that economists need to appear before courts or tribunals as expert witnesses. Depending on the legal system and the kind of case, they might simply be employed to help put the case together.

41. This is suggested only to stimulate thinking on alternative approaches. No competition agency is known formally to use an approach like this, which is proposed in Ross (1993) as a way to measure the height of the sunk cost barrier.

42. That is, the expected profits from entry would be given by:

\[ EP = (\$1\text{ million} \times \frac{1}{3}) + (-\$500,000 \times \frac{2}{3}) = 0. \]
43. In more general terms, if \( S \) represents the profits from successful entry and \( F \) the losses from unsuccessful entry, the critical break even probability of success \( p^* \) will be given by the expression: 
\[
p^* = \frac{F}{F + S}.
\]
Thus to make entry attractive, success will have to be more likely the higher are the losses from unsuccessful entry and the lower are the profits from successful entry.

44. This checklist, although somewhat different in organization, draws inspiration from that offered in the United Kingdom (1994).

REFERENCES


