

Observations on the Multiple Dimensions of Market Power

BY ALAN J. DASKIN AND LAWRENCE WU

MARKET POWER IS PROBABLY the most often-used term and concept in antitrust and competition policy, yet its meaning is open to much debate and interpretation. Courts, agencies, practitioners, and economists routinely wrestle with issues surrounding market power—whether a merger will enhance market power, whether particular conduct or pricing policies reflect the exercise of market power, and whether market power is synonymous with harm to competition. Although the basic concept stems from textbook economic models of perfect competition and monopoly, the practical implications of the analysis of market power are complex enough to have inspired an entire handbook on the subject.¹

Indeed, even the definition of the term “market power” is unsettled. Consider, for instance, the following definitions of market power, each of which has very different implications for an antitrust analysis of market power:

Definition 1: the power to control prices or exclude competition.²

Definition 2: the ability of a single seller to raise price and restrict output.³

Definition 3: the ability to raise prices above the levels that would be charged in a competitive market.⁴

Definition 4: the ability of a firm or group of firms within a market to profitably charge prices above the competitive level for a sustained period of time.⁵

The first definition is the broadest of the four. If all that is required is the power to control prices, then all firms have some market power. After all, firms can set their prices as high or low as they like. Likewise, the ability to exclude competition is overly broad. Many firms can literally exclude “competition.” Manufacturers can limit the number of dealers

that distribute their products, franchisors do not have to contract with all comers, and retailers can selectively choose which products they want to place on the retail floor and shelves. Yet none of those actions would imply the possession of market power in a meaningful antitrust sense. The “power to exclude,” however, is important because without the ability to exclude competition, a firm may not have much market power, if any, in the long term. Nonetheless, the broad wording in the first definition potentially indicts all firms, raising the possibility that there are forms of market power that are not necessarily synonymous with anticompetitive effects or harm to competition.

The second definition (the ability of a single seller to raise price and restrict output) is a refinement: It focuses on price increases and reductions in output, which reduce consumer welfare. All else equal, consumers are worse off if they pay higher prices. However, without a reference point, the definition could encompass a broad range of market events and strategies that do not reflect harm to competition. Without reference to changes in costs or features of the underlying product, for example, a price increase—even if it is entirely justified—might be called an exercise of market power under the second definition.

The third definition (the ability to raise prices above the levels that would be charged in a competitive market) is a further refinement, because it adds the concept of a competitive benchmark. However, the definition does not actually specify what might constitute a competitive benchmark.

The fourth definition adds two other conditions: profitability (i.e., the price increase must be consistent with profit-maximizing behavior) and the requirement that a supra-competitive price be sustained for a long period of time. The profitability condition is particularly important because it refers not only to the ability to raise prices but also to the incentive to do so. The ability to sustain a supra-competitive price increase over time is also useful in focusing our attention on markets where new entry and expansion by existing rivals are not likely to be effective or timely sources of competitive discipline.

The concept of a competitive benchmark, the profitability of pricing above competitive levels, and the ability to set prices above competitive levels over a long period of time are important considerations when evaluating whether market power raises antitrust concerns. We address each of these issues, starting with a discussion of the economic foundations for definitions of market power. While most definitions of market power refer to control that a firm either has or does not have over prices and competitors’ entry, analyses of market power should be more nuanced. The focus should be on the degree to which prices or profits exceed competitive levels and how long they can be sustained. Such analysis requires a clear specification of the competitive benchmark as well as other relevant evidence that can help fact-finders distinguish “market power” that nearly all firms have from the market power that raises antitrust concerns.

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The Economic Foundations for Definitions of Market Power

The concept of market power stems originally from a comparison of the assumptions and implications of the textbook models of perfect competition and monopoly.

Perfect Competition. In a market characterized by perfect competition, all firms produce identical products, and each individual firm is so small relative to the market as a whole that the firm's output decisions have a negligible effect on total output or market price. Moreover, there are no impediments to entry by firms that are not currently in the market.

In the textbook model of perfect competition, the prevailing price equals the marginal cost of production.⁶ An attempt by the firm to raise price would be futile: Because competitors produce the same product, existing customers of any firm that raises price would defect en masse to competing firms. By the same token, an individual firm selling under such market conditions would have no incentive to reduce its price below prevailing levels: Because its output is small relative to total market output, the firm can effectively sell as much as it wants at the prevailing market price.

Although no real-world market is ever perfectly competitive, the concepts that are implicit in such a definition have made their way into the antitrust vernacular. In a perfectly competitive market, firms do not have "power over price." A firm in a competitive market would not find it profitable to raise its price above the prevailing price because consumers would switch to other firms producing the same product, and the quantity demanded from the firm that raised its price would drop to zero. Firms in a competitive market are instead "price-takers," taking the price dictated by the interplay of market demand and supply. They choose their profit-maximizing output by finding the quantity at which their marginal cost just equals the market price.

Moreover, in the perfectly competitive model, there are no barriers to entry, a feature that is consistent with the first definition above and with most real-world assessments of market power: In a market without barriers to entry, no firm has the power to exclude competition.⁷

The model of perfect competition provides one definition of the competitive pricing benchmark that is referred to in definitions 3 and 4 above: In a perfectly competitive market, the prevailing price would be the competitive price, and that price equals the marginal cost.

The Ultimate Monopoly. Firms with market power also strive to maximize profits. The difference is that the monopolist has an advantage that the competitive firm does not have: barriers to entry and no other rivals in the marketplace; i.e., a monopolist has the power to exclude entry by new rivals.

The monopoly model also helps us understand what we mean by "power over price." Unlike a competitive firm, a monopolist does have a choice regarding the price that it can charge; it is not a price taker. As a result, a monopolist can set its price at the level that maximizes profits. In contrast, a

competitive firm does not set the price; it takes the market price as given, choosing its output so as to maximize its profits at that price.

A monopolist's decision to restrict its output will raise price, while a decision to increase or decrease output by a perfectly competitive firm would have essentially no effect on price.⁸ The general rule for profit maximization is the same for a monopoly and a firm in a competitive industry: Choose the quantity at which marginal revenue equals marginal cost ($MR = MC$).⁹ For the monopoly, however, the $MR = MC$ condition, combined with the fact that the firm faces a downward-sloping demand curve, implies that the monopoly's profit-maximizing price exceeds its marginal cost at the firm's profit-maximizing quantity.¹⁰ In other words, a monopolist has the ability profitably to set price above marginal cost.

Supracompetitive Pricing: A Closer Look at the Competitive Benchmark

As already noted, definitions of market power often refer to pricing above competitive levels (e.g., definitions 3 and 4 above). Based largely on the standard model of perfect competition, some definitions of market power refer to a firm's ability to set price above marginal cost.¹¹ Many practitioners also assess market power using the Lerner Index, which is defined as the percentage markup of price over marginal cost.¹² In many cases, however, firms may charge a price that exceeds their marginal cost without having "power" in a sense that does—or should—offend the antitrust laws, in which case the marginal cost would not be an appropriate proxy for the competitive price.

Three Examples of Pricing Above Marginal Cost: Is Marginal Cost the Right Benchmark? In many markets, for example, prices are determined by the cost of the "marginal seller." For instance, consider the markets for many natural resources. There are many competing suppliers with different levels of efficiency. Because firms face capacity constraints, however, price will exceed marginal cost for all but the least efficient firm in the market. In fact, prices are determined by that "marginal seller," whose marginal cost, while higher than other firms' costs, is just equal to price. In these markets, the efficient but capacity-constrained sellers are able to price above their marginal cost, yet the prevailing market price and the process by which prices are determined are generally considered competitive.

For another example, consider a so-called "monopolistically competitive" market. Such a market differs from a perfectly competitive market in one important respect: Because firms' products are slightly differentiated from each other—as is true in virtually all actual markets—individual firms face demand curves that slope downward. Unlike firms in a perfectly competitive market, sellers in a monopolistically competitive market can raise price without losing *all* of their customers to other firms. Because of free entry, however, firms in a monopolistically competitive industry lack the ability to exclude competition. Consequently, they cannot earn supra-

competitive profits in the long run. From an antitrust perspective, therefore, it makes little sense to say that they have meaningful “power” over price. Free entry in this type of market guarantees that prices will fall to the point at which firms no longer earn abnormal profits.

Inferring the anticompetitive exercise of market power from prices above marginal cost may also be inappropriate because of the cost structure of the industry. In some cases, the technology of production or the nature of costs precludes sustainable pricing at marginal cost. That is, although the firm *could* set the price equal to marginal cost, it would lose money by doing so. To understand why, suppose, for example, that the firm incurs fixed costs each period that are independent of the level of output as well as marginal costs that are constant—i.e., the marginal cost per unit neither increases nor decreases as output increases. In that case, if the firm sets price equal to marginal cost, it will cover *only* its marginal costs each period; its need to incur each period’s fixed costs guarantees that the firm will operate at a loss.

More generally, it is likely that such analysis applies to many firms that have low or negligible marginal costs but substantial and recurring fixed or sunk costs. Pharmaceutical manufacturers, for example, expend substantial sums on research and development for new products, but the marginal cost of actually producing each pill or unit of the product is typically small. Similarly, software firms spend considerable time and money on development of new or updated software, but the marginal cost of producing a diskette or compact disc with the new code is trivial. In fact, some commentators claim that such cost structures are quite typical:

The industries that are the hallmark of the “new economy” are characterized by a special cost structure. From software to semiconductors, digital entertainment to biotechnology, and in innovative fields more generally, the standard cost pattern entails sunk outlays that are large and must be incurred over and over again, but the marginal cost—the cost of serving an additional customer—is virtually negligible.¹³

Under such cost conditions, a firm may set its price above marginal cost to recover its fixed or sunk costs. Such cost structures also may force firms to adopt discriminatory pricing to remain viable. If a firm charges different prices to different customers, then it must be setting at least some of its prices above marginal cost. But it is hard to argue, in general, that antitrust should condemn such firms for exercising “market power” simply because they must set prices above marginal cost to avoid sustaining continuing losses.

All of these examples suggest the need to revisit some of antitrust’s conventional thinking about market power, particularly inferences of market power simply from the observation that price exceeds marginal cost or, equivalently, that the firm faces a downward-sloping demand curve.

Rethinking the Competitive Benchmark. One possible approach is to continue to use marginal cost as the competitive benchmark when defining and assessing market power, but to recognize that possession of market power does not

necessarily imply any anticompetitive effects. The fact-finder could then consider other relevant evidence (e.g., rivalry among competitors and entry conditions) to judge whether the possession of, exercise of, or increase in market power warrants an inference of anticompetitive effects or consumer harm.¹⁴

An alternative approach would be to develop other measures or definitions of market power instead of, or in addition to, those that focus on the relationship between price and marginal cost. Consider, for instance, the approach suggested by William Baumol and Daniel Swanson, who question the inference of market power from the observation that price exceeds marginal cost:

[B]ecause discriminatory pricing is common in markets that are subject to intense competitive pressures, neither the presence of discriminatory pricing, nor the negative slope of a demand curve, nor the existence of prices that exceed marginal costs, can be deemed by itself to establish a presumption of market power.

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We believe that a firm’s profit record can be very helpful as one defensible indicator of market power, although it is hardly the one most commonly used.

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The logic of our approach suggests that monopoly power can appropriately be defined as the ability to obtain monopoly *earnings*, rather than as the power to charge monopoly *prices* (or as the power to exclude competition).¹⁵

Whether we choose to focus on prices or profits, neither economic theory nor the law provides guidance on how high they must be before they constitute antitrust market power or imply anticompetitive effects. Analyses that focus on these measures, therefore, should be complemented by other relevant evidence that helps determine whether prices that exceed marginal cost reflect viable competitive pricing or the exercise of market power in the antitrust sense. Such evidence might include the degree of product differentiation in the marketplace, the structure of costs, and the firm’s efficiency relative to its rivals. Consideration of all relevant evidence will lead to more meaningful conclusions than definitions that lack sufficient specificity for many practical applications (e.g., “the power to force a purchaser to do something that he would not do in a competitive market”¹⁶) or definitions that are very specific but often wrong (e.g., definitions that equate anticompetitive market power with prices that exceed marginal cost).¹⁷

Sustaining Price Increases Over Time

In the textbook model of competition, firms price at marginal cost at every point in time. In contrast, aided by the ability to exclude entry, the monopolist charges the monopoly price in each period. Again, the textbook models suggest two extremes: everlasting competition or market power that is never eroded.

Most markets fall between those extremes, where neither economic theory nor the law defines how durable market

power must be before it gives rise to antitrust concerns. The federal Horizontal Merger Guidelines are an important exception because they explicitly recognize the relevance and importance of considering the time dimension when assessing market definition, competitive effects, and entry. Specifically, the Guidelines consider entry timely if it can occur within a two-year period.¹⁸ The Guidelines also consider the ability of rival firms to defeat a unilateral price increase by expanding their capacity, as long as they can do so within two years.¹⁹

Analyses of the timing and speed of competitive responses, therefore, tend to focus on an examination of barriers to entry and expansion. Such analyses might include an inquiry into the costs of expansion, the technical means by which entry might occur, and the profitability of the investment required. Such an inquiry, however, may not fully address the question raised in the Guidelines, i.e., whether “timely and likely entry would be sufficient to return market prices to their premerger levels.”²⁰ Moreover, the two-year time horizon is largely arbitrary and not likely to fit all markets. Depending on the market at issue, the appropriate time horizon might be longer or shorter. Furthermore, the bright line distinction may invite largely meaningless distinctions between entry that would occur in 25 months and entry that would occur in 23 months.

An analysis of market power based on the Guidelines definition²¹ (the ability to charge supracompetitive prices for a sustained period) ought to rely on empirical measures of how long a firm or group of firms can charge prices above competitive levels. Such measures would also provide an indirect assessment of the degree to which an incumbent firm or group of firms have the power to “exclude competition.” A number of measures could be applied, many of which are related to the competitive benchmark discussed earlier and the appropriate measure of market power in the short run.

For instance, it may be possible to estimate the own-price elasticity of demand for an alleged monopolist over different time horizons, which would combine the concept of supracompetitive pricing with the timeliness of entry and expansion. Over time, as new alternatives are introduced into the marketplace, the own-price elasticity of demand facing a firm will increase. An increase in this elasticity would correspond to a lower percentage markup over the marginal cost. Thus, the monopolist’s market power may be short-lived for at least three reasons: over time, consumers have more time to adjust their purchases and switch to alternatives, new suppliers have time to enter, and existing suppliers have time to expand their capacity. Alternatively, if a monopolist has the power to exclude entry, it would have the power to restrict the availability of alternatives to consumers, which would slow the increase in the elasticity of demand over time. Thus, a dynamic analysis that captures the change in the relevant own-price elasticity of demand over time would capture the durability of an alleged monopolist’s market power.

An alternative approach would focus on directly quantifying the persistence of supracompetitive pricing or profits. This approach, which comes closest to the inquiry suggested by the Guidelines definition, has the benefit of being consistent with economic theory and the “law of one price” (which suggests that in a perfectly competitive market comprised of homogeneous products, prices will tend towards uniformity).²² Not only should (quality-adjusted) price levels within a market be the same, but these prices should adjust to their equilibrium levels easily and rapidly. The speed of arbitrage, which has been the basis for numerous empirical analyses of market definition, is meaningful because it captures the willingness and ability of consumers to switch from one product or seller to another, as well as the ability of rival sellers and new entrants to increase or gain entry into a market.²³

Yet another approach would be to assess evidence on shifts in market shares over time. Depending on the market at issue, it may be possible to assess market power by measuring the persistence of the market share(s) of a firm or group of firms. Such evidence would help to demonstrate that new entry or expansion can be sources of effective competition, that customers are not locked-in to their current suppliers, or that the cost of switching from an existing product or brand to a new one is low or insignificant.

These analyses move the inquiry away from structural characteristics of the marketplace (e.g., static market shares and structural barriers to entry) towards evidence that may help fact-finders assess the degree of market power held by a firm or group of firms. Of course, a fact-finder must still wrestle with the issue that the relevant time horizon for an assessment of market power will vary from market to market. Moreover, the analyses described above are only “one-way” tests in that they can help identify circumstances where firms are not likely to have much, if any, market power. For example, the observation of persistently high profits and/or market shares may not imply the presence of market power or the ability to sustain a price increase. Both measures are also characteristic of producers who are efficient and firms that make and sell superior products in the marketplace at a competitive price. Moreover, firms’ market shares may change little over time even if customers do switch frequently among existing firms. In addition, even if entry could otherwise occur immediately, there might be short-term contractual obligations, information lags, or search costs that prevent consumers from making immediate readjustments in response to a change in relative prices.

Similarly, in the case of intermediate goods, downstream producers may not be able to switch instantaneously from one input supplier to another. Depending on the product and technology at issue, some producers may be able to switch from a branded input to an unbranded input immediately. Other producers may need more time if the switch requires a reconfiguration in production lines or additional equipment.²⁴

Conclusion

Some market power definitions emphasize power over price, while others emphasize the ability to exclude competition. Without some further specificity, such definitions are not very useful for identifying the kind or form of market power that is likely to raise antitrust concerns. Antitrust market power must be more narrowly and carefully defined. First, the competitive benchmark must be specified clearly, particularly for the purpose of deriving estimates of competitive prices. Although economic theory suggests the use of marginal cost as a proxy for the competitive price, that benchmark may be inappropriate, particularly if a firm suffers continuing losses when it prices at marginal cost. Second, antitrust market power would not be of consequence if it were not for some ability to exclude or delay entry or expansion by rival firms. To identify such ability, it is sometimes useful to focus on identifying barriers to entry, but it may also be helpful to focus on measures that capture directly the durability of supracompetitive pricing. The need to consider both an appropriate benchmark and the time dimension help to sharpen a market power inquiry into one that focuses on the degree of market power in the short and long term, rather than the absolute presence or absence of market power.

With an appropriate competitive benchmark, which is likely to vary from market to market, evidence on supracompetitive prices or profits and how long they persist will provide a more realistic picture of the “market power” of a firm or group of firms. Economic theory alone, however, does not provide a bright line that indicates when such power raises concerns that violate the antitrust laws. ■

increase its profits by selling another unit, so it should do so. Similarly, if selling one less unit reduces the firm’s costs more than it reduces the firm’s revenue—i.e., MC exceeds MR—the firm can increase its profits by selling one less unit, so it should do so. Only when MR equals MC will the firm be maximizing its profits. For a firm in a competitive industry, the MR = MC condition required for profit maximization implies that it will choose the quantity at which its marginal cost just equals the market price. That follows because, for such a firm, the extra revenue it earns from selling an additional unit is simply the market price (MR = P). If MR = P and the firm sells the quantity at which MR = MC, it must be selling the quantity at which its marginal cost equals the market price.

⁷ There is no general consensus about what precisely constitutes a barrier to entry. For an illuminating discussion of some of the issues, see W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., *ECONOMICS OF REGULATION AND ANTITRUST* 156–60 (3d ed. 2000). For further details, see *MARKET POWER HANDBOOK*, *supra* note 1, ch. VII.

⁸ A monopolist faces the entire market demand curve, which slopes downward: In order to increase the quantity it sells, a monopolist must reduce price; when a monopolist raises price, it reduces the quantity demanded.

⁹ See *supra* note 6.

¹⁰ A monopolist that sets a single price must reduce the price in order to sell a larger quantity. When it does so, the extra revenue the firm earns from selling an additional unit is offset at least partly by the reduced revenue it earns on units it *could* have sold at the higher price. The monopolist’s price, therefore, exceeds its marginal revenue ($P > MR$). If $P > MR$ and the firm sells the quantity at which MR = MC, the price must exceed marginal cost at the firm’s profit-maximizing quantity ($P > MC$).

¹¹ See, e.g., LUÍS M.B. CABRAL, *INTRODUCTION TO INDUSTRIAL ORGANIZATION* 6 (2000) (“Market power may be defined as the ability to set prices above cost, specifically above incremental or marginal cost, that is, the cost of producing one extra unit.” (footnote omitted)).

¹² More precisely, the Lerner Index is defined as $(P-MC)/P$. See, e.g., CARLTON & PERLOFF, *supra* note 5, at 93.

¹³ William J. Baumol & Daniel G. Swanson, *The New Economy and Ubiquitous Competitive Price Discrimination: Identifying Defensible Criteria of Market Power*, 70 *ANTITRUST* L.J. 661, 661 (2003). For related papers, see *Symposium: Competitive Price Discrimination*, 70 *ANTITRUST* L.J. 593 (2003).

¹⁴ That is apparently consistent with the position taken by Jonathan Baker in his discussion of price discrimination: “Courts should . . . continue to follow the well-established analytical methodology of considering all relevant evidence of market power, direct and indirect alike, when market power is the issue, treating the inference of anticompetitive effect from proof of market power as rebuttable, and accounting for legitimate business justifications in determining whether a practice with some anticompetitive effect is unreasonable.” See Jonathan B. Baker, *Competitive Price Discrimination: The Exercise of Market Power Without Anticompetitive Effects* (Comment on Klein and Wiley), 70 *ANTITRUST* L.J. 643, 654 (2003).

¹⁵ Baumol & Swanson, *supra* note 13, at 681–82. Baumol and Swanson recognize the “substantial practical difficulties in method of economic profit estimation and acknowledge that the profit standard is no easy solution.” *Id.* at 683. As Baumol and Swanson note, there is no well-defined distinction between market power and monopoly power; they use “market power” to encompass “monopoly power.” *Id.* at 662 n.2.

For other criticisms of inferences of market power from prices that exceed marginal cost, see Benjamin Klein & John Shepard Wiley Jr., *Competitive Price Discrimination as an Antitrust Justification for Intellectual Property Refusals to Deal*, 70 *ANTITRUST* L.J. 599 (2003), and *Market Power in Economics and in Antitrust: Reply to Baker*, 70 *ANTITRUST* L.J. 655, 657–58 (2003) (“We reject a definition of antitrust market power in terms of a firm’s elasticity of demand . . . because such a definition is not useful. In fact, most real-world competitive firms sell differentiated products and face negatively-sloped demand curves. . . . Market power is a useful concept in antitrust law because it helps screen cases worthy of costly judicial attention from cases that are not. To dilute this concept so that it applies everywhere is to destroy its value. And, as explained in our [original] article, using the degree of demand inelasticity to measure the degree of market power also leads to nonsensical results. Although a perfectly elastic demand implies the absence

¹ ABA SECTION OF ANTITRUST LAW, *MARKET POWER HANDBOOK* (2005).

² *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 391–92 (1956) (stating that it is inconceivable that prices could be controlled without power over competition). See also *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 596 n.20 (1985).

³ *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 464 (1992) (citing the ability of a single seller to raise prices and restrict output). See also *Fortner Enters., Inc. v. United States Steel Corp.*, 394 U.S. 495, 503 (1969); *SCFC ILC, Inc. v. Visa U.S.A., Inc.*, 36 F.3d 958, 965 (10th Cir. 1994).

⁴ *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 27 n.46 (1984). See also *Town of Concord, Mass. v. Boston Edison Co.*, 915 F.2d 17, 32 (1st Cir. 1990) (“the power to raise price significantly higher than the cost-based level that competition would otherwise bring about”).

⁵ See, e.g., U.S. Dep’t of Justice & Federal Trade Comm’n, *Horizontal Merger Guidelines* § 0.1 (1992, revised 1997) [hereinafter *Guidelines*] (defining market power as “the ability profitably to maintain prices above competitive levels for a significant period of time.”); see also DENNIS W. CARLTON & JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 8 (4th ed. 2005) (“The ability to price profitably above the competitive level is referred to as market power, and such conduct leads to welfare losses by society.”)

⁶ A rational profit-maximizing firm will want to sell the quantity at which the firm’s marginal revenue (MR) just equals its marginal cost (MC). While the mathematical justification for that claim is relatively simple, the intuition is equally straightforward: If selling an additional unit increases the firm’s revenue more than it increases its cost—i.e., MR exceeds MC—the firm can

of any market power (and the presence of homogeneous products), one cannot usefully rank the antitrust market power of firms selling differentiated products by their elasticity of demand.”)

¹⁶ Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 452 (1992).

¹⁷ Even if we consider marginal cost as a benchmark, pricing above marginal cost may not imply the ability or the desire to restrict output. For example, a monopolist that practices perfect price discrimination, charging each buyer the maximum price he is willing to pay, sells the same quantity as a perfectly competitive market. For nearly all customers, therefore, the firm charges a price that exceeds its marginal cost, even though the monopolist does not restrict quantity relative to the competitive equilibrium. Some economists argue, therefore, that a perfectly discriminating monopolist does not exercise market power in a way that the antitrust laws should condemn. Of course, this is one area in which economics may part company with antitrust law, particularly when antitrust law reflects a consumer welfare standard. By charging each buyer the maximum price he is willing to pay for each unit, a perfectly discriminating monopolist extracts all consumer surplus from buyers. Thus, although the monopolist’s output is no different from total output in the competitive equilibrium, consumers are clearly worse off than in the perfectly competitive equilibrium. Their losses, however, are exactly offset by the monopolist’s gains. Thus, no deadweight loss is created by the perfectly discriminating monopolist.

¹⁸ Guidelines, *supra* note 5, § 3.2. (“In order to deter or counteract the competitive effects of concern, entrants quickly must achieve a significant impact on price in the relevant market. The Agency generally will consider timely only those committed entry alternatives that can be achieved within two years from initial planning to significant market impact. Where the relevant product is a durable good, consumers, in response to a significant commitment to entry, may defer purchases by making additional investments to extend the useful life of previously purchased goods and in this way deter or counteract for a time the competitive effects of concern. In these circumstances, if entry only can occur outside of the two year period, the Agency will consider entry to be timely so long as it would deter or counteract the competitive effects of concern within the two year period and subsequently.”)

¹⁹ *Id.* § 2.22. (“This unilateral effect is unlikely unless a sufficiently large number of the merged firm’s customers would not be able to find economical

alternative sources of supply, i.e., competitors of the merged firm likely would not respond to the price increase and output reduction by the merged firm with increases in their own outputs sufficient in the aggregate to make the unilateral action of the merged firm unprofitable. Such non-party expansion is unlikely if those firms face binding capacity constraints that could not be economically relaxed within two years or if existing excess capacity is significantly more costly to operate than capacity currently in use.”)

²⁰ *Id.* § 3.0.

²¹ Henceforth, for convenience, we refer to definition 4 in the text above as the “Guidelines definition,” although similar definitions have been used elsewhere as well.

²² Consider, for instance, a definition given by Cournot, who defined a market as “the entire territory of which the parts are so united by the relations of unrestricted commerce that prices there take the same level throughout with ease and rapidity.” See A. COURNOT, RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH 51–52 (1838) (N.T. Bacon trans., Macmillan 1927).

²³ Applications of the empirical methods that can and have been applied to assess the speed of arbitrage include George J. Stigler & Robert A. Sherwin, *The Extent of the Market*, 28 J.L. & ECON. 555 (1985); Pablo T. Spiller & Cliff J. Huang, *On the Extent of the Market: Wholesale Gasoline in the Northeastern United States*, 35 J. INDUS. ECON. 131 (1986); Margaret E. Slade, *Exogeneity Tests of Market Boundaries Applied to Petroleum Products*, 34 J. INDUS. ECON. 291 (1986); Arthur De Vany & W. David Walls, *Pipeline Access and Market Integration in the Natural Gas Industry: Evidence from Cointegration Tests*, 14 ENERGY J. No. 4, 1993, at 1–19; Armando E. Rodriguez & Mark D. Williams, *Is the World Oil Market “One Great Pool”? A Test*, 5 ENERGY STUD. REV. 121 (1993); Michael J. Doane & Daniel F. Spulber, *Open Access and the Evolution of the U.S. Spot Market for Natural Gas*, 37 J.L. & ECON. 477 (1994); Lawrence Wu & De-Min Wu, *Measuring the Degree of Interindustry Competition in U.S. v. Continental Can*, 42 ANTITRUST BULL. 51 (1997).

²⁴ In recent years, several airlines have switched from buying branded replacement and maintenance parts to producing their own less expensive parts. See Melanie Trottman, *Nuts-and-Bolts Savings—To Cut Costs, Airlines Make More of Their Own Parts; Jettisoning a \$719 Toilet Seat*, WALL ST. J., May 3, 2005, at B1.

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