

The Economic and Legal Context

Markets may be structured in a wide variety of ways, but purely structural concerns in antitrust arise in the cases of monopolies and oligopolies. Since the monopoly model is at the heart of almost all antitrust analysis, we will begin with a discussion of monopoly and then move on to oligopoly.

MONOPOLY

Economics

The microeconomic theory of monopoly is straightforward: A single seller of a good or service, for which (at a price that would just yield normal profits) there are no good substitutes and for which entry is difficult, will be able to take advantage of its market power. If the seller can sell only at a single price to all buyers (i.e., it cannot practice price discrimination), then its pursuit of maximum profits will lead it to sell a smaller output and maintain a higher price than would an otherwise similar competitive industry.¹

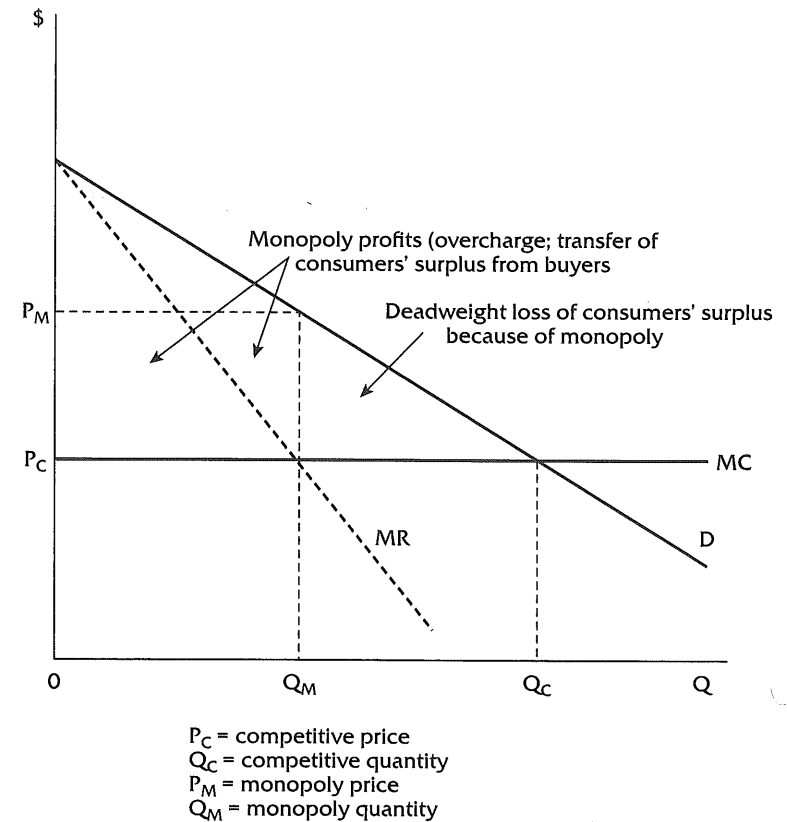
Figure I-1 portrays this outcome. As the figure indicates, the maximizing price will not be at “the sky’s the limit” levels but instead will be related to the demand curve (via the derived marginal revenue) for the monopolist’s output and the monopolist’s marginal costs.² An immediately important point is that the demand curve—which expresses the empirical reality that at higher prices customers generally buy less—does limit the extent to which the monopolist’s price can exceed competitive levels.

This monopoly outcome is *socially* less efficient than the competitive outcome because of *allocative* inefficiency: The monopolist produces too

¹ A similar argument applies to monopsony: a single buyer in a market, which can gain by buying less and at a lower price than if competition among buyers prevailed.

² The familiar formula for profit maximization is $P_M = MC / (1 + 1/E_D)$, where E_D is the (negative) elasticity of demand. Once P_M has been determined, the monopolist’s output (Q_M) can be derived from the demand relationship.

FIGURE I-1 A Comparison of Monopoly and Competition



little; equivalently, there are buyers who are willing to buy at prices that are above marginal costs (and who would be able to buy from a competitive industry) but who are not willing to buy at the higher monopoly price (and who buy other, less desirable things instead). The lost consumer surplus of the buyers, portrayed in Figure I-1, is frequently described as a “deadweight loss triangle.”

The higher price (which is the cause of the allocative inefficiency) also yields the higher profits or “overcharge” of the monopolist (which is sometimes described as “monopoly rents”). This overcharge is largely a *transfer* from buyers to the monopolist and is represented by a rectangle in Figure I-1.³

³ Since the monopolist should be willing to spend an amount up to the size of the rectangle to defend its monopoly, some of this rectangle may be “burned up” in costly efforts (e.g., political lobbying, raising barriers to entry) to protect its position. Such efforts represent a socially wasteful use of resources and thus add to the deadweight loss of monopoly; see Posner (1975). Also, the absence of competitive pressures may induce less than fully efficient production processes (“X-inefficiency”) and thereby add to deadweight loss; see Leibenstein (1966).

Any monopoly seller would like to be able to practice price discrimination, thereby segmenting the firm's market on the basis of the buyers' willingness to pay. In order for price discrimination to occur successfully: (1) There must be buyers with different levels of willingness to pay;⁴ (2) The firm must be able to identify who they are (or have some mechanism that will cause them to reveal themselves); and (3) The firm must be able to prevent arbitrage (i.e., prevent the buyers who receive low prices from reselling to the buyers who would otherwise receive high prices). If the seller could identify each buyer and make an all-or-nothing offer to that buyer at the latter's maximum willingness to pay, this would constitute "perfect" price discrimination (frequently described as "first-degree" price discrimination).⁵ Other forms of price discrimination can involve block pricing ("second-degree" price discrimination), segmenting buyers by geography or by customer type ("third-degree" price discrimination), bundling (Adams and Yellen 1976), and tying (Burstein 1960).

Instances of true monopoly can be found in the U.S. economy, although they collectively account for only a small fraction of U.S. GDP. Examples include local residential (landline) telephone service (in some geographic areas), local electricity distribution, local natural gas distribution, postal service for first-class and bulk mail, the single hardware store (or gasoline station, or pharmacy) in an isolated crossroads town, and firms producing unique products that are protected by patents (e.g., those patented pharmaceuticals for which there are no good substitutes). Over time, technological advances tend to erode existing monopolies (e.g., by producing substitutes and by expanding market boundaries through reduced telecommunications and transportation costs), but also to create new ones.

It is a short conceptual leap from the single seller to the dominant firm: a firm of uniquely large size but one that also faces a "fringe" of smaller competitors. Though technically not a monopoly, the dominant firm will still be able to enjoy the fruits of its market power. The extent of its enjoyment will be determined by its costs relative to those of smaller firms, the elasticity of the demand for the product, the elasticity of supply by the fringe, and the ease or difficulty of entry.⁶ Historical examples of such market structures include U.S. Steel in steel, Alcoa in aluminum, IBM in mainframe computers, Xerox in photocopying, and Kodak in cameras and film, at least for some time periods. More recent examples include Microsoft in

⁴ This condition is clearly satisfied by a monopoly; it is also satisfied by any firm that faces a negatively sloped demand curve (i.e., that sells a differentiated product), so price discrimination can arise under monopolistic competition or differentiated oligopoly as well.

⁵ One paradoxical consequence of such perfect price discrimination is that the allocative inefficiency of the monopolist disappears, even while the transfer to the monopolist increases.

⁶ See Stigler (1940), Saving (1970), and Landes and Posner (1981). Though the dominant firm model is usually presented in terms of a commodity product, where the fringe firms' disadvantages lie in their inferior production technology, the model readily extends to the case of a differentiated product, where the fringe firms' disadvantages lie in their inferior brand acceptance.

personal computer operating systems,⁷ Intel in microprocessors,⁸ and United Parcel Service for small package delivery services.

Monopoly can arise in four ways: First, economies of scale may indicate that a single firm is the most efficient structure for serving the entire market. In essence, the technology of production may be such that unit costs decline over the relevant range of production. It is important to note that this "natural" monopoly outcome is dependent on both the nature of the technology *and* the size of the market. Thus, where markets are small, monopoly may be more likely, whereas larger markets may be able to accommodate multiple efficient producers (if unit costs do not continue to fall at relatively high volumes, or if product differentiation is important to buyers).⁹ Also, although "rule-of-thumb" engineering relationships often indicate unlimited economies of scale, the real-world difficulties of managing a larger enterprise may yield higher rather than lower unit costs at higher volumes.

Second, incumbent firms may merge to create a monopoly or a dominant firm. Historically, the merger wave of 1887–1904 yielded a large number of such consolidations, including U.S. Steel (steel), Standard Oil (petroleum), American Tobacco (cigarettes), American Can (tin cans), Kodak (cameras and films), DuPont (explosives), and more than 60 other monopolies or dominant firms (Markham 1955; Nelson 1959; Scherer and Ross 1990, ch. 5). As will be discussed below, an important goal of modern antitrust policy is to prevent the creation of market power through mergers (of which a merger-to-monopoly would be the limiting case).

Third, a firm may own a unique and advantageous input into production. For example, market power may arise from the ownership of a unique natural resource (e.g., metallic ores) or the ownership of some patents—e.g., Polaroid's early patents on self-developing film, Xerox's early patents on photocopying, pharmaceutical companies' patents on unique drugs, and Intel's patents on its microprocessors. However, most patents convey little or no market power. All are intended to encourage investment in new ideas and their implementation by creating property rights that prevent quick and easy free-riding on the efforts of innovators. It is this aspect of patents that leads to their description as "intellectual property."

Fourth, government policy can be the source of monopoly. Historically, exclusive government franchises—for rail, air, and trucking service (between some city pairs); local and long-distance telephone service; local cable television service; local banking; and postal service—have yielded monopolies, along with government regulation to deal with them. With the advent of the deregulation movement of the mid-1970s and after, such gov-

⁷ See Gilbert (1999) and Case 20 by Daniel Rubinfeld in Part IV of this book.

⁸ See Shapiro (2004) and Case 13 by Joshua Gans in Part III.

⁹ For important discussions of these issues, see Sutton (1991; 1998).

the ease or difficulty with which sellers can come to a mutually beneficial understanding with respect to prices or other important dimensions of conduct. In turn, this will imply differences in market outcomes.¹⁹ Thus, there are important links between oligopoly structure and conduct; oligopoly structure matters—which brings us naturally to the consideration of antitrust.

Antitrust

The primary vehicle for a structural antitrust approach to oligopoly²⁰ is Section 7 of the Clayton Act, which instructs the Department of Justice (DOJ) and the Federal Trade Commission (FTC) to prevent mergers “where in any line of commerce or in any activity affecting commerce in any section of the country the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly.” Though the Act was passed in 1914, Section 7 was largely a dead letter until 1950 because of an unintended loophole.²¹ The Celler-Kefauver Act of 1950 closed that loophole, and Section 7 gained life.

A series of government challenges to mergers in the 1950s and 1960s led to a set of important Supreme Court decisions, beginning with *Brown Shoe*²² in 1962. In those decisions the Court indicated that it was ready to prohibit both horizontal mergers between competitors and vertical mergers between customers and suppliers, even in markets where the merging parties’ shares were relatively small and entry was easy. The Court expressed concerns about competition but also opined that Congress had intended to halt mergers so as to preserve market structures with large numbers of firms, even at the sacrifice of some efficiency that might be achieved by a merger. However, the Court backed off from this tough, semi-populist position in two merger decisions in 1974.²³ Almost 40 years passed before the next Supreme Court decision on a government challenge to a merger: *FTC v. Phoebe Putney Health Systems, Inc.*, 133 s.ct.1003 (2013), which was decided in favor of the FTC.

Flushed by the favorable Supreme Court decisions of the 1960s, the DOJ’s Antitrust Division developed a set of *Merger Guidelines* in 1968.

¹⁹ In addition to the discussion in Part II, see the overviews provided by Shapiro (1989) and, especially with respect to horizontal mergers, Jacquemin and Slade (1989).

²⁰ Parts II, III, and IV of this book will address behavioral approaches to addressing oligopoly issues.

²¹ The 1914 Act forbade mergers that were effected through one company’s purchase of another company’s equity shares. Merger candidates quickly realized that they could easily evade this restriction by simply having one company buy all of the underlying assets of the other company.

²² *Brown Shoe Co. v. U.S.*, 370 U.S. 294 (1962).

²³ See *U.S. v. General Dynamics Corp., et al.*, 415 U.S. 486 (1974) and *U.S. v. Marine Bancorporation, et al.*, 418 U.S. 602 (1974).

The *Guidelines* indicated the circumstances (described in terms of industry four-firm concentration ratios and the sales shares of the merging firms) in which the DOJ would be likely to challenge mergers, so that the private antitrust bar could provide better guidance to its clients. While those *Guidelines* reflected the economic and policy understanding of the time, it soon became apparent that they were too restrictive and too rigid. As a result they fell into disuse during the 1970s, awaiting an effort to revise them in accordance with advances in economics and different views about appropriate policy.

The 1968 *Guidelines* were largely scrapped, and a new set was issued in 1982. Economists played a large role in the development of the new *Guidelines* and in subsequent revisions in 1984, 1992 (when the FTC joined as an author),²⁴ and 1997. A major revision to the *Guidelines* appeared in 2010.

These *Guidelines* have proved influential in shaping antitrust lawyers, economists, and eventually judges’ approaches to mergers (Werden 2003). They certainly shaped many of the economic arguments that were developed in the cases discussed in this Part. Accordingly, we next turn to a more detailed discussion of the *Guidelines*, with most of the attention on the recent 2010 revision.²⁵

THE HORIZONTAL MERGER GUIDELINES

The *Horizontal Merger Guidelines* start from the fundamental premise that the antimergers provisions of the Clayton Act are intended to prevent the exercise or enhancement of *market power* that might arise as a consequence of a merger.²⁶ They thus reject a populist notion that the pure sizes of the merging entities should be a consideration in the evaluation of a merger.

Since the *Guidelines*’ focus is on preventing the creation or enhancement of market power through a merger, the phrase “competitive effects” is found throughout the document. The emphasis is on ascertaining whether—and why and how—a merger may have competitive consequences.

²⁴ Also, the 1992 revision modified the title to *Horizontal Merger Guidelines*.

²⁵ The 2010 *Guidelines* can be found at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>. A recent compendium of discussions of the 2010 *Guidelines* can be found in the August–September 2011 issue of the *Review of Industrial Organization*; for an introduction to that special issue, see Blair (2010). See also Shapiro (2010) and Farrell and Shapiro (2010). Discussions of the earlier *Guidelines* can be found in Baker (2003); Kolasky and Dick (2003); Scheffman, *et al.* (2003); Werden (2003); and Williamson (2002). The enforcement agencies’ commentary on the earlier *Guidelines* can be found in FTC and DOJ (2006). See also Antitrust Modernization Commission (2007), Baker and Bresnahan (2008), Kuhn (2008), Werden and Froeb (2008a, 2008b), Collins (2008), and White (2008, 2010).

²⁶ Although most of the discussion in the *Guidelines* addresses the market power that could be exercised by sellers (i.e., “monopoly” power), market power that could be exercised by buyers (“monopsony” power) is also covered.

Earlier versions of the *Guidelines* had been organized primarily around efforts to delineate (define) a relevant market and then to measure post-merger levels of seller concentration in that relevant market (and the pro forma change in seller concentration that was brought about by the merger). This was a natural follow-through to the prevailing views—at least through the 1970s—of how market power could be exercised by oligopolies: If there were a relatively small number of sellers of a roughly similar product, they were likely to compete less vigorously—recognizing their mutual interdependence—than would a larger number of sellers (other things being equal).²⁷ The task of merger policy would be to prevent mergers that could create such small-numbers aggregations of sellers (and thus would cause post-merger price increases across the market). In the language of today's merger analyses, this was a focus on “coordinated effects” and was best suited for analyses of mergers in markets with homogeneous products.

By the early 1990s, however, there had been extensive developments in microeconomic theory that had illuminated the behavior of oligopolists in differentiated-products markets and the implications for merger policy.²⁸ This “new learning” was introduced into the 1992 revision of the *Guidelines*: The “unilateral effects” analysis focused on whether the two merging firms (that sold differentiated products) might find it worthwhile (post-merger) to increase the prices of one or more of their products unilaterally, without any coordination or cooperation with other firms that sold similar products. Nevertheless, the tone and structure of the *Guidelines* remained embedded in the language of coordinated effects, with the immediate emphasis on delineating a relevant market and measuring market shares.

The 2010 *Guidelines*, with its emphasis on “competitive effects”, tries to avoid the rigidity of analysis that the coordinated effects approach seemed to require. The agencies will seek information about the competitive realities of the market or markets in which the two merging firms sell and try early to ascertain a theory (or narrative) of the competitive consequences of the merger and whether (if warranted) the competitive consequences could come through a unilateral effects effort by the merging firms or through a more general coordinated effects outcome. In addition, the *Guidelines* extend the coordinated effects analysis explicitly to procurement auctions and other similar arrangements where sellers compete to be the supplier of inputs that are being bought by a “downstream” firm (or government). Also, the *Guidelines* address non-price competition (e.g., issues that are related to quality or variety) and competition with respect to innovation.

These analytical efforts necessarily draw on the base of the microeconomics of monopoly and oligopoly discussed above and in Part II. Consequently, the *Guidelines* address six crucial issues:

²⁷ See, for example, Stigler (1964).

²⁸ See, for example, Willig (1991).

- The delineation/definition of the relevant market for merger analysis, so as to determine whether the merger partners compete with each other and the sizes of their (and other relevant sellers') market shares;
- The level of seller concentration in a relevant market that should raise antitrust concern about a merger;
- The potential adverse effects of mergers, either through post-merger coordinated behavior among sellers or through the possibility that the merging firms might unilaterally, post-merger, be able to affect prices and output;
- The extent and role of entry into the market;
- Other characteristics of market structure that might make the post-merger exercise of market power easier or more difficult; and
- The extent to which merger-related cost savings and efficiencies that are promised should be allowed as a defense of a merger that otherwise appears to increase the likelihood of the exercise of market power, and the types of efficiency evidence that should be considered.

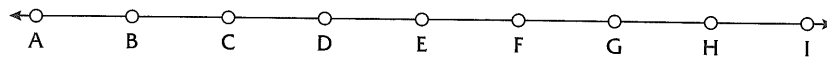
Each will be discussed in turn.

Market Definition

The *Guidelines* start with market definition/delineation because a merger analyst cannot sensibly refer to the “market shares” of the merging parties without first delineating the relevant market.²⁹ The *Guidelines* define a relevant market for antitrust merger analysis as a product (or group of products) that is sold by a group of sellers who, if they acted in concert (i.e., as a “hypothetical monopolist”), could bring about “a small but significant and nontransitory increase in price” (SSNIP). This is equivalent to defining a relevant market as one in which market power can be exercised (or one in which existing market power can be enhanced). The *Guidelines* indicate that a five percent nontransitory price increase is the likely SSNIP value (and thus the indicator of the exercise of market power) that the enforcement agencies will use. The smallest group of sellers that satisfies the SSNIP test is usually selected as the relevant market. These principles apply to the determination of both product markets and geographic markets. Under this definition, markets might be as small as a neighborhood or as large as the entire global economy; the determining factor is simply whether

²⁹ However, as will become clear in the discussion below of the unilateral effects theory of the anticompetitive effects from a merger, there are serious questions as to whether a separate market definition analysis—apart from the direct effort to measure the unilateral effects—is necessary in such cases. The *Guidelines* recognize that the direct finding of unilateral effects may obviate the necessity to engage in any further market delineation analysis.

FIGURE I-2 An Illustration of Market Definition Concepts



buyers would (or would not) switch away to the sellers of other products or in other locations in sufficient numbers to undermine the price increase.

The logic of this approach follows from the goal of preventing mergers that create or enhance market power as measured by such a price increase. The SSNIP test identifies the smallest group of sellers that could exercise such market power. With one exception, the market definition paradigm focuses on sellers (since it is sellers that exercise market power). That exception arises when a group of sellers could practice price discrimination and raise prices significantly for an identifiable group of customers (defined by a geographic area or by a business function). In such a case, that group of customers may also be considered to be a relevant market.

A stylized graphical example, using geographic differentiation, can further illustrate these points concerning market definition. In Figure I-2, imagine a set of, say, separately owned shoe stores (A, B, C, etc.) stretched along a highway, with one mile between each store.³⁰ Customers are located continuously along the highway in between the stores. Initially, let us assume that any customer will buy only from the lowest-price store location that is immediately to her right or left,³¹ that is, she will not “skip over” a store to get to the next one. (Let us call this a strong preference for adjacency.) Each store effectively competes with the stores on each side of it and gets a roughly equal share of the potential customers on each side of it.

If stores D and E merge, then the customers that are located between them are “trapped”; if the merged D–E firm can identify which of its customers are from the “trapped” region and can price discriminate, it will likely raise its prices to them. If the price increase satisfies the SSNIP criterion, the merger will be anticompetitive, and the trapped customers between any two adjacent stores will thus constitute a relevant market. Even if the merged D–E firm could not identify the trapped customers (or devise a means whereby they revealed themselves), it might still find that it could raise its overall prices to considerable heights and earn sufficiently large profits from its trapped customers (if they had quite inelastic demands for shoes) to offset its lost profits on the lost sales to the nontrapped (former) customers (its former share of customers between C and D and between E and F).³² In this case the merger would be anticompetitive, and any two adjacent firms would constitute a relevant market.

³⁰ The example uses geographic space and one dimension, but the insights apply equally well to product space and to multiple dimensions.

³¹ For the sake of simplicity, we abstract from transportation costs.

³² This might also be considered an instance of “unilateral effects,” which is discussed below.

Now let us suppose that the buyers’ preferences for adjacency are less strong, and customers are willing to skip over one store in their pursuit of lower prices for shoes. Effectively, each store competes for customers with the three stores to its right and the three stores to its left. The merger between stores D and E would no longer pose a competitive problem, because none of their customers is trapped.

Further, in this case the minimum number of adjacent stores that could possibly constitute a relevant market would be four. (Two stores clearly do not, and even three do not, since there are still no trapped customers.) If a hypothetical monopolist were to control stores C, D, E, and F, then customers between D and E would be trapped. If the monopolist could practice price discrimination, it could profitably raise the price to them, and the customers in the middle of the four stores constitute a relevant market. If price discrimination is not possible, then it seems unlikely that the gains from charging high prices to the trapped D–E customers would offset the lost profits on the lost sales to the (former) nontrapped customers (all of the customers between C and D and between E and F, and its share of the customers between B and C and between F and G). So, the relevant market would have to include a larger number of adjacent stores (such that the hypothetical monopolist’s gains from enough trapped customers more than offset its loss of profits from the lost nontrapped customers). Further analysis (of the type described below) would be necessary to determine whether a merger between any two sellers within this market of “n” adjacent stores would create an anticompetitive problem.³³

As this example illustrates, the strength of buyers’ preferences for individual companies’ products vis-à-vis other individual companies’ products is key to the delineation of the market.

Seller Concentration

With the market boundaries determined, the analysis turns to the post-merger level of overall seller concentration in the relevant market and the merger-induced change in that concentration that would trigger enforcement attention. The conventional basis for this approach is the belief that cooperative conduct among sellers is more likely (other things being equal) at higher seller concentration levels (see, for example, Stigler 1964); however, an alternative theory of anticompetitive harm—the “unilateral effects”

³³ This example also points out an interesting paradox: Suppose that the seven sellers B, C, D, E, F, G, and H were found to constitute a market when customers were willing to skip over one store. A conspiracy among the seven sellers to raise prices would be unlikely to stick, since the flanking firms (B and H) would lose customers and receive no gains and thus would likely leave the conspiracy, thereby exposing C and F, etc. But if E owned B and H, then the flanks would be protected. Thus, a three-way merger of E with B and H might be more conducive to a post-merger coordinated price increase by the seven than would the merger of E with D and F.

approach (which focuses largely on just the two merging parties and which will be discussed below)—is also considered.

The *Guidelines* use the Herfindahl-Hirschman Index (HHI) for this measurement. The HHI for a market is computed by summing the squared market shares (expressed as percentages) of all of the sellers in the market. Thus, an atomistic market would have an HHI that is very close to zero; a pure monopoly would have an HHI of 10,000 ($100^2 = 10,000$); and a duopoly consisting of two firms with, for example, 70 percent and 30 percent market shares, respectively, would have an HHI of 5800 ($70^2 + 30^2 = 5800$).

The *Guidelines* (as of 2010) classify markets into three categories, according to their HHI levels:

- Unconcentrated markets: HHI below 1500;
- Moderately concentrated markets: HHI between 1500 and 2500;
- Highly concentrated markets: HHI above 2500.³⁴

The *Guidelines* then specify likely thresholds for decisions in terms of post-merger HHI levels and the changes in the HHI that occur because of the merger:³⁵

- Small changes in concentration: Mergers that cause an increase in the HHI of less than 100 are unlikely to be challenged.
- Unconcentrated markets: Mergers that result in unconcentrated markets are unlikely to be challenged.
- Moderately concentrated markets: Mergers that result in moderately concentrated markets and that involve an increase in the HHI of more than 100 “potentially raise significant competitive concerns and often warrant scrutiny.”
- Highly concentrated markets: Mergers that result in highly concentrated markets and that result in an increase in the HHI that is between 100 and 200 “potentially raise significant competitive concerns and often warrant scrutiny”. Mergers that result in highly concentrated markets and that involve an increase in the HHI of more than 200 “will be presumed to be likely to enhance market power”.

³⁴ There are two ways of translating the HHI thresholds into more familiar terms: (1) An HHI of 1500 would be yielded by a market with six or seven equal-size firms (each with approximately a 15 percent market share); an HHI of 2500 would be yielded by a market of four equal-size firms; (2) Alternatively (since most markets do not have equal-size firms), the two HHI thresholds translate empirically (on the basis of simple correlations) to four-firm concentration ratios of approximately 60–65 percent and 85–90 percent, respectively (Kwoka 1985).

³⁵ A quick method of determining the pro forma change in the HHI that is due to the merger of two firms is to multiply their premerger shares and then double the result.

These 2010 thresholds replace an older and lower set that had been in place since 1982.³⁶ However, in practice, the enforcement agencies had been considerably more lenient than the former HHI thresholds indicated.³⁷ In essence, the merging parties in such instances had been able to convince the enforcement agencies that other characteristics of the market or the merger made the post-merger exercise of market power unlikely. Whether the 2010 thresholds will prove to be a more accurate guide to actual enforcement remains to be seen.

Adverse Effects

As was mentioned above, the *Guidelines* present two theories—coordinated effects and unilateral effects—with respect to the adverse effects of mergers. The first and more traditional approach holds that a heightened probability of coordinated behavior among the sellers in a market would arise as a consequence of a market structure with fewer sellers and with the merged firm’s having a larger market share. It is this notion that drives the thresholds that were just described. The *Guidelines* recognize that characteristics other than seller concentration can affect the likelihood of coordinated behavior, including entry (which is discussed in the following section) and other features of the market that could facilitate monitoring and policing of any seller understandings (which are discussed in other market characteristics).

Alongside the traditional concern that post-merger oligopolistic sellers might coordinate their behavior, the *Guidelines* present a second mechanism that could result in competitive harm: unilateral effects.³⁸ Unilateral effects arise in markets where, even in the absence of cooperation with other sellers, the merged firm could find a unilateral price increase profitable. The most obvious circumstance in which this might occur is when the two merging sellers are each other’s major competitors in a differentiated product market, so that the elimination of competition between the two as a result of the merger significantly relaxes the prior pricing constraint that each felt. In this context, other products are simply too imperfect as substitutes to prevent price increases, and for the same reason other sellers’ cooperation in the price increase is not necessary.³⁹

³⁶ Those former thresholds were at 1000 and 1800, rather than 1500 and 2500.

³⁷ This leniency (as compared with the former *Guidelines*’ formal HHI benchmarks) had been an “open secret” of merger enforcement for more than two decades. Data released by the FTC and DOJ in the 2000s confirmed what was suggested far earlier by Leddy (1986). See, for example, FTC and DOJ (2003), FTC (2004), Kwoka (2004), Coate (2005), and Coate and Ulrick (2006).

³⁸ Enforcement procedures now almost invariably set forth one of these two possible concerns as part of an agency challenge to a merger.

³⁹ Farrell and Shapiro (2010) present a thorough discussion of the “upward pricing pressure” (UPP) that can arise as a consequence of unilateral effects. They also develop the concept of the “gross upward pricing pressure index” (GUPPI). At the heart of these concepts is the relative amount of one of the merging firm’s products that is diverted to the products of the partner firm, multiplied by the profit margins on those latter products.

Ordoover and Willig (1993) provide a stylized example of unilateral effects, which we adapt for this discussion: Suppose that all frozen beets are produced by a single company, B. Another single company, C, produces all frozen carrots, and all frozen spinach is produced by company S. Each company has set its own prices so as to maximize its own profits. An important constraint on each company's pricing is whatever elasticities of substitution among the different vegetables exist among consumers.

Now suppose that beet producer B merges with carrot company C. Two things now occur: First, the merged company BC would now find that a higher price for beets would be profitable because some of the lost customers switch to carrots, and so the merged company B-C gains (internalizes) some profits from those customers, which the stand-alone company B would not have gained; similarly, a higher price for carrots is profitable for B-C where it was not profitable for the stand-alone company C. Second, the merged company B-C can do better than this outcome because it is now able to set the price of both products simultaneously so as to maximize joint profits.⁴⁰

Note that the competitive harm from this merger does not result from collusion or cooperation; rather, it results from the ability of the merged company to internalize more of the benefits of the price increase. Clearly, this result depends heavily upon the pre-merger pattern of elasticities and cross-elasticities among all products in the differentiated product setting.⁴¹ While these are not always easy to estimate or specify, antitrust enforcement has made considerable progress in this area over the past few decades. Aided by detailed scanner data (data that are recorded at the point of purchase in supermarkets, drug stores, and the like), the FTC and DOJ (as well as defendants) often estimate models of differentiated product competition in the context of actual mergers.⁴²

In addition, a finding of significant unilateral effects will depend on the ease of entry by outside firms, as well as the readiness and ability of other competing firms to reposition their (differentiated) products so as to attract more customers when the merged firm tries to raise its prices. And, as Farrell and Shapiro (2010) remind us, the potential upward pricing pressures may be alleviated by merger-induced efficiencies that reduce the marginal costs of the relevant products.

⁴⁰ Ordoover and Willig's example has more subtleties in that they allow for multiple producers of beets and of carrots and hypothesize a merger between leading producers of each. While perhaps more realistic, the issues are much the same as those set forth here. See also Willig (1991), Shapiro (2010), and Farrell and Shapiro (2010).

⁴¹ See Werden and Froeb (1994).

⁴² For discussions of these techniques, see, for example, Werden and Froeb (1994), Shapiro (1995), Werden (2008), Leonard and Zona (2008), Werden and Froeb (2008a, 2008b), and Rubinfeld (2008). This kind of approach was used in the analysis of the Oracle-People Soft merger, which is discussed in Case 5 by Preston McAfee, David Sibley, and Michael Williams in this Part.

It is also worth noting that the *Guidelines* market definition paradigm is essential (and was developed) for the coordinated effects theory of adverse consequences of a merger, since seller concentration—and thus the delineation of a market within which seller market shares can be calculated—is central to that approach. However, the market definition paradigm fits less well—indeed, it may well be redundant—in the context of the unilateral effects theory, since that approach rests crucially on the empirical estimates of the premerger elasticities and cross-elasticities among a group of differentiated products (some of which are being merged). In essence, if these empirical estimates show that the merged firm would likely find unilateral price increases profitable, then this result automatically indicates that one or more relevant markets (that encompass the products for which post-merger price increases are likely to be profitable) must be present.⁴³

Equivalently, if significant unilateral effect are found to be present, the merged firm will be able to exercise market power—effectively, to have a monopoly with respect to these products. Or, in the phrase that antitrust practitioners often use, this is a “two-to-one” merger, or a “merger-to-monopoly.” This notion of “monopoly” may not seem to be quite the same as, say, the market power that the local electric utility could exercise if it were unregulated. Nevertheless, if the merged firm's ability to raise prices unilaterally exceeds the SSNIP test criterion (say, five percent), then—at least in the *Guidelines* context—the merger has created a monopoly.

Entry

Since easy entry by new firms could thwart sellers' efforts to exercise market power even in highly concentrated markets, the *Guidelines* recognize entry as an important component of merger analysis. They recognize that, for entry to obviate concerns about the potential for post-merger exercise of market power, it must be “timely, likely, and sufficient in magnitude, character, and scope.” Timeliness requires entry to occur within a period that would make the post-merger attempt at the exercise of market power unprofitable overall. The criterion of likelihood is satisfied if the entrant would be profitable in the post-entry market. Sufficiency in magnitude, character, and scope requires that the entrant be capable of replicating the scale and strength of one of the merging firms.

The *Guidelines* acknowledge that the consideration of “sunk costs” is important for the assessment of entry; “sunk costs” are “entry or exit costs that cannot be recovered outside the relevant market.” (Examples include specialized production equipment, marketing costs, training costs, research and development, advertising, etc.) Firms that could enter easily (i.e., with-

⁴³ See, for example, White (2008). The 2010 *Guidelines* acknowledge that the direct finding of unilateral effects may reduce the need to proceed further with a more detailed market delineation analysis.

out the expenditure of significant sunk costs) are termed “rapid entrants” and are considered to be market participants. Where significant sunk costs or other impediments are present, the *Guidelines* focus on the considerations of timeliness, likelihood, and sufficiency.

Finally, the *Guidelines* specifically mention the importance of “potential entrants” and the possible anticompetitive effects of a merger between an incumbent and a potential entrant. Although the elimination of such a firm could relax the competitive constraint on an incumbent firm and thereby cause adverse effects that are similar to those from eliminating a direct competitor, explicit mention of potential competition had previously been dropped from the *Guidelines* beginning with the 1992 revision.⁴⁴

Other Market Characteristics

As mentioned earlier, the traditional theory of post-merger seller coordination recognizes that other market characteristics can influence the market outcome. Sellers always have an incentive to “cheat” on any implicit (or explicit) understanding among one another that tempers their competition, especially if they believe that such cheating (e.g., price cutting) can go undetected for a considerable period. Accordingly, the ability of sellers to detect and “punish” (through, e.g., severe price cutting) deviations from any understanding is important for the success of any sustained period of noncompetitive behavior.

The *Guidelines* discuss the major market characteristics that oligopoly theory recognizes as important determinants of sellers’ abilities to detect and punish deviations and thus to coordinate their behavior:

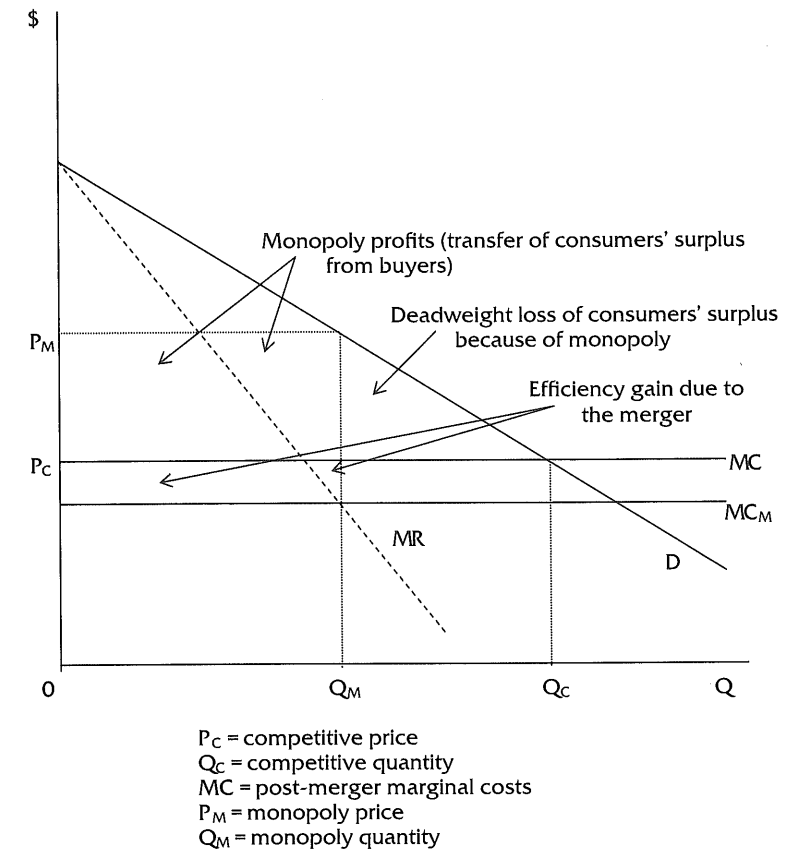
- The availability to all sellers of key information about market conditions and individual transactions;
- Typical pricing or marketing practices by firms in the market;
- The level of concentration on the buyers’ side of the market;
- The degree of complexity in the quality and service dimensions of the product or products at issue; and
- The antitrust history of the sellers in the relevant market.

Cost Savings and Efficiencies

In principle, the cost efficiencies that are achieved by a merger could yield social savings that would more than compensate for the social loss that is created by the exercise of market power. Figure I-3, drawn from Williamson (1968), illustrates the tradeoff. Suppose that a merger converts a competitive

⁴⁴ For further discussion of the competitive importance of potential entrants, see Kwoka (2001; 2010).

FIGURE I-3 The Efficiencies/Market-Power Tradeoff



industry into a monopoly but also achieves cost efficiencies. The social gain is represented by the rectangle of reduced costs (efficiency gain); the social (deadweight) loss is the triangle. If the area of the reduced costs rectangle exceeds the area of the deadweight loss triangle, the merger yields a net social gain. The monopoly profits (overcharge) rectangle (which is a transfer from buyers to sellers) may still be an obstacle to a merger if the goal of antitrust is considered to be solely to help consumers or if, as seems to be the case, consumers matter more to enforcers than do producers.

If, however, the cost reduction is great enough, the post-merger price could be lower than the premerger price, even taking into account the post-merger exercise of market power.⁴⁵ Or, as is sometimes argued,⁴⁶ the

⁴⁵ The 2010 *Guidelines* explicitly recognize this as a possibility for a unilateral effects analysis; see also Farrell and Shapiro (2010) and Shapiro (2010).

⁴⁶ See, for example, the discussion of the Heinz–Beech-Nut proposed merger in Baker (2009).

post-merger efficiencies may change the dynamic within a sluggish oligopolistic industry and allow the merged firm to challenge the industry leader aggressively. More often, however, some modest efficiencies may result from a merger, leaving the enforcement agencies or the courts with the task of making a judgment about the extent of the possible price increase that might be risked in order to achieve cost savings.

An important practical problem is that efficiencies are easy to promise before a merger but often are difficult to deliver after the fact, especially in the context of the difficulties of the post-merger firm's efforts to integrate personnel, equipment, systems, and cultures from the two pre-merger firms.⁴⁷ The *Guidelines* recognize the tradeoff and the dilemma and try to strike a compromise, stating that the agencies "will not challenge a merger if cognizable [i.e., merger-specific and verifiable] efficiencies are of a character and a magnitude such that the merger is not likely to be anti-competitive in any relevant market." Evidence in support of efficiencies (and in support of the merging parties' claims more generally) is likely to be given greater credence by the enforcement agencies if it is present in (or can be derived from) "normal course of business" documents, rather than in documents that are specially prepared at the time of the merger proposal.

MERGER ENFORCEMENT PROCEDURES

Under the provisions of the Hart-Scott-Rodino Act of 1976 (as amended in 2001), the parties to all prospective mergers that exceed specified thresholds⁴⁸ must notify the FTC and DOJ of their intentions to merge and provide basic information about the companies involved.⁴⁹ Within a few days the FTC and the DOJ decide which agency will be responsible for reviewing the merger. The basis for this allocation is usually the presence of expertise about the industry within the agency (although political "horse-trading" between the agencies when prominent cases arise is not unknown). Most reported mergers receive a quick screening and are found to be

⁴⁷ See, for example, the discussion of the UP-SP merger in Kwoka and White (2004).

⁴⁸ The Hart-Scott-Rodino (H-S-R) thresholds for notification involve the dollar sizes of the parties and of the transaction. Beginning in 2005 the dollar thresholds have been adjusted annually by the percentage changes in U.S. nominal GDP. As of 2013, the thresholds are as follows: The acquiring firm must have at least \$141.8 million in assets or in annual sales, and the acquired firm must have at least \$14.2 million in assets or annual sales. Also, the transaction must be valued above \$70.9 million. If the transaction is valued above \$283.6 million, the size-of-parties test is eliminated, and the transaction must be reported to the agencies. The enforcement agencies are still free to challenge a merger involving smaller parties. See, for example, FTC and DOJ (2012).

⁴⁹ The H-S-R Act was the response to complaints by the enforcement agencies that they sometimes found out about mergers late or even only after the event and that attempting legally to "unscramble the eggs" of a completed merger created an unnecessary extra burden on merger enforcement.

innocuous.⁵⁰ In instances where there is potential for anticompetitive effects, a group of lawyers and economists within the relevant agency is assigned to undertake further analysis.

The agency has 30 days (15 days if the merger involves a hostile takeover) from the initial notification during which time the merger cannot be consummated (unless the agency's quick screening reveals an absence of problems and the agency so notifies the parties involved). At the end of that period the parties can consummate their merger unless the agency makes a "second request" for more information. In this event, after the parties deliver the requested information,⁵¹ the agency has an additional 30 days (10 days for a hostile takeover) to reach a decision. In complex and controversial mergers, however, the elapsed time from the initial notification to the agency's decision can be considerably longer than the 60 days, partly because of the parties' delays in delivering requested information and partly because of the agency's requests for delays.

If the agency concludes that a merger does pose a potential problem, the parties and the agency will try to determine if there is an acceptable remedy, or "fix," that would alleviate the agency's competitive concerns and still allow the merger partners to gain the efficiencies or other advantages that they seek from the merger.⁵² Typically, solutions can be found whereby the merger partners sell off facilities (for some product lines or in some geographic areas) to smaller rivals or to entrants, so as to reduce the relevant HHIs to acceptable levels. For example, in mergers between large banks with overlapping branch networks in multiple metropolitan areas, a standard remedy is to require the merging banks to sell sufficient branches to smaller rivals so as to decrease the HHI levels in each metropolitan area to acceptable levels.⁵³

If an acceptable remedy cannot be found, the agency will indicate its intention to challenge the merger in court. Often, this announcement alone will cause parties that are unwilling to endure the additional delays, costs, and uncertainties of a court challenge to abandon the merger.⁵⁴ If instead the parties choose to contest the agency's action, the agency will typically

⁵⁰ Between 1999 and 2008 the annual number of reported mergers that were quickly cleared ranged from 95.7% to 97.9%; see Shapiro (2010).

⁵¹ The parties' lawyers often request meetings with agency officials to present their case for the absence of competitive harm, to which they typically bring company executives and economics consultants or experts.

⁵² This was true, for example, of the BP-ARCO merger that is discussed by Bulow and Shapiro (2004) and of the Ticketmaster-Live nation merger that is discussed by John Kwoka in Case 2 in this Part.

⁵³ An interesting analysis of these remedies can be found in FTC (1999).

⁵⁴ This happened, for example, in the MCI WorldCom-Sprint proposed merger that is discussed by Pelcovitz (2004) and in the AT&T-T-Mobile proposed merger that is discussed by Patrick DeGraba and Gregory Rosston in Case 1 in this Part.

seek and quickly obtain a temporary restraining order (TRO) from a federal district court judge.

The agency then asks for a preliminary injunction (PI). Usually, within a few weeks the judge conducts a small-scale trial, which lasts a week or two, that is nominally about the fairness of granting a PI but is really a mini-trial on the merits of the two sides' arguments about the potential anticompetitiveness of the proposed merger.

The judge's decision on the motion for the PI is often determinative: If the agency wins, the parties are unwilling to appeal, and they simply cancel the merger;⁵⁵ if the parties win, the agency drops the case. But appeals to a federal circuit court of appeals by either side are possible.⁵⁶ Or the losing party can (but only rarely does) request a full-scale trial on the merits of the case, which can take many months or even years of pretrial maneuvering, extensive document requests and depositions, and a lengthy trial itself.⁵⁷

It should be noted that not all mergers are reviewed by the DOJ or FTC, or even subject to the *Merger Guidelines* standards. In regulated industries, primary antitrust authority often rests with the regulatory agency,⁵⁸ or authority is shared with the DOJ or FTC.⁵⁹ The regulatory agencies usually evaluate mergers under a broader "public interest" standard, of which antitrust concerns constitute only one part.

WHITHER MERGER ANTITRUST POLICY?

When the "modern" *Merger Guidelines* were introduced in the early 1980s, they were controversial, inspiring extensive criticism and even alternative frameworks. More than 30 years later, they have clearly stood the test of time as an organizing framework for the antitrust analysis of mergers. As was discussed above, periodic updates have helped them adjust to subsequent theoretical and empirical advances; the latest (2010) revisions, although extensive, are in that spirit.

⁵⁵ This happened in the Staples–Office Depot proposed merger that is discussed in Case 6 by Serdar Dalkir and Frederick Warren-Boulton in this Part.

⁵⁶ This happened in the Heinz–Beech-Nut proposed merger that is discussed Baker (2009).

⁵⁷ If the DOJ is the prosecuting agency, the trial takes place in federal district court, and the losing party can then appeal to a circuit court of appeals and then to the Supreme Court. If the FTC is involved, the case is adjudicated by an administrative law judge (ALJ), who then reaches a decision and writes an opinion. The losing party can then appeal to the full Commission for a final agency decision. If the merging parties are unhappy with the Commission's decision, they can appeal to a circuit court of appeals.

⁵⁸ This was true of the UP–SP merger that is discussed by Kwoka and White (2004).

⁵⁹ This was true of the proposed EchoStar–DirecTV merger that is discussed by Gilbert and Ratliff (2009), the proposed Exelon–Public Service merger that is discussed by Wolak and McRae (2009), and the NBC–Comcast merger that is discussed by William Rogerson in Case 17 in Part IV.

Within the framework, however, criticism still arises, especially with respect to enforcement. On the one hand, some critics believe that too many anticompetitive mergers (e.g., by merger partners with large market shares in industries with high seller HHIs) are being approved by enforcement agency officials who are too sanguine with respect to the prospects of entry and of promised efficiencies and who are too skeptical of the possibilities for coordinated behavior among sellers in high-concentration industries.⁶⁰ On the other hand, there are those who believe that the agencies are not giving sufficient weight to the prospects of efficiencies that can be created by mergers.⁶¹

The debate on these issues is likely to persist for as long as merger policy remains a feature of antitrust; a resolution that is satisfactory to both sides seems highly unlikely. This debate also highlights, however, the continuing importance and relevance of merger policy in the U.S. economy.

REFERENCES

- Adams, W. James, and Janet L. Yellen. "Commodity Bundling and the Burden of Monopoly." *Quarterly Journal of Economics* 90 (August 1976): 475–498.
- American Antitrust Institute. "Statement of the American Antitrust Institute on Horizontal Merger Analysis and the Role of Concentration in the Merger Guidelines." Washington, D.C.: AAI, February 10, 2004. <http://www.antitrustinstitute.org/archives/files/296.pdf>.
- Antitrust Modernization Commission. *Report and Recommendations*. Washington, D.C.: AMC, April 2007.
- Baker, Jonathan B. "Responding to Developments in Economics and the Courts: Entry in the Merger Guidelines." *Antitrust Law Journal* 71(2003): 189–206.
- . "Efficiencies and High Concentration: Heinz Proposes to Acquire Beech-Nut (2001)." In *The Antitrust Revolution*, 5th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 157–177. New York: Oxford University Press, 2009.
- Baker, Jonathan B., and F. Timothy Bresnahan. "Economic Evidence in Antitrust: Defining Markets and Measuring Market Power." In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi, 1–42. Cambridge, Mass.: MIT Press, 2008.
- Blair, Roger D. "Symposium: The 2010 Horizontal Merger Guidelines: Editor's Introduction." *Review of Industrial Organization* 39 (August–September 2011): 1–2.
- ⁶⁰ See, for example, American Antitrust Institute (2004).
- ⁶¹ This, for example, was prominent in the Antitrust Modernization Commission's (2007, ch. I.B.) discussion of merger policy. Another critique that is sometimes raised is that the *Guidelines* do not provide sufficient guidance or certainty for prospective merging parties—but also (sometimes by the same critics) that the *Guidelines* need to be more "flexible". It should be clear that both goals are unlikely to be achieved simultaneously.

- Bulow, Jeremy, and Carl Shapiro. "The BP Amoco-ARCO Merger: Alaskan Crude Oil (2000)." In *The Antitrust Revolution: Economics, Competition, and Policy*, 4th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 128–149. New York: Oxford University Press, 2004.
- Burstein, Meyer L. "The Economics of Tie-In Sales." *Review of Economics and Statistics* 42 (February 1960): 48–73.
- Coate, Malcolm B. "Empirical Analysis of Merger Enforcement Under the 1992 Merger Guidelines." *Review of Industrial Organization* 27 (December 2005): 279–301.
- Coate, Malcolm B., and Shawn W. Ulrick. "Transparency at the Federal Trade Commission: The Horizontal Merger Review Process 1996–2003." *Antitrust Law Journal* 73(2) (2006): 531–570.
- Collins, Wayne D., ed. *Issues in Competition Law and Policy*. Chicago: American Bar Association, 2008.
- Farrell, Joseph, and Carl Shapiro. "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition." *B.E. Journal of Theoretical Economics: Policies and Perspectives*, 10(1) (2010), article 9.
- Federal Trade Commission. "Horizontal Merger Investigation Data, Fiscal Years 1996–2003." February 2, 2004 (revised August 31, 2004). <http://www.ftc.gov/os/2004/08/040831horizmergersdata96-03.pdf>.
- Federal Trade Commission, Bureau of Competition. "A Study of the Commission's Divestiture Process." Washington, D.C., August 1999. <http://www.ftc.gov/os/1999/9908/divestiture.pdf>.
- Federal Trade Commission and U.S. Department of Justice. "Merger Challenges Data, Fiscal Years 1999–2003," December 18, 2003. <http://www.ftc.gov/os/2003/12/mdp.pdf>.
- . "Commentary on the Horizontal Merger Guidelines" March 2006. <http://www.ftc.gov/os/2006/03/CommentaryontheHorizontalMergerGuidelinesMarch2006.pdf>.
- Federal Trade Commission, Bureau of Competition, and U.S. Department of Justice, Antitrust Division. "Hart-Scott-Rodino Annual Report: Fiscal Year 2011," 2012. <http://www.ftc.gov/os/2012/06/2011hsrreport.pdf>.
- Gilbert, Richard J. "Networks, Standards, and the Use of Market Dominance: Microsoft (1995)." In *The Antitrust Revolution: Economics, Competition, and Policy*, 3d ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 409–429. New York: Oxford University Press, 1999.
- Gilbert, Richard J., and James Ratliff. "Sky Wars: The Attempted Merger of EchoStar and DirecTV (2002)." In *The Antitrust Revolution*, 5th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 115–139. New York: Oxford University Press, 2009.
- Jacquemin, Alexis, and Margaret E. Slade. "Cartels, Collusion, and Horizontal Merger." In *Handbook of Industrial Organization*, vol. 1, edited by Richard Schmalensee and Robert H. Willig, 415–473. Amsterdam: North Holland, 1989.
- Kolasky, William J., and Andrew R. Dick. "The Merger Guidelines and the Integration of Efficiencies Into Antitrust Review of Horizontal Mergers." *Antitrust Law Review* 71 (2003): 207–252.

- Kuhn, Kai-Uwe. "The Coordinated Effects of Mergers." In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi, 105–144. Cambridge, Mass.: MIT Press, 2008.
- Kwoka, John E., Jr. "The Herfindahl Index in Theory and Practice." *Antitrust Bulletin* 30 (Winter 1985): 915–947.
- . "Non-Incumbent Competition: Mergers Involving Constraining and Prospective Competitors." *Case Western Reserve Law Review* 52 (Fall 2001): 173–211.
- . "Some Thoughts on Concentration, Market Shares, and Merger Enforcement Policy." Paper presented at the FTC/DOJ Workshop on Merger Enforcement, February 17, 2004. <http://www.ftc.gov/bc/mergerenforce/presentations/040217kwoka.pdf>.
- . "Comments Submitted to the Horizontal Merger Guidelines Review Project of the Federal Trade Commission and Department of Justice." January 2010. <http://www.ios.neu.edu/j.kwoka/KwokaComments.pdf>.
- Kwoka, John E., Jr., and Lawrence J. White. "Manifest Destiny? The Union Pacific and Southern Pacific Railroad Merger (1996)." In *The Antitrust Revolution: Economics, Competition, and Policy*, 4th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 27–51. New York: Oxford University Press, 2004.
- Landes, William M., and Richard A. Posner. "Market Power in Antitrust Cases." *Harvard Law Review* 94 (1981): 937–996.
- Leddy, Mark. "Recent Merger Cases Reflect Revolution in Antitrust Policy." *Legal Times*, November 3, 1986, p. 2.
- Leibenstein, Harvey. "Allocative Efficiency vs. X-Efficiency." *American Economic Review* 56 (June 1966): 392–415.
- Leonard, Gregory K., and J. Douglas Zona. "Simulation in Competitive Analysis." In *Issues in Competition Law and Policy*, vol. 2, edited by Wayne D. Collins, 1405–1436. Chicago: American Bar Association, 2008.
- Markham, Jesse W. "Summary Evidence and Findings on Mergers." In *Business Concentration and Price Policy*, 141–212. Princeton, N.J.: Princeton University Press, 1955.
- Nelson, Ralph L. *Merger Movements in American Industry, 1895–1956*. Princeton, N.J.: Princeton University Press, 1959.
- Noll, Roger G., and Bruce M. Owen. "The Anticompetitive Uses of Regulation: *United States v. AT&T* (1982)." In *The Antitrust Revolution: The Role of Economics*, 2d ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 328–375. New York: HarperCollins, 1994.
- Ordoover, Janusz, and Robert Willig. "Economics and the 1992 Merger Guidelines: A Brief Survey." *Review of Industrial Organization* 8(2) (1993): 139–150.
- Pelcovits, Michael D. "The Long-Distance Industry: One Merger Too Many? MCI Worldcom and Sprint (2000)." In *The Antitrust Revolution: Economics, Competition, and Policy*, 4th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 101–127. New York: Oxford University Press, 2004.
- Posner, Richard A. "The Social Costs of Monopoly and Regulation." *Journal of Political Economy* 83 (August 1975): 807–827.

- Rubinfeld, Daniel L. "Quantitative Methods in Antitrust." In *Issues in Competition Law and Policy*, vol. 1, edited by Wayne D. Collins, 723–742. Chicago: American Bar Association, 2008.
- Salop, Steven C., and David T. Scheffman. "Raising Rivals' Costs." *American Economic Review* 73 (May 1983): 267–271.
- . "Cost-Raising Strategies." *Journal of Industrial Economics* 36 (September 1987): 19–34.
- Saving, Thomas R., "Concentration Ratios and the Degree of Monopoly." *International Economic Review*, 11 (February 1970), 139–146.
- Scheffman, David, Malcolm Coate, and Louis Silva. "Twenty Years of Merger Guidelines Enforcement at the FTC: An Economic Perspective." *Antitrust Law Review* 71 (2003): 277–318. <http://www.usdoj.gov/atr/hmerger/11255.htm>.
- Scherer, F. M., and David Ross. *Industrial Market Structure and Economic Performance*. 3rd ed. Boston: Houghton-Mifflin, 1990.
- Shapiro, Carl. "Theories of Oligopoly Behavior." In *Handbook of Industrial Organization*, vol. 1, edited by Richard Schmalensee and Robert D. Willig, 329–414. Amsterdam: North Holland, 1989.
- . "Mergers with Differentiated Products." Address to ABA International Bar Association, November 9, 1995, Washington, D.C.
- . "Technology Cross-Licensing Practices: *FTC v. Intel* (1999)." In *The Antitrust Revolution: Economics, Competition, and Policy*, 4th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 350–372. New York: Oxford University Press, 2004.
- . "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years." *Antitrust Law Journal* 77(1) (2010): 49–107.
- Stigler, George J. "Notes on the Theory of Duopoly." *Journal of Political Economy* 48 (August 1940): 521–541.
- . "A Theory of Oligopoly." *Journal of Political Economy* 72 (February 1964): 55–69.
- Sutton, John. *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration*. Cambridge, Mass.: MIT Press, 1991.
- . *Technology and Market Structure*. Cambridge Mass.: MIT Press, 1998.
- Werden, Gregory J. "The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm." *Antitrust Law Journal* 71 (2003): 253–276.
- . "Unilateral Effects of Horizontal Mergers I: Basic Concepts and Model." In *Issues in Competition Law and Policy*, vol. 2, edited by Wayne D. Collins, 1319–1341. Chicago: American Bar Association, 2008.
- Werden, Gregory J., and Luke Froeb. "The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy." *Journal of Law, Economics, and Organization* 10 (October 1994): 407–426.
- . "Unilateral Competitive Effects of Horizontal Mergers." In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi, 43–104. Cambridge, Mass.: MIT Press, 2008a.

- . "Unilateral Effects of Horizontal Mergers II: Auctions and Bargaining." In *Issues in Competition Law and Policy*, vol. 2, edited by Wayne D. Collins, 1343–1357. Chicago: American Bar Association, 2008b.
- White, Lawrence J. "Horizontal Merger Antitrust Enforcement: Some Historical Perspectives, Some Current Observations." In *Corporate Mergers: Modern Approaches*, edited by P. L. Jayanthi Reddy, 88–99. Hyderabad, India: Icfai University Press, 2008.
- . "Economics, Economists, and Antitrust: A Tale of Growing Influence." In *Better Living Through Economics*, edited by John J. Siegfried, 226–248. Cambridge, MA: Harvard University Press, 2010.
- Williamson, Oliver E. "Economies as an Antitrust Defense: The Welfare Tradeoffs." *American Economic Review* 58 (March 1968): 18–36.
- . "The Merger Guidelines of the U.S. Department of Justice—In Perspective, 2002." <http://www.usdoj.gov/atr/hmerger/11254.htm>.
- Willig, Robert D. "Merger Analysis, Industrial Organization Theory, and Merger Guidelines." *Brookings Papers on Economic Activity: Microeconomics* 1991 (1991): 281–332.
- Wolak, Frank A., and Shaun D. McRae. "Merger Analysis in Restructured Electricity Supply Industries: The Proposed PSEG and Exelon Merger." In *The Antitrust Revolution*, 5th ed., edited by John E. Kwoka, Jr., and Lawrence J. White, 30–66. New York: Oxford University Press, 2009.