

II. ANTITRUST ECONOMICS: A NONTECHNICAL INTRODUCTION

A. Overview

The foundations of antitrust law rest in part on concepts and theories drawn from economics, or informed by economic analysis. This includes not only a set of central ideas like “competition,” “monopoly,” and “market power,” but also propositions about the tendencies of particular practices or circumstances to lead to particular outcomes. For example, antitrust law’s central understanding about the tendency of competition to reduce prices and improve quality—and the tendency of practices like price-fixing, or acquisitions of key competitors, to increase prices and reduce quality—comes from what we would today call microeconomic analysis. As a result, some basic antitrust *economics* is indispensable for anyone trying to understand antitrust *law*.

But do not be dismayed or intimidated! You do not need a degree in economics, or anything like it, to be a good antitrust lawyer. In fact, most antitrust lawyers have no formal qualifications in economics. Instead, they rely on a basic understanding of some core economic principles, and they frequently work closely alongside formally trained economists who help illuminate the more complex economic issues presented by an antitrust matter. Both DOJ and the FTC employ many professional economists, and economic experts are retained to consult or testify in many antitrust cases (including public and private investigations and litigations).¹²⁵

This Chapter introduces some economic concepts that underpin antitrust law and practice. Section B provides a short introduction to microeconomics as a means of understanding and analyzing the world. Section C introduces the forces of market supply and demand. Section D presents the idea of perfect competition. In Section E we will meet the concept of monopoly. Section F introduces the related concept of “market power” and some of the conditions in real world markets that may create it. Section G describes the idea of potential competition. Section H introduces the concept of tacit collusion and the related idea of market concentration. Section I brings in buyer-side power, including monopsony and oligopsony. Section J introduces price discrimination, and Section K offers some thoughts on the relationship between economics and law.

The discipline of economics is, and has always been, very important to antitrust. But it cannot supply us with a full set of clear right answers about what antitrust law should permit or prohibit, or about what set of rules would be socially optimal in an all-things-considered sense. Economics can illuminate and inform some of the hard normative choices that antitrust doctrine raises, and it can help us understand the possible effects of particular practices or rules, but it will still leave us with hard choices and plenty of uncertainty. We all have different prior assumptions about how the world works and how people behave; different beliefs about what is desirable and why; and different views about the relative prevalence or likelihood of particular outcomes in the real world. These and many other things affect our own sense of what antitrust rules should be, our instincts about whether we should label particular practices “anticompetitive” or “procompetitive,” and our intuitions about whether it would be better to prohibit or permit those practices. Even (and maybe especially) our sense of what “competition on the merits” *means* is derived from many more sources than just microeconomics textbooks. Economic analysis can make a critically important contribution to our understanding of the hard choices at the heart of antitrust enforcement and policy, but it cannot make those choices for us.

¹²⁵ The FTC’s Bureau of Economics employs roughly 80 economists; the Antitrust Division’s Economic Analysis Group includes around 50. *See generally* <https://www.ftc.gov/about-ftc/bureaus-offices/bureau-economics/about-bureau-economics>; <https://www.justice.gov/atr/about-division/economic-analysis-group>.

B. The Lens of Microeconomic Analysis

Traditional microeconomic analysis is centrally focused on the question of how individuals face incentives to make particular decisions under conditions of scarcity: that is, in a world of finite resources.

Preferences and rationality. Most microeconomic analysis assumes that people have preferences, and that they act in a way that seems to them to best satisfy those preferences.¹²⁶ Preferences are just rankings, from most preferred to least preferred. For example, I prefer having \$10 to having \$5, and I prefer having \$5 to having \$1. But preferences need not relate to quantifiable things. Thus, for example, I might also prefer to take the train for a 100-mile journey rather than drive, with air travel being my least-preferred option. And someone else might have different preferences over means of transportation.

Of course, real people often do not appear to be fully rational. Some economists (and professionals in other disciplines) work to understand when and how people do not think or behave this way.¹²⁷ But antitrust analysis generally assumes that they do.¹²⁸

Welfare. The concept of preferences gives us, in turn, the idea of economic *welfare*. We say that a person’s welfare is increased when they move from a less preferred state to a more preferred one. Notice that this use of the term “welfare” has nothing to do with what is “best” for the person in any objective sense: the only thing that matters is what that person subjectively prefers. If the person wants more of X, then, all else equal, an increase in that person’s amount of X is a welfare improvement for this purpose: even if we, as observers, might personally feel that too much X—or even any X at all—is bad for that person.

In this strict sense, we can generally only talk about increasing or reducing the economic welfare of individuals: if a particular change in the world is preferred by some individuals and disfavored by others, there is no obvious way to determine whether that change would lead to an “overall” increase or reduction in the welfare of society.¹²⁹ In economic jargon, this is the problem of “interpersonal comparability”: it is not obvious how we can sensibly weigh one person’s preference for X over Y against another person’s preference for Y over X.¹³⁰

Some analytical methods, such as the Kaldor-Hicks criterion that underlies traditional cost-benefit analysis, attempt to resolve this problem by converting preferences into amounts of money. For example, suppose that you want to plant a tree in your back yard, but I—your neighbor—object, because it will reduce the amount of sunshine that reaches my yard. You might be willing to pay up to \$100 to be able to plant the tree; I might be only willing to pay \$50 to prevent you from doing so. In a certain sense, then, we might think that the world would be improved if you were allowed to plant the tree: you would receive a benefit that you value at \$100, while I would suffer a harm that I value at \$50. And you could in principle compensate me from your gains, by paying me any amount between \$50 and \$100, such that we would both be better off.¹³¹ But this approach raises problems of its own, including the fact that people value dollars, and other resources, less as they have more of them—the so-called “diminishing marginal utility of wealth”—meaning that analysis of this kind may end up

¹²⁶ The “rationality” constraint further provides that these preferences are complete (*i.e.*, cover all the possible alternatives) and transitive (*i.e.*, do not “cycle,” such that if I prefer A to B and B to C, I will also prefer A to C). See generally Andreu Mas-Colell, Michael D. Whinston & Jerry R. Green, *MICROECONOMIC THEORY* (1995) Ch. 1.

¹²⁷ See, e.g., Amos Tversky & Richard H. Thaler, *Anomalies: Preference Reversals*, 4 *J. Econ. Persp.* 201 (1990).

¹²⁸ See generally Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 *U. Pa. L. Rev.* 261 (2010). See also Symposium, *Behavioral Antitrust*, 1 *Comp. Pol’y Int’l* (Winter 2019); Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 *Ind. L.J.* 1527 (2011); Avishalom Tor, *Illustrating a Behaviorally Informed Approach to Antitrust Law: The Case of Predatory Pricing*, 18 *Antitrust* 52 (2003); but see Alan Devlin & Michael Jacobs, *The Empty Promise of Behavioral Antitrust*, 37 *Harv. J. L. & Pub. Pol’y*, 1009 (2013).

¹²⁹ Of course, if a particular change makes at least one person better off, and no-one worse off, we can describe it as an improvement. This is often called a Pareto improvement. See generally Lewis Kornhauser, *The Economic Analysis of Law* in *STANFORD ENCYCLOPEDIA OF PHILOSOPHY* (rev. Jan. 7, 2022) § 6.2.

¹³⁰ See, e.g., Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 *Rev. Econ. & Stat.* 387, 387 (1954) (“It is not a ‘scientific’ task of the economist to ‘deduce’ the form of [a social welfare] function; this can have as many forms as there are possible ethical views[.]”).

¹³¹ This approach underpins the Kaldor-Hicks criterion, which provides that a change is an improvement if the gains to the winners are sufficient to compensate the losses to the losers. See Nicholas Kaldor, *Welfare Propositions in Economics and Interpersonal Comparisons of Utility*, 49 *Econ. J.* 549 (1939).

favoring the interests of wealthy persons unless we make complex and controversial efforts to try to account for this effect. Moreover, the fact that the gains to the winners might in theory be enough to compensate the losers does not mean that they will *in fact* be so compensated.¹³² It's not obvious why a loser should be mollified by the knowledge that it *could in theory have* been compensated from the gains that a winner is now enjoying.

Welfare maximization and profit maximization. Through the lens of microeconomic analysis, then, we see a world of rational persons acting to maximize their welfare. For producers (*i.e.*, entities that supply products and services of any kind), we usually assume that the rationality constraint means that they will aim to maximize their profits, and only their profits. The assumption that producer welfare is equal to profit, and that businesses do not have preferences over other things like social or political goals, is a controversial one, and it touches an active area of scholarship and debate.¹³³ But much economic analysis, and most standard antitrust economics, generally just assumes that businesses act rationally to maximize their profits.¹³⁴

Of course, consumers—people who buy and use, but do not supply, products and services—do not have profits. But they have preferences, and therefore welfare, all the same. If consumers of a particular product or service are forced to pay more for that product or service, all else equal, the value they experience above what they have paid—their “consumer surplus”—is reduced. This is a welfare harm. Conversely, a price reduction—again, all else equal—tends to increase the consumer surplus received, and thus amounts to a welfare benefit for consumers.

Note the importance of the “all else equal” assumption when we are talking about prices. Remember that what matters for a welfare analysis is whether the consumer is moving to a more or less preferred state of affairs. A literal decrease in the price number after the dollar sign—that is, the “nominal price” of a product or service—implies a welfare increase only so long as the product or service supplied for that price is not also changing for the worse. To illustrate, suppose I can today obtain a pretty great sandwich from the store for \$5. If tomorrow I find that the nominal price of the sandwich has fallen to \$4.50, but that the sandwiches are now completely awful, the welfare gain I would receive from a sandwich purchase has probably been reduced, not improved. Alternatively, if the price has gone up to \$5.10, but the sandwiches are now world-beating achievements in the field of culinary science, I am probably going to receive a greater welfare benefit from a sandwich purchase as a result. So we often talk about “real price” or “quality-adjusted price” to clarify that what matters in welfare analysis is not just the number on the price sticker but what the buyer is getting for his or her money.

As this suggests, consumer welfare turns on much more than just the price paid for a product or service: quality matters too. If a consumer receives a *better* (that is, more preferred, from their own perspective) product or service for the same nominal price, then that consumer’s welfare has been increased. Thus, quality changes can affect consumer welfare even in the absence of any change in price.

But quality can get complicated. Consumers may disagree about whether a qualitative change makes a product better or worse: for example, is it a quality improvement to change an ice cream flavor from lemon to vanilla? (Economists often reserve the word “quality” for something that all buyers agree is better.) This raises complexities that may be absent from discussions about price, as consumers generally do not disagree about whether they prefer higher or lower prices for the same product or service. But even this presumption does not

¹³² For some thoughtful discussions, *see, e.g.*, Michael A. Livermore & Richard Revesz, REVIVING RATIONALITY: SAVING COST-BENEFIT ANALYSIS FOR THE SAKE OF THE ENVIRONMENT AND OUR HEALTH (2020); Lewis A. Kornhauser, *On Justifying Cost-Benefit Analysis*, 29 J. Leg. Stud. 1037 (2000).

¹³³ *See, e.g.*, C.F. Camerer & U. Malmendier, *Behavioral economics of organizations* in P. Diamond & H. Vartiainen (eds.), BEHAVIORAL ECONOMICS AND ITS APPLICATIONS (2007); Paul J. H. Schoemaker, *Strategic Decisions In Organizations: Rational And Behavioural Views*, 30 J. Mgmt. Stud. 107 (1993); Eugene F. Fama & Michael C. Jensen, *Separation of Ownership and Control*, 26 J. L. & Econ. 301 (1983); Barry J. Nalebuff & Joseph E. Stiglitz, *Prizes and Incentives Towards a General Theory of Compensation and Competition*, 14 Bell. J. Econ. 21 (1983); Milton Friedman, *A Friedman Doctrine—The Social Responsibility of Business Is to Increase Its Profits*, N.Y. TIMES (Sept. 13, 1970); Richard M. Cyert & James G. March, A BEHAVIORAL THEORY OF THE FIRM (1963); Gary S. Becker, *Irrational Behavior and Economic Theory*, 70 J. Pol. Econ. 1 (1962).

¹³⁴ This is a critical assumption, which antitrust analysis uses to predict how particular practices or transactions might change the ability and incentives of market participants to behave in particular ways. *See, e.g.*, *United States v. AT&T, Inc.*, 916 F.3d 1029, 1043–44 (D.C. Cir. 2019). What else could courts and agencies do? *See generally, e.g.*, Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. Pa. L. Rev. 261 (2010); Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 Indiana L.J. 1527 (2011).

always hold: for some goods, like champagne, some consumers actually prefer higher rather than lower prices. These are sometimes called “Veblen goods.” And it may be hard to agree on how we should measure quality effects in the real world (how should we measure the quality of word processing software, or of apples, or of fashionable apparel, or of a social networking service?),¹³⁵ so we can get bogged down in arguments about whether and how quality has changed, or by how much.¹³⁶ But prices can be easier to measure—unless we try to account for “quality-adjusted” price rather than nominal price.

What this means in practice is that, when we are trying to measure or predict welfare effects, we may find ourselves tempted—including for reasons of analytical or evidentiary convenience—to focus on price, perhaps to the exclusion of nonprice effects. But we should avoid falling into the trap of assuming that price is all that matters, or even that it matters most. Economic welfare includes everything that matters to persons. Of course, this does not mean—or at least does not *necessarily* mean—that courts and agencies would be well-advised to try to reflect every idiosyncratic preference or prejudice of every market participant in formulating and applying antitrust rules. Among other things, we might not believe they could do so accurately, or predictably, or without undue delay and expense, or without exercising the kind of broad discretion that might make us uncomfortable.

Efficiency. The idea of welfare, and the related idea that maximizing welfare is a good policy objective, underlies another concept you will encounter often in antitrust: “efficiency.” This term can have a variety of meanings, but the most important variations are “allocative” and “productive” efficiency. Allocative efficiency is a quality that pertains to a particular distribution of resources: it is improved when resources are distributed to higher-value uses (that is, distributions that improve overall social welfare). Productive efficiency is a quality of a productive process: it is improved when the ratio of output to cost is increased, such that the process produces more output for the same cost, or the same output for less cost (or, of course, more output for less cost!).¹³⁷

These economic concepts—rationality, welfare, profit maximization, and efficiency—are of central importance to modern antitrust analysis.

In particular, as we saw in Chapter I, courts and commentators today often state that the primary goal of antitrust is the promotion of consumer welfare through the efficient operation of markets.¹³⁸ (We also saw that that proposition is controversial.¹³⁹) But it is important to appreciate that there is also considerable debate *even among antitrust economists* over what “efficiency” and “consumer welfare” actually mean—or what they should mean for the purposes of antitrust enforcement and policy—and how those things can or should be identified or pursued.

For example, suppose that we could all agree that welfare maximization is the overriding purpose of antitrust, and that we needn’t worry about anything else (including the binding authority of past Supreme Court decisions). We might nevertheless disagree about: (1) what practices or rules will actually increase or maximize welfare (including because particular practices may have one effect in the short run but another in the long run); (2) how we should weigh and combine welfare effects on individuals in order to calculate whether a practice should be permitted or prohibited; (3) what tools or heuristics we should use to measure or predict welfare impacts in real antitrust cases; (4) what we should do when we are uncertain about welfare impacts; or (5) whether welfare has actually been improved or reduced in individual cases. We might also disagree about *whose* welfare matters and in what ways. (End-consumers? Workers? Trading partners? Everyone, including

¹³⁵ There are of course a variety of ways in which one might try to proxy for quality: one might try to measure purchasers’ willingness to pay for particular features, or aspects of their behavior when they are offered a choice, or one might pick some reasonably plausible index for good or bad quality (like the number of crashes that users experience with a particular piece of software). The key point is that there is often real room for argument about which measures are better than others.

¹³⁶ This is a common problem in practice. For example, the Bureau of Labor Statistics must grapple with it in determining the CPI. See U.S. Bureau of Labor Statistics, *Frequently Asked Questions about Hedonic Quality Adjustment in the CPI*, <https://www.bls.gov/cpi/quality-adjustment/questions-and-answers.htm>; U.S. Bureau of Labor Statistics, *Quality Adjustment in the CPI*, <https://www.bls.gov/cpi/quality-adjustment/home.htm>.

¹³⁷ See generally, e.g., Richard O. Zerbe, *ECONOMIC EFFICIENCY IN LAW AND ECONOMICS* (2001); E.J. Mishan, *ECONOMIC EFFICIENCY AND SOCIAL WELFARE* (1981).

¹³⁸ See *supra* note 4 and accompanying text.

¹³⁹ See *supra* notes 4–8 and accompanying text.

defendants?) Confusingly, people use the phrase “consumer welfare standard” to encompass a wide variety of views about all these things.¹⁴⁰

NOTES

- 1) What are the advantages of microeconomic analysis as a way of understanding the world and the ways in which entities behave?
- 2) What features of the real world does traditional microeconomic analysis seem to miss or to poorly describe?
- 3) Does antitrust need a “paradigm,” or a consistent way of thinking about how entities make decisions? Does microeconomic analysis meet this need? What else could do so?
- 4) Do you think it is a problem for antitrust law that most lawyers and judges are not trained in economics? What would be the costs and drawbacks of a requirement of formal qualification in economics for lawyers and judges?
- 5) How do you feel about the maximization of economic welfare as a normative goal for antitrust? What, if anything, would be a better alternative?
- 6) “Antitrust law should rely on the same goals and analytical methods as tort and contract law.” Do you agree? What are those, exactly?
- 7) How do you think the United States ended up with a consumer welfare standard in antitrust? Concretely, how would you go about changing it?

C. Markets, Supply, Demand, and Elasticity

Antitrust law often deals with “markets,” and they will play a critical role in many of the topics we will cover in the rest of this book. In this section, we will introduce the concept of markets, and some of the core terms and ideas we will use to talk and think about them.

1. Markets and Substitutes

The foundation of all thinking about markets—and, ultimately, of the entire antitrust project—is the fact that people have demand for products and services: they prefer to receive them, and are willing to pay some amount to have that preference satisfied. Of course, different people have different levels of demand for different things. Thus, I might be willing to pay \$4 for a cup of tea but only \$2 for a cup of coffee, and you might be willing to pay \$5 for a cup of coffee but have no interest in tea at all.

When more than one product or service might meet a particular need or desire, such as our desire for a caffeinated drink in the morning, we may think of them as substitutes. That is, we may compare them and make a choice from among them, in light of whatever might matter to us, including the products’ or services’ nature, features, quality, price, and perhaps their location. As a result, when many such alternatives exist, suppliers of the products and services will realize that under most realistic circumstances they will generally do better—that is, they will increase their profits—if their product and services are more appealing than the alternatives. The process of vying to make products and services more attractive than rival options is what is often loosely called competition.

Antitrust uses the idea of a “market,” and the process of “defining a relevant market,” as tools for thinking about this process. This may be different from other uses and meanings of the term “market” with which you are familiar. We can think of a market as an imaginary frame or zone that includes a product or service and the significant alternatives to it (the “supply side” of the market) and the actual and potential buyers of it (the “demand side” of the market). The aim of defining a market is often to understand and describe the demand for a product or service, and the other products or services that those buyers would regard as substitutes for the product or service at issue.

¹⁴⁰ See, e.g., Jonathan Kanter, *Milton Handler Lecture* (May 18, 2022) (“[C]onsumer welfare is a catch phrase, not a standard.”).

A *substitute* for product or service X is another product or service to which buyers might turn if X became unavailable, or available only on less appealing terms (*e.g.*, at a higher price). When products and services are “homogeneous,” the suppliers’ products and services are identical and are perfect substitutes for one another, in that buyers are indifferent about which one they receive. When products and services are “differentiated,” they are not identical: thus, some are closer substitutes and others are more distant. For example, if we are defining a market around a particular cola-flavored carbonated soft drink, we might describe other cola-flavored carbonated soft drinks as close substitutes; non-cola-flavored carbonated soft drinks as somewhat substitutable; and non-carbonated soft drinks (like juices) as more distant substitutes.

In general, as we will discuss in the next section, two things usually happen when a supplier increases its price: fewer people will buy the supplier’s product or service; but the supplier will make more profit on each sale. Thus, to determine whether a price increase would be profitable overall, a supplier must weigh the fact that it will make fewer sales against the fact that it will make a greater profit on each sale that it does make. The existence of substitutes for the product or service is a critical factor in this assessment: substitutes give buyers an alternative to which they can turn (or can threaten to turn) in the event that the price of the first product or service rises, or its quality falls. In other words, substitutes exert competitive “pressure” or competitive “discipline.”

All else equal, the closer the substitutes that are available to buyers, the stronger the competitive constraint those substitutes exert. If buyers regard Pepsi as very similar to Coke, then even a small increase in the price of Coke will cause many buyers to switch and buy Pepsi instead. As a result, that price increase is less likely to be profitable overall. (If the substitute is truly identical, even a trivial increase in price or diminution in quality will likely cause such switching.¹⁴¹) By contrast, if buyers regard Pepsi as very different from Coke, and nothing else is available, then it may be possible to increase the price of Coke substantially before many consumers will switch away to Pepsi.

A variety of things might affect whether and when one product is a substitute for another from the perspective of consumer demand. These might include, for example: the features and functionalities of the product or service; its aesthetic qualities or branding; the geographic location of the supplier relative to the buyer; the identity and reputation of the supplier; and so on. Economic analysis has no objective theory of when differences “should” matter: whatever matters to buyers affects the assessment of whether products or services are substitutes.

Of course, different buyers might have different views about whether and to what extent one product is substitutable for another. We would then say that demand is “heterogeneous.” For example, to some consumers who just want a caffeinated drink, Pepsi may be just as good as Coke. To other consumers who inflexibly drink Coke every day and have no desire to drink anything else, even Pepsi may be unacceptable: it’s Coke or nothing.

One final point of terminology when we are talking about markets. Supply chains commonly involve multiple markets, with entities purchasing something in one market and selling into another. For example, an original equipment manufacturer (or “OEM”) might buy components from component suppliers and sell finished equipment to retailers. The retailers, likewise, might buy equipment from OEMs and resell to individual consumers. It is usual to talk about markets earlier in the supply chain (like the market for the supply of components, in this example) as being “upstream” and markets later in the chain (like the market for the retail sale of equipment to consumers) as “downstream.”

NOTES

- 1) Is geographic location always important to assessing substitutability? Can you think of two markets in which the location of a supplier seems important to buyers, and two in which it does not?
- 2) Everyone has idiosyncratic demand for some things. Can you think of three examples where you believe that you personally regard two products or services as closer (or more distant) substitutes for one another than most people do?
- 3) In each of these examples, do you believe that the availability of the first product or service would cause large numbers of buyers to switch over if the price of the second increased by 5% or 10%?

¹⁴¹ *But see infra* § II.F. (noting that even physically identical products do not always work this way).

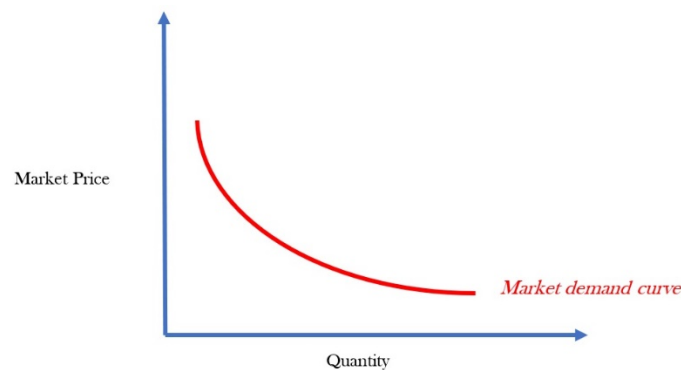
- a. Brand-name breakfast cereal and supermarket-brand cereal?
- b. Apples and pears?
- c. Coke and Pepsi?
- d. White bread and wheat bread?
- e. Skim milk and whole milk?
- f. Taxis and ridesharing services?
- g. Planes and trains?

2. Demand, Supply, and Elasticity

Antitrust economics is usually focused on interactions between buyers and sellers. As such, it is helpful to understand some basic ideas about how the behavior of buyers affects the incentives of sellers, and vice versa.

Let's start by thinking about the market demand—that is, the total demand in the market—for a product or service. Holding all else equal, there will almost always be more demand to buy the product or service when it is cheaper, and less demand when it is more expensive: a lower price makes the purchase more attractive because more buyers will find the value of the good to them to be higher than the price they pay. Depending on the nature of the product or service, the additional demand generated by a price reduction may represent new purchasers buying the product or service, the purchase of more units by the same purchasers, or both. This lets us construct a downward-sloping *demand curve*: as market price increases, market demand falls.

Figure 1: Demand curve



The percentage change in market demand arising from a one-percent increase in market price is known as the market price elasticity of demand. A higher elasticity of demand means that demand falls off more sharply in reaction to a price increase: in other words, that a particular proportional increase in price will result in a higher proportional decrease in demand. A lower elasticity of demand means that demand falls off more slowly in reaction to a price increase: in other words, that a given proportional increase in price will result in a lower proportional decrease in demand.

It is worth spotting the relationship between elasticity of demand and total revenue available from supply of a product or service. Total revenue—that is, the amount of money generated by sales—is the number of sales multiplied by the sale price. When the market demand is “inelastic,” such that the market-price elasticity of demand is less than one, it means that a particular percentage increase in market price would result in a smaller proportional decrease in demand. Thus, a change in market price implemented by all sellers simultaneously (if such a thing could be done and sustained) would result an increase in the total revenue earned by all suppliers (*i.e.*, the number of units sold multiplied by the price of each unit). This might create an incentive for market participants to look for ways to coordinate their conduct, such as a price-fixing cartel. When the market demand is “elastic,” such that the market-price elasticity of demand is greater than one, it means that a percentage increase in market price would reduce total revenue earned by all suppliers, as it would result in a greater proportional decrease in the number of units sold. And when market-price elasticity of demand is equal to one, it means that total revenue is being maximized: a percentage change in price will result in an identical and opposite change in demand, and vice versa.

The market price elasticity of demand for a particular product or service depends, among other things, on buyers' views about the available alternatives, given the market price of the product or service. If buyers have access to alternatives that they regard as very nearly as good as the product or service at the prevailing market price, then they will be very willing to switch in the event of a price increase. If the alternatives are much inferior, then they may be less willing to switch.

For example, suppose that the market price for a PowerZap laptop is \$600. If a competing laptop—the PowerPop laptop—is available for about the same price and is roughly as good in almost all respects, then the market price elasticity of demand for the PowerZap may be very high, because even a modest price increase will send consumers running to the PowerPop. But if all the other available laptops are much worse in quality, or much more expensive for the same quality, then even a significant price increase may not reduce sales by much.

As this example suggests, and as you will remember from our discussion above, a change in quality may have a similar effect to a change in price, even if it might be harder to agree about how to measure some aspects of quality (how would you try to measure “pleasant user experience” or “ease of portability” or even “attractive color” for a laptop? if one has a faster processor and the other has more RAM, which is higher quality overall?).

At any given price point, the portion of demand that is closest to indifference between buying the product or service and not buying it—that is, the portion of demand that will be lost first if the price is increased—is called the “marginal” demand. The portion of demand that will continue to exist even if the price increases is called “inframarginal.”

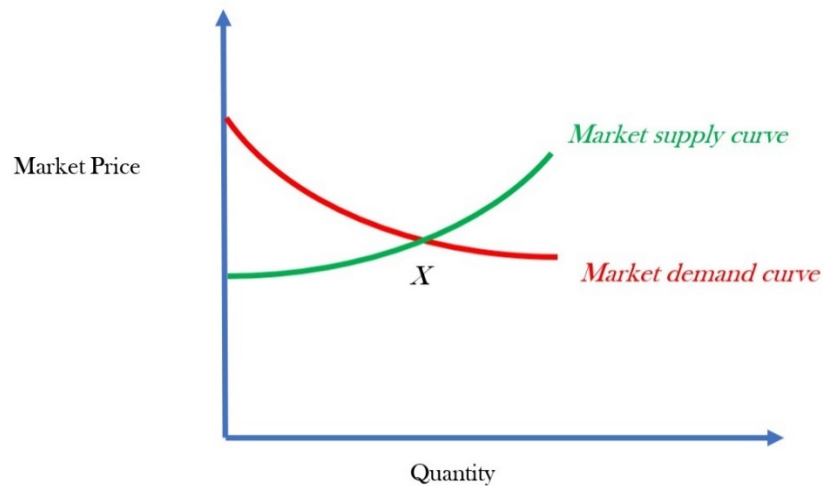
We can also use the language of elasticity to talk about the relationship between *two different* products or services. The percentage change in market demand for A arising from a one-percent increase in market price of B is called the “cross-price elasticity (or just ‘cross-elasticity’) of demand” of A with respect to B:

- *Substitutes.* If an increase in the price of one good results in a significant increase in demand for the other good—in technical terms, if there is significant *positive* cross-elasticity of demand for one good with respect to the price of the second—then the two goods are substitutes. In this situation, the higher price on the first good is driving purchasers to demand the other one instead, as an alternative. For example, if the price of pencils were to increase, demand might shift to pens (*i.e.*, demand for pens might increase), suggesting that users regard pens as substitutes for pencils. And if the price of pencils were to fall, then demand for pens would also fall: cheaper pencils would draw consumers away from pens.
- *Complements.* If an increase in the price of one good results in a significant decrease in demand for the other good—a significant *negative* cross-elasticity of demand for one good with respect to the price of the second—then they are complements. In this situation, the higher price on the first good is making the second good less attractive, reflecting the fact that demand for the second good is a function of the availability of the first. For example, if the price of pencils were to increase, demand for pencil erasers might decrease, suggesting that users regard erasers as complements for pencils. And if the price of pencils were to fall, the availability of cheap pencils would fuel demand for pencil erasers.

Now let's think about market supply. Holding all else equal, there will generally be more supply of a product or service as the market price of that product or service increases: the availability of a higher market price makes it more attractive to supply the product or service. Depending on the nature of the product or service, the additional supply generated by a price increase may represent new suppliers selling the product or service, the supply of more units by the same suppliers, or both. This lets us construct an upward-sloping *supply curve*: as price increases, more supply. As the costs of supplying the product or service change, the shape of the supply curve also changes.

We can superimpose the supply curve on the demand curve to see that, for any given price, there will be a certain level of supply and a certain level of demand. And at a particular price point—the so-called “market clearing” price, marked X in the diagram below—supply and demand are equal. We will assume that the costs of producing new units *increases* with quantity, which is true of many but not all markets.

Figure 2: Demand curve and supply curve



As a general rule, market dynamics tend to push quantity and price toward the market-clearing level, at least in the theoretical ideal world in which entry and exit are frictionless (*i.e.*, instantaneous and costless). In particular: when output is below the market-clearing quantity level, demand to buy the good at that price exceeds supply, so there is room for a new entrant to make a profit by entering and selling more output, or for existing suppliers to expand their output. This calls more supply into the market. When output is above the market-clearing quantity level, by contrast, supply exceeds demand, so suppliers cannot profitably sell all their output, and this encourages them to reduce production.

Similarly, when price is above the market clearing level, supply exceeds demand, which creates pressure on suppliers to lower price in order to generate profit from their unsold output. And when price is below the market-clearing level, demand exceeds supply, which makes it profitable for suppliers to increase their price to take advantage of the willingness of purchasers to pay more in order to get the product or service.

The result is that so-called “market forces”—by which we just mean the operation of incentives upon individual market participants—tend to push markets back toward the point at which the amount demanded equals the amount supplied. Indeed, this is part of the classic case for markets: market prices act as signals about market demand, helping to attract resources to the uses in which they are most valued.

At least: that’s the theory. Real markets, of course, are much messier, including for reasons we will discuss below.

NOTES

- 1) Is it really always true that when price increases, demand falls? Can you think of any counterexamples? (One was mentioned earlier: can you think of others?)
- 2) Is the “market clearing” price necessarily the socially optimal price? If so, why? If not, in what sense if any is it a desirable condition?
- 3) How much information do you think real businesses have about the shape of the market demand curve? How would they get information of this kind?
- 4) Without looking ahead to the next section, how do you think a supply curve would change, if at all, if:
 - a. the cost of producing each unit were halved (or doubled)?
 - b. the fixed cost of being in business were increased (or decreased)?
 - c. a major event (*e.g.*, a natural disaster) significantly increased society’s need for the product or service?
- 5) How do you think a demand curve would change, if at all, if:
 - a. the cost of producing the product or service were halved (or doubled)?
 - b. a complementary product or service were introduced that interoperated in a valuable way with the relevant product or service?

- c. a major event (*e.g.*, a natural disaster) significantly increased society’s need for the product or service?

D. Perfect Competition

Imagine a market in which all the sellers’ products or services are identical. Assume that there are no constraints on how many units each seller can supply, no constraints on market entry, and no costs other than the per-unit cost of making each unit. And assume for now that the cost of each unit is a fixed, uniform amount, and that each firm incurs its costs in the same way.

Real Costs are Complicated!

Despite our simple assumptions, the “costs” of production are usually more complicated than a simple fixed amount for each unit produced. In the real world, businesses incur some costs that vary in light of the number of units produced (“variable costs”), with the cost of producing the next unit known as the “marginal cost.” Businesses also usually face some costs that are not incurred in proportion to the volume of output (“fixed costs”), such as the costs of certain facilities and equipment. For now we can assume no fixed costs, but you should be aware that this is a gross oversimplification. Calculating a business’s real costs, and allocating them accurately to its various activities, can be tremendously difficult!

In a “perfectly competitive” market, no supplier can make any money by pricing higher than the competitive price. If a supplier’s price is higher than another supplier is offering, potential purchasers will simply go buy from the others instead. (Remember that by assumption all supply is identical.) If prevailing prices are for some reason above the competitive price in a robustly competitive market, each supplier has the incentive to set a fractionally lower price than others are offering in order to win share: each supplier reasons that it is better to drop the price a little, and make a slightly smaller profit margin on more sales, than to make no sale—and thus no profit—at all. Of course, all the suppliers (at least if we assume them all to be rational and possessed of all relevant information) will be doing the same thing! This means that the suppliers will try to outbid each other (or “compete”) to offer lower prices. “Competitive pressure”—that is, the struggle to win business by being more attractive to purchasers—thus drives prices down, and profit margins down. As it does so, consumers become progressively better and better off: they are paying less for the same product or service, so they end up with more money in their pocket for other things, as well as receiving the product or service itself.

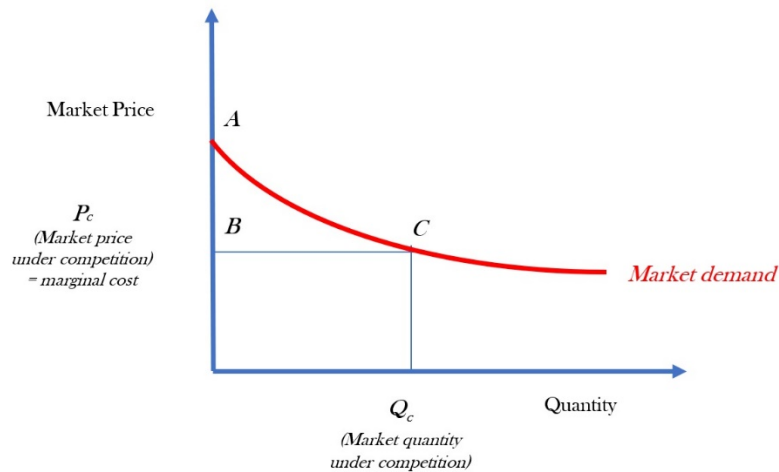
This process, in which multiple suppliers progressively try to outdo each other by lowering prices, does have a limit: the point at which price cannot be lowered further without the supplier taking a *loss* compared to the next-best use of resources. At the point at which the supplier would do equally well, or better, by not selling the good at all, the supplier will stop lowering price. Thus, the “competitive price” is the price that provides just enough profit margin, above the cost of production, to compensate the suppliers’ “opportunity cost” of time and capital: that is, the cost of forgoing the opportunity to use that time and capital in other ways (*e.g.*, investing it elsewhere in the economy for a rate of return). The pressure of competition continually pushes each business toward this point.

When the suppliers in a market are pricing at the competitive point, notice that no individual seller can profitably do anything but the same. If it tries to charge less, the operation of the business will actively lose money. If it tries to charge more, no-one will buy. The supplier in a perfectly competitive market is thus a “price-taker” with no “pricing power,” and there is just one price—the competitive one—at which it can make a (slender) profit.

This implies that, in a perfectly competitive market, the *market price* elasticity of demand differs sharply from each supplier’s *own-price* elasticity of demand for each supplier. In other words, although there would still be market demand (albeit for a somewhat smaller quantity) if the price of all sellers were to increase *together*, no seller will make the decision to increase price *unilaterally*, because doing so would reduce that seller’s sales to zero. Thus, all sellers are forced to price at the competitive price, and only at that price.

Of course, this is just a thought-experiment. In the real world businesses generally do not go the trouble of staying in business for a return that is indistinguishable from that of a passive investment.¹⁴² We will talk below about some of the reasons why real markets do not look like the perfect-competition model. But the key insight for now is that, in imaginary markets that are perfectly competitive, prices are pushed down by competition to a point approaching the economic costs of production. We can reflect this fixed per-unit cost on a demand curve, and we can see how it determines the quantity supplied under competition.

Figure 3: Market price and market demand under competition



In a perfectly competitive market, with costless entry and expansion by suppliers, the competing suppliers will keep reducing price until market price approaches P_C , with the result that market quantity demanded will approach Q_C .

Under these conditions, purchasers are doing well in some important ways. They are all paying the same, competitive, price for the product or service, but they all value the product or service more than they value the price in money (otherwise they would just keep their money!). Each purchaser is thus getting a “surplus” value: the most inframarginal purchaser (the one who would be willing to pay the highest price) is getting a lot of surplus value; the marginal purchaser (who is all but indifferent between purchasing and not purchasing at the competitive price) is getting zero surplus. The triangle ABC in Figure 3 represents the total value that purchasers in the market receive above the price paid: the total “consumer surplus.” (Having said that, remember what we said earlier about the idea of aggregation across individuals involving some contested moves.)

On the other hand, in a perfectly competitive market, *suppliers* are much less comfortable: their margins approach zero (or, more accurately, the return available from investment of capital elsewhere). Suppliers who find themselves in this position will try to improve their lot by lowering their cost of production. Thus, in addition to the benefit of pushing prices down toward cost, competition also encourages hungry competitors in search of margin to find ways to lower their costs: that is, to innovate, and to develop more efficient ways to providing the product or service. Other competitors, facing the same incentives, will pursue the same goal. Thus, competition encourages innovation in production.

Lowering costs is typically good for everyone in the market. The result of a reduction in marginal costs is that, for any given price point, the quantity supplied will increase, the market-clearing price will decline, and the market clearing quantity will increase. Conversely, increasing marginal cost will mean that *less* will be supplied for any given price point, and that that market-clearing price will increase.

¹⁴² A business unit with zero *economic* profit in this sense—that is, a business unit that is generating no more profit than the alternative use of those resources—may still have considerable *accounting* profit (*i.e.*, revenue minus expenses of operation).

In sum, we can think of competition—in the everyday sense of rivalry to win the business of purchasers in order to maximize profits—as a force that, among other things, drives each competitor to lower its prices toward its costs, and to lower its costs as far as possible.

Competition also offers a further benefit. Because competitive pressure comes, among other things, from the presence of close substitutes, it creates an incentive for businesses to differentiate their products and services from those of their competitors in ways that buyers value. In other words, the search for profit margin encourages *innovation*: new ways to meet demand. We will discuss product differentiation below.

NOTES

- 1) Which real-world markets most resemble the perfect competition model?
- 2) Which real-world markets least resemble the perfect competition model?
- 3) What tools do producers use to differentiate their products and services?
- 4) If product differentiation tends to make markets less competitive, does that mean it's a bad or harmful thing?
- 5) In practice, in most markets, marginal costs generally change with the quantity produced. The nature of this change depends on the nature of the business, but in many markets the marginal costs increase with quantity of output. In others, they decline with quantity of output. In others still, costs may change in different directions as quantity of output increases (*e.g.*, declining up to a certain level of output, and then increasing). Why do you think this is? Can you think of examples?
- 6) In what sense do all purchasers benefit from the existence of the marginal purchaser?

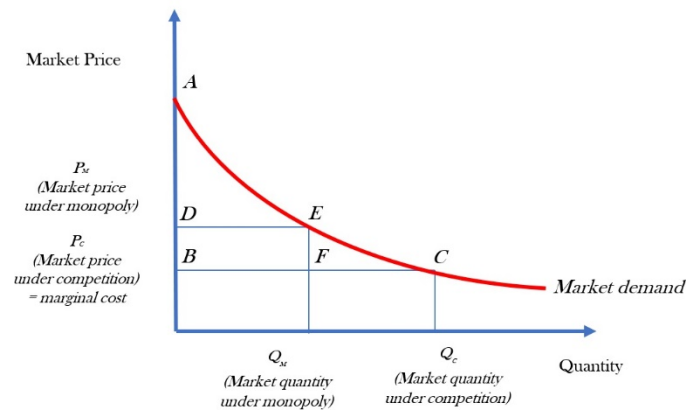
E. Monopoly

So what happens when we eliminate competition among sellers? We can replace our set of competitive, price-taking sellers with a single monopolist: that is, a lone supplier with no actual or potential rivals. As we will discuss below, this move from competition to monopoly could represent any of a variety of changes in a real market. It could represent the formation of a successful agreement among all the sellers to coordinate their actions (like a price-fixing cartel); it could represent the acquisition, by one seller, of all the others; it could represent the fact that costs decline steadily with scale, such that a larger firm can set prices that a smaller firm cannot match; or it could represent all but one seller being driven out of the market, perhaps by a superior product, foul play, or government action. But, for now, the means of creating the monopoly is immaterial.

The monopolist is unlike the competitive sellers in one very important respect: it can make a profit by selling above the competitive price. If it does so, it will of course sell fewer units than it would sell at the competitive price: the shape of our demand curve tells us that as price goes up, quantity demanded goes down. But the monopolist will make more profit on each unit sold.

Unlike a competitive seller, the monopolist's own price affects market demand and market price: the market-price demand curve is the same as its own-price demand curve. The result is that the profit-maximizing price for a monopolist—the “monopoly price”—is higher than the profit-maximizing price for a seller in a competitive market, resulting in a lower quantity of units supplied. We can depict this graphically: the move to monopoly results in a higher price and a lower quantity than we saw under perfect competition.

Figure 4: Market price and market demand under competition and monopoly



We have already seen that, under perfect competition, suppliers are forced to survive on a profit margin that approaches zero (or, at least, that approaches the rate of return available from other uses of the capital). But the ability to price above cost without competitive discipline means that things are much more pleasant for a monopolist! The area *DEFB* (*i.e.*, the margin between monopoly price and cost, multiplied by the quantity sold under monopoly) represents the monopolist's total "monopoly profit." But that profit comes at the expense of consumers, who are now worse off. As you will remember, their total surplus at the competitive price is the difference between the value of the good to them and the price they paid, which, in aggregate, is represented by the area *ABC*. Under monopoly, consumers' total surplus is now only *ADE* (which is clearly a smaller area). So they have taken an overall welfare hit, compared to perfect competition, equal to *ABC* minus *ADE*.

And here the diagram shows us a helpful fact about the relative values of the quantities we are discussing. We can see from the diagram that the loss sustained by consumers is equal to the area of the shape *DECB* (*i.e.*, area *ABC* – area *ADE*). And we can also see that this harm to consumers is larger than the monopolist's profit *DEFB*: in fact, the margin of difference is equal to the area of the triangle *ECF*. We can think of *ECF* as representing the surplus that would have been enjoyed by consumers who would have bought the product or service at the competitive price, but do not buy it at the monopoly price.

This gives us a critical insight for antitrust law and policy: the harm suffered by consumers under monopoly outweighs the monopoly profit, leaving society worse off overall compared to a perfectly competitive market. The amount of that overall injury is called the "deadweight loss," and it is equal to the area of triangle *ECF*.

This proposition is central to the standard normative economic case for antitrust. The central objection to monopoly power is not, as such, that consumers (or other purchasers) must pay more: it is that the existence of monopoly, rather than perfect competition, is associated with *social* or overall harm, because the benefit to the monopolist is outweighed by the harm to consumers.¹⁴³

Note, however, that a perfectly competitive market might not be realistically available. If a particular business involves costs that *decline* as output increases ("economies of scale"), then a single monopoly supplier might be able to meet demand more cheaply than would a number of smaller businesses. Indeed, as a result, the smaller firms (with their higher costs) might not be able to compete sustainably with the dominant firm, such that a "natural monopoly" may be the result toward which the market tends to move.¹⁴⁴

¹⁴³ See, e.g., Andreu Mas-Colell, Michael D. Whinston & Jerry R. Green, *MICROECONOMIC THEORY* (1995) § 12.B. at 384–87.

¹⁴⁴ This observation was critical to the development of the theory of utility regulation. See generally, e.g., Morton J. Horwitz, *THE TRANSFORMATION OF AMERICAN LAW, 1870–1960: THE CRISIS OF LEGAL ORTHODOXY* (1992) Ch. 8; Herbert Hovenkamp, *ENTERPRISE AND AMERICAN LAW, 1836–1937* (1991), 142–68.

Where does the monopolist price?

We can go one step further and figure out where exactly the monopolist will price. We will continue to assume that every unit sold by the monopolist is priced identically, a constant marginal cost, and no fixed costs.

The monopolist understands that a higher price for its output means that a smaller quantity will be demanded at that price. Each marginal move down the demand curve, starting from the left hand side, will cause a marginal increase in quantity demanded, increasing its total revenue. But with each move downward, this increase in revenue—the marginal revenue from the next sale—will get smaller and smaller, until it reaches the level of marginal cost. And then the monopolist will not produce the next unit, because it would not be rational to produce a unit for which marginal cost exceeds marginal revenue. So the profit-maximizing price and quantity will be the point at which marginal revenue = marginal cost.

We can see this with an example, with some basic calculus to help us. Suppose that the market demand curve for a widget, setting the relationship between price (P) and quantity (Q), is defined by the function $P = 100 - 10Q$. Suppose also that the marginal cost (MC) of making a widget is constant at \$10. There is a single strict monopolist of widgets, and entry is impossible. Total revenue (TR) at any point is equal to the number of units sold multiplied by the price of each unit (*i.e.*, $TR = PQ$). Given our demand curve, we know that $TR = PQ = (100 - 10Q)Q = 100Q - 10Q^2$.

Marginal revenue (MR) is the rate of change in total revenue with respect to a marginal change in quantity. Differentiating TR with respect to Q gives us $MR = 100 - 20Q$. And we know that the monopolist will reach its profit-maximizing price when $MR = MC$, which we have supposed to be 10. If $100 - 20Q = 10$, then $20Q = 90$, so $Q = 4.5$. And if $Q = 4.5$, then our original demand curve tells us that $P = 100 - 10Q = 100 - 10(4.5) = 55$. So the monopolist's profit-maximizing price given its costs of \$10 per unit, and the shape of our demand curve, is 55, at which it will sell a quantity of 4.5.

We can see this in tabular form too.

Table 1: Where does the monopolist price?

Quantity	Price	Total Revenue (= Quantity x Price)	Total Cost (= Quantity x \$10)	Total Profit (= TR - TC)
0.5	95	47.5	5	42.5
1.0	90	90	10	80
1.5	85	127.5	15	112.5
2.0	80	160	20	140
2.5	75	187.5	25	162.5
3.0	70	210	30	180
3.5	65	227.5	35	192.5
4.0	60	240	40	200
4.5	55	247.5	45	202.5
5.0	50	250	50	200

But the emergence of a monopoly is not usually the end of the story. The charging of monopoly prices in the market can act as a signal to others that there are profits to be made in the relevant market. And this profit opportunity may induce others to enter the relevant market and compete with the monopolist. In this way, the existence of monopoly power itself incentivizes greater competition: the higher the monopoly price, the stronger the inducement to enter and compete that calls other suppliers into the market. This idea plays an important part in the observation that markets often have a tendency to “self-correct.” However, the strength of this

tendency, and the extent to which it can or should be trusted to operate as a cure for the ills of monopoly, are all highly controversial: real markets are imperfect.¹⁴⁵

In addition, in some settings, the prospect of achieving monopoly power may encourage would-be competitors to radically innovate new ways of meeting demand, rather than pursuing incremental improvements. Sometimes firms may end up driving a “leap” forward in an effort to become the incumbent monopolist in a market that does not yet exist: for example, introducing the car rather than an incrementally better horse-and-carriage; a personal computer rather than an incrementally better typewriter; a smartphone rather than an incrementally better flip phone; and so on.¹⁴⁶

NOTES

- 1) Why is it rare for a firm to have literally no competitors (a “strict monopolist”)? Can you think of any real examples of strict monopoly?
- 2) Why isn’t the monopoly price infinitely high for a strict monopolist? In other words, if there are literally no competitors, why can’t the supplier charge any price it likes, regardless of what the product or service is?
- 3) Are there reasons to object to monopoly other than the one emphasized in the text?
- 4) “In a free market society, persons have an inherent right to seek, retain, and enjoy whatever monopoly profits they can get.” Do you agree with this statement?
- 5) “Markets are created by state power to serve us all, underwritten with the coercive power of the state—including the criminal law—and should be subject to whatever rules are necessary to avoid enduring inequalities, including inequalities of opportunity, wealth, or power.” Do you agree with this statement?

F. Imperfect Competition and Market Power

A strict monopolist of the kind we just considered—with sole control of production, facing no competition to supply the product or service, and constrained only by the nature of market demand—is a fairly rare sight in a real economy. In practice, we more commonly encounter the cousin of strict monopoly: “market power.”

Market power is the ability of an individual supplier to charge a price that is above the competitive level, and it exists in between the clean (but also largely imaginary) worlds of perfect competition and strict monopoly. When the amount of market power is very significant, antitrust lawyers call it “monopoly power,” even if the firm is not a strict monopolist, and although this is not a term that economists tend to use.

Lerner Index

One way to measure market power is the Lerner Index: $(\text{price} - \text{marginal cost}) / \text{price}$. This yields a value between 0 (when price is equal to marginal cost) and 1 (when marginal cost is zero, so the price is pure profit-margin). This is a helpful tool but it can be hard to calculate, as cost measurement is notoriously difficult. It may also give a misleading impression of a firm’s market power: can you think of reasons why this might be so?

So how could a supplier have some pricing power even though it faces some competition? Some of the most important factors include *product differentiation*, *entry barriers*, *capacity constraints*, *imperfect information*, and *transaction costs*.

¹⁴⁵ The imperfection of real markets has been understood by economists for a long time. *See, e.g.*, Joan Robinson, *THE ECONOMICS OF IMPERFECT COMPETITION* (1933); Martin Shubik, *STRATEGY AND MARKET STRUCTURE: COMPETITION, OLIGOPOLY, AND THE THEORY OF GAMES* (1959). For a short, accessible summary of some of the history, *see* Huw Dixon, *A Brief History of Imperfect Competition*, *Comp. Pol’y Int’l* (Oct. 2021).

¹⁴⁶ *See, e.g.*, Andreas Pyka & Richard R. Nelson, *Schumpeterian Competition and Industrial Dynamics* in Richard R. Nelson (ed.) *MODERN EVOLUTIONARY ECONOMICS: AN OVERVIEW* (2018); J. Gregory Sidak & David J. Teece, *Dynamic Competition In Antitrust Law*, 5 *J. Comp. L. & Econ.* 581 (2009); Herbert J. Hovenkamp, *Schumpeterian Competition and Antitrust*, U. Iowa Legal Studies Research Paper No. 08-43 (2008); Jerry Ellig (ed.), *DYNAMIC COMPETITION AND PUBLIC POLICY: TECHNOLOGY, INNOVATION, AND ANTITRUST ISSUES* (2001); Carl A. Futia, *Schumpeterian Competition*, 94 *Q. J. Econ.* 675 (1980).

1. Product differentiation

Real suppliers are not identical, and neither are real purchasers. Products and services are differentiated in a variety of ways, including by brand identity, and purchasers have different preferences. For example, suppose that there are twelve manufacturers of dishwashing liquid, each of which is slightly different. One has a punk-themed brand identity, one has an eco-friendly brand identity, and one is endorsed by a popular sports player. One is slightly better at dealing with food grease; one smells more pleasant; one moisturizes the user's hands. One makes glasses shine a little better; one is gentler for delicate crockery. And so on.

In this example, none of the suppliers of dishwashing liquid are strict monopolists or anything like it. But different consumers will have different preferences over this selection of dishwashing products, for which they are willing to pay a little more: and thus, each of these manufacturers will likely find it profitable to set a price *somewhat* above the pure competitive level, but lower than the strict monopoly point. Somewhat like a monopolist, they must balance the fact that every price increase means a greater margin on each unit but that fewer units will be sold. Of course, this is all a matter of degree: the greater the demand for the special nature of the supplier's product, and the fewer or more dissimilar the alternatives, the more market power the supplier has.

Notice that some of the “differentiation” may involve differences in branding or appearance, rather than physical or chemical differences in the underlying products. If it seems odd to you that consumers would be willing to pay more for something other than an “objective” difference in the product, consider for example the significant price gap between “branded” and “generic” drugs, which generally do not have relevant chemical differences. Consider also the vast premiums paid for designer goods of all kinds by consumers who value the ability to display a famous brand name or logo, even if the goods themselves barely differ from the unbranded alternatives. Nor are consumer preferences set in stone: the vast expenditures on advertising across the economy reflect the role of marketing in helping to shape and form consumer preferences for particular brands. How many ads have you seen that aim to convince you that a particular company, product, or brand is desirable, reliable, or trustworthy?¹⁴⁷

Product differentiation is a common feature of the modern economy. The growth and development of modern technology—including technologies relating to the collection and analysis of data on individual consumers—has made it much easier for many businesses to identify customers' preferences and to tailor products accordingly.

2. Entry barriers

Real suppliers do not just pop into existence overnight upon learning that there is an infinitesimal profit margin available from the supply of some product or service. In practice, it may take time and money to enter a line of business: facilities must be obtained, employees must be found and hired, suppliers and distributors must be identified and contracts negotiated, and the process of actually providing the product or service may take time and require trial and error to get right. Risks and uncertainties, or the prospect of facing significant “exit costs” if things do not work out, may deter businesses from investing in the first place. Other factors, too, may deter or prevent entry: necessary IP licenses, regulatory permissions from federal, state, or local government, or needed infrastructure may all prove difficult or impossible to obtain. We can think of all these factors individually, at least in a general sense, as “barriers to entry.”¹⁴⁸

As a technical matter, the definition of an “entry barrier” turns out to be more controversial than you might think. The two main competing traditional definitions are: (1) a factor that allows those in the market to raise

¹⁴⁷ See, e.g., Anna E. Tuchman, *Advertising and Demand for Addictive Goods: The Effects of E-Cigarette Advertising*, 38 Mktg. Sci. 913 (2019); Gary W. Brester & Ted C. Shroeder, *The Impacts of Brand and Generic Advertising on Meat Demand*, Am. J. Agr. Econ. 969 (1995); Carl Shapiro, *Advertising and Welfare: Comment*, 11 Bell. J. Econ. 749 (1980); James L. Hamilton, *The Demand for Cigarettes: Advertising, the Health Scare, and the Cigarette Advertising Ban*, 54 Rev. Econ. & Stat. 401 (1972).

¹⁴⁸ See, e.g., R. Preston McAfee, Hugo M. Mialon & Michael A. Williams, *What Is a Barrier to Entry?* AEA Papers & Procs. 461 (May 2004); Richard Schmalensee, *Sunk Costs and Antitrust Barriers to Entry*, 94 Am. Econ. Rev. 471 (2004); Harold Demsetz, *Barriers to Entry*, 72 Am. Econ. Rev. 47 (1982); see generally George Stigler, *THE ORGANIZATION OF INDUSTRY* (1968); Joe S. Bain, *BARRIERS TO NEW COMPETITION* (1956).

price above the competitive level without attracting entry; and (2) a cost that would have to be borne by a firm seeking to become active in the market that is not borne by those already present.¹⁴⁹ The first definition includes, but is not limited to, the second. The second, narrower, category includes startup costs like the acquisition of know-how and the one-time costs of obtaining regulatory permissions. The first category also includes a much broader category of cost differentials which advantage incumbents, such as efficiencies of scale and scope, capital requirements, customer brand loyalty, and so on.¹⁵⁰ In practice, the formal labels matter less than our understanding of the various mechanisms by which entry can be impeded or deterred, and our recognition that we might want to use different policy tools to respond to different phenomena that make entry more difficult.

The existence of entry barriers can give incumbents the confidence to increase their prices (or undertake equivalent actions, like lowering their quality) in the knowledge that new entrants will be deterred, hindered, delayed, or completely prevented by entry barriers from entering the market to provide competitive discipline. Obviously, higher barriers will tend to create more pricing power.

Sometimes incumbents may engage in conduct that *increases* entry barriers. For example, incumbents may enter into exclusive dealing arrangements that lock up key suppliers, distributors, or customers; they may extract commitments from trading partners that rivals and entrants will not be granted terms that are as good, or better, than those granted to the incumbent; and they may use or abuse government or regulatory processes to keep competitors out. One important function of antitrust law is to regulate the extent to which, and the ways in which, incumbents with market power can engage in conduct that raises entry barriers or otherwise deters or impedes entry. We will spend plenty of time talking about this in the rest of this book.

In addition to traditional entry barriers, special features of certain markets or technologies may favor incumbents in a similar way. For example, “economies of scale” (*i.e.*, cost advantages that arise as a function of the supplier’s level of production) may mean that established players who have already achieved a certain level of scale may find it cheaper to meet demand than newcomers do.¹⁵¹ Similarly, “economies of scope” (*i.e.*, cost advantages that arise from engaging in two or more different productive activities simultaneously) may mean that established players who are active in more than one market may find it cheaper to meet demand than unintegrated single-market competitors.¹⁵² And “network effects” (*i.e.*, benefits to users of a product or service as a function of the number of other people using it, as with a fax machine or a social networking service) may make users reluctant to switch from an incumbent to a new entrant, even if the entrant’s product is in some other way superior.¹⁵³

The result of these and similar factors can be to reduce the incentive that potential rivals would otherwise have to rush into the market to discipline a price increase. In effect, entry barriers and equivalent phenomena create a shelter from the winds of competition, within which incumbents can enjoy a margin of market power.

However, the presence of these effects does not necessarily mean that something has “gone wrong” in an all-things-considered sense. Economies of scale and scope enable products and services to be provided at lower cost than would be the case if those economies did not exist. Network effects reflected the added value of interconnection with other users. It is important to see that the benefits of lower cost and greater value, and the risks of greater insulation from competition, go hand-in-hand.

3. Capacity constraints

In much the same way that entry barriers can impede or deter new market entry, so too can other factors impede or deter expansion by *existing* market participants. Such factors can include, for example, the costs and

¹⁴⁹ Joe S. Bain, BARRIERS TO NEW COMPETITION (1965) 22–23; George Stigler, THE ORGANIZATION OF INDUSTRY (1968) 67.

¹⁵⁰ See generally, e.g., R. Preston McAfee, Hugo M. Mialon & Michael A. Williams, *What Is A Barrier to Entry?*, 94 Am. Econ. Rev. 461 (2004); Harold Demsetz, *Barriers to Entry*, 72 Am. Econ. Rev. 47 (1982).

¹⁵¹ See, e.g., George J. Stigler, *The Economies of Scale*, 1 J. L. & Econ. 54 (1958); Alfred D. Chandler, SCALE AND SCOPE: THE DYNAMICS OF INDUSTRIAL CAPITALISM (1994).

¹⁵² See, e.g., John C. Panzar & Robert D. Willig, *Economies of Scope*, 71 Am. Econ. Rev. 268 (1972); David J. Teece, *Economies of scope and the scope of the enterprise*, 1 J. Econ. Behavior & Org. 223 (1980).

¹⁵³ See, e.g., Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. Econ. Persp. 93 (1994); Oz Shy, *A Short Survey of Network Economics*, 38 Rev. Indus. Org. 119 (2011).

delays of upgrading existing facilities or acquiring new ones, as well as difficulties in obtaining critical raw materials, other inputs, licenses, permissions, know-how, or access to distribution infrastructure.

The existence of such capacity constraints may contribute to market power by limiting the ability of existing competitors to discipline price increases or output reductions. For example, if existing rivals could not instantly expand their own output to pick up new customers, the incumbent may be able to implement a significant price increase, at least while competitors work to expand their capacity. And in the meantime, competitors who are unable to serve additional customers may choose to follow the price increase rather than compete aggressively: in other words, capacity constraints may facilitate “oligopoly” dynamics, including through so-called “tacit collusion,” a topic we will explore below.

4. Imperfect information and transaction costs

In certain versions of an ideal universe, everyone would always know everything about the world—what suppliers and purchasers are available, how much everything costs and how good it really is, and so on—and it would be costless to switch between trading partners. But in the real world, information is imperfect, and transacting and switching are often costly. This can have important implications for competition.

Reliable and accurate information can be hard to find. A supplier or purchaser may not know exactly which potential trading partners are willing and able to deal with it, or on what terms they would be willing and able to do so. They may not know which trading parties can be trusted to provide products and services of the requisite quality and reliability. And they may not know how far they can trust the information that they do receive, including information about robustness of demand or security of supply.¹⁵⁴

This means that market participants may, in practice, not avail themselves of more efficient options, or negotiate to more efficient terms, simply because they do not know whether those options or terms are actually available. For example, a purchaser may be willing to pay a supracompetitive price, despite the availability of a more competitive option, because it does not know or believe that the more competitive supplier is available and willing to meet its needs. A supplier may be unwilling to work with the most efficient distributor because it does not know whether that distributor can really be trusted to provide high-quality services of the relevant kind. A consumer may pay extra to buy a product or service through a particular platform because the consumer does not realize that the same product or service is available for a better price on an alternative platform. As these examples illustrate, information gaps can work to protect incumbents’ market power against competitive pressure.

And just as information is not perfect in real-world markets, neither are transactions instantaneous or costless. It takes time and energy—which may not be available—to negotiate or renegotiate contracts. Parties make investments in specific relationships all the time, and may stand to lose the benefits of those investments if they switch to a “better” competitor. For example, switching among suppliers or distributors might involve spending considerable time and money in evaluating their suitability, working to assess the technical compatibility of the alternative suppliers’ products with their needs, negotiating the terms of the commercial relationship, building trust and understanding, and perhaps obtaining new or amended licenses and regulatory permissions. This can all add up to a significant “switching cost.” The prospect of that cost may deter market participants from finding, or switching to, even superior competitors.

Consumers can face switching costs too. For example, suppose that you had spent years using a particular kind of consumer electronic device: you had come to rely on that device to keep track of your contacts, to hold records of your messages and other interactions with your friends, to store your photos and videos, and to manage access to other content and files. Even if a “better” device came along, you might be reluctant to switch over if it meant losing your vast store of accumulated value on the incumbent device. The new device might

¹⁵⁴ See generally, e.g., Michael S. Jacobs, *Market Power Through Imperfect Information: the Staggering Implications of Eastman Kodak Co. v. Image Technical Services and a Modest Proposal for Limiting Them*, 52 Md. L. Rev. 336 (1993); Louis Philips, *THE ECONOMICS OF IMPERFECT INFORMATION* (1989); Alan Schwartz & Louis L. Wilde, *Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis*, 127 U. Pa. L. Rev. 630 (1979).

have to be *vastly* better to convince you that it was worth overcoming the “lock-in” effect and leaving your existing investments behind.

Thus, both imperfect information and transaction costs can soften the competitive pressure that attractive alternatives would otherwise exert on incumbents. Just like entry barriers, and just like product differentiation, they can create space between the incumbent and the next-best substitute in which market power can operate.

NOTES

- 1) Is it possible to ban the possession of substantial market power? Is it desirable?
- 2) Can you name examples of firms that arguably have some market power due to economies of scale or scope?
- 3) Can you think of real businesses that enjoyed significant network effects, but nevertheless lost their incumbent position, and were replaced by other firms?
- 4) Can you think of real businesses that have enjoyed significant network effects for an extended period and have held their incumbent position for a long time? What seems to explain this? What, if anything, do you think will displace those firms?
- 5) What is the longest-enduring example of significant market power than you can think of?
- 6) Is the existence of market power in markets for non-necessary products and services (*e.g.*, designer fashion-wear; luxury foods; recreational goods) a problem that society should take seriously?

G. The Concerns of Antitrust: Collusion and Exclusion

We noted above that monopoly or market power can emerge in a variety of ways. One way in which it could happen is if one supplier out-competes the others by offering a product that is so much better (or so much cheaper) than those of its rivals that the rivals cannot constrain it. We sometimes think of this as the acquisition of monopoly through “industry” or “competition on the merits.” This process, even to the extent that it results in some degree of monopoly power being created for some period of time, is generally regarded as a healthy and necessary feature of life in a free-market society. Indeed, economists often point out that the prospect of gaining monopoly power, and reaping some monopoly profits, is a critical source of the incentive to innovate and invest in the first place, and to develop new products and services that confer value on society.¹⁵⁵

But other ways of achieving monopoly are less appealing! Antitrust is primarily concerned with protecting against two mechanisms that may lead to monopoly or market power. The first is *collusion*: if the competitors in a market agree amongst themselves about the prices and other terms they will offer, such that they are making competitive decisions jointly rather than unilaterally, the result can be that the participants act, in at least some respects, like a single monopolist. A group of competitors engaging in naked coordination of this kind is commonly called a cartel.

Successful collusion depends on the group of colluders being able: (1) to coordinate their conduct rather than competing with one another, so they can act in concert (despite the fact that “cheating” on the others by undercutting their price can produce gains, at least in the short term); and (2) to collectively control enough of the market that they exercise market or monopoly power. We will focus on collusion in Chapters IV and V.

The second mechanism of harm is *exclusion*: if a market participant can drive up its rivals’ costs, cut off their access to inputs or distribution, or suppress their incentives to compete, monopoly or market power may be acquired or maintained as a result. This could be accomplished in a variety of ways, including by tying up key

¹⁵⁵ This is a classic justification for the existence of the law of intellectual property, and for property law more generally. See, *e.g.*, Makan Delrahim, *The “New Madison” Approach to Antitrust and Intellectual Property Law* (speech of Mar. 16, 2018), <https://www.justice.gov/opa/speech/file/1044316/download>; Nancy Gallini & Suzanne Scotchmer, *Intellectual Property: When Is It the Best Incentive System?*, *Innovation Pol’y & Econ.* 51 (2002); Steven Shavell & Tanguy van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 *J. L. & Econ.* 525 (2001); Timothy Besley, *Property Rights and Investment Incentives: Theory and Evidence from Ghana*, 103 *J. Pol. Econ.* 903 (1995); Ejan Mackaay, *Economic Incentives in Markets for Information and Innovation*, 13 *Harv. J. L. & Pub. Pol’y* 867 (1990); see also John Locke, *SECOND TREATISE OF GOVERNMENT* (1690) Ch. 5.

input suppliers or distributors such that they are available to competitors on less advantageous terms (*e.g.*, higher prices or worse quality), or not at all; by using or abusing regulatory processes to inflict costs on rivals; by engaging in unsustainable “predation” that drives rivals out of the market; or by using threats or bribes to buy off or scare off rivals.

Successful exclusion depends on being able to hinder enough rivals, by a significant enough degree, to generate market power for the excluding firm. Driving up rivals’ costs, or forcing them to reduce their output, can leave the excluder with greater control over price and output. In the extreme case, forcing them all out of the market and precluding entry will leave the excluder as a strict monopolist. (Sometimes a group of colluders may *also* engage in the exclusion of non-participating rivals: for example, cartel members might obtain commitments from key input suppliers not to deal with firms outside the cartel. Why do you think they might do this?) Exclusionary agreements and practices will be an important theme in Chapters IV, VI, and VII.

Acquisitions may present the concerns of collusion, exclusion, or both. A horizontal merger with a rival may leave the market more vulnerable to “tacit collusion” (that is, coordination that does not require an actual agreement among the firms, as we will see later in this chapter)—or even express collusion—creating what antitrust calls coordinated effects. Or it may result in the creation of a business that controls enough of the market to hold market power all alone—replicating the effects of collusion between the merging parties—creating what antitrust calls unilateral effects. A vertical merger may leave the merged firm able to exclude rivals by foreclosing their access to inputs or distribution; it may also facilitate explicit or tacit collusion among market participants. To address these concerns, we rely on merger-control laws, as we will see in Chapter VIII.

Second-Order Concerns: Errors, Error Costs, and Decision Theory

Antitrust rules and enforcement practices are not *solely* designed to target harmful collusion and exclusion. They also reflect an effort to minimize the costs and harms of error in the application of antitrust itself. “Decision theory” is the study and analysis of how decisions can best be made with limited information and uncertainty about outcomes, and it has been influential in the development of antitrust rules.¹⁵⁶ Through this lens, courts and scholars often think about the likelihood and harms of “false positives” (*i.e.*, the imposition of liability when the underlying conduct is not of concern) and “false negatives” (*i.e.*, the failure to impose liability when the underlying conduct is, in fact, of concern). They also consider the related effects on incentives: that is, the fear that an overbroad antitrust rule or enforcement practice might deter (or “chill”) desirable competition and investment, or the risk that antitrust loopholes will encourage harmful anticompetitive practices.

There is limited evidence about the relative frequency and dangers of these two kinds of error, and intuitions vary significantly. For example, many Chicago School scholars argued that false positives in antitrust enforcement were more harmful than false negatives, because the market would erode a monopoly but could not correct government action, and that a robust presumption of non-intervention would therefore be best in most cases.¹⁵⁷ Many post-Chicago scholars argued that courts and agencies have—by overstating the resiliency of markets and the costs of intervention—worried too much about false positives and not enough about false negatives.¹⁵⁸

H. Potential Competition and Entry

Competitive pressure is exerted not only by businesses already in the market, but also by those who can credibly threaten to enter the market in the event of a price increase. Such competitors are sometimes called “potential” competitors, to distinguish them from actual competitors.

¹⁵⁶ See, *e.g.*, Isaac Ehrlich & Richard A. Posner, *An Economic Analysis of Legal Rulemaking*, 3 J. Leg. Stud. 257 (1974).

¹⁵⁷ See, *e.g.*, Frank H. Easterbrook, *The Limits of Antitrust*, 63 Tex. L. Rev. 1 (1984).

¹⁵⁸ See, *e.g.*, Jonathan B. Baker, *Taking the Error out of “Error Cost” Analysis: What’s Wrong with Antitrust’s Right*, 80 Antitrust L.J. 1 (2015); C. Frederick Beckner III & Steven C. Salop, *Decision Theory and Antitrust Rules*, 67 Antitrust L.J. 41 (1999).

Potential competition works in a very similar way to actual competition. Recall that actual competitors exert competitive pressure on an incumbent through their ability to offer a lower price (or higher quality for the same price), thus winning business if the incumbent tries to charge a price above the competitive level. Potential competition works in the same way, except that the potential competitor is not yet actually active in the market. A potential competitor exerts competitive pressure through the implicit threat to enter in the event that an incumbent tries to raise price.¹⁵⁹

Suppose that entry into a particular market—say, the market for lemonade—is costless and immediate, such that there are no costs or delays required to get started. And suppose that the competitive price for lemonade is \$0.50/cup, and that there is only a single participant in the market, selling lemonade for the competitive price.

At first glance, the single lemonade stand looks a strict monopolist. There are no other lemonade suppliers in the market, so it might appear that the lemonade supplier could simply raise its prices to the monopoly point. But now add some potential competitors: potential entrants, peeking out from behind the curtains of the buildings across the street. Right now, those potential entrants are not supplying lemonade. They are, thus, not actual competitors. But if the incumbent tries to raise its prices by any significant margin, they will spot the opportunity to make a profit and will be out on the street in a flash, exerting competitive pressure until the price falls to the competitive level. That threat of entry, if the incumbent knows about it, can exert discipline and keep prices down.

There is much we can learn from the lemonade stand example. For one thing, notice the importance of barriers to entry in affecting the pressure exerted by potential entrants. Suppose that, in order to sell lemonade in the street, you need to pay \$5 and fill in a lengthy application form. That barrier would likely somewhat deter the potential rivals from entering, and limit the importance of the threat. Maybe the incumbent could increase its price to \$0.55, or \$0.60, before the rivals felt it was worth coming into the market. A higher entry barrier—say, a \$10 or \$20 fee, or an obligation to fill out three or ten forms—would create still more market power for the incumbent. The lesson is that the higher the entry barriers, the less the competitive pressure that potential rivals exert. For another thing, notice that the ability of the incumbent to swiftly return to competitive pricing is a powerful deterrent to entry, especially if entry or exit is costly. If the incumbent can instantly drop its price back to the competitive level, reducing the available margin to virtually zero, then the expected profit from entry disappears. After all, why go through the hassle of overcoming an entry barrier, or face the costs of exiting the market in failure, when the incumbent can make the profit margin vanish as soon as you arrive in the market?¹⁶⁰

NOTES

- 1) How can we identify a potential competitor in the real world? What kind of evidence could we look at to determine whether a particular business might qualify as a potential competitor?
- 2) If we are concerned about an incumbent's ability to rapidly lower its prices as a means to deter new market entry, should we introduce rules that require suppliers to stick to posted prices for a minimum time period? Or that prohibit changing prices by more than, say, 10% in a particular time period? What are the advantages and disadvantages of these proposals?
- 3) If potential competitors are really exerting competitive pressure, shouldn't we describe them as being "in" the market?
- 4) Suppose that Company X has made a series of public announcements about its readiness and plans to enter Market Y. But, unbeknownst to the rest of the world, Company X has no plans in fact to enter. Is Company X a potential competitor in Market Y? Can it exert competitive discipline on incumbents?

¹⁵⁹ See generally William J. Baumol, John C. Panzar & Robert D. Willig, *CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE* (1982); William B. Tye, *THE THEORY OF CONTESTABLE MARKETS: APPLICATIONS TO REGULATORY AND ANTITRUST PROBLEMS IN THE RAIL INDUSTRY* (1990).

¹⁶⁰ See, e.g., Robert E. Hall, *Potential Competition, Limit Pricing, and Price Elevation from Exclusionary Conduct*, in ABA Section of Antitrust Law, 1 *ISSUES IN COMPETITION LAW AND POLICY* (2008); Paul Milgrom & John Roberts, *Limit Pricing and Entry under Incomplete Information: An Equilibrium Analysis*, 50 *Econometrica* 443 (1982).

I. Tacit Collusion and Market Concentration

We have so far focused on three main cases; the case of perfect competition, the case of strict monopoly, and the case in which a supplier holds market power short of monopoly. In each case, suppliers have been acting unilaterally, taking the behavior of other market participants as given. But a fourth case is important to antitrust doctrine and policy. In some markets, suppliers may find it profitable to keep an eye on each other and to calibrate their behavior according to what their rivals do. This phenomenon—strategic interdependence—gives rise to what is often called “tacit collusion.”

The core insight is simple. In a market with a small number of players that can monitor one another’s behavior with some accuracy (sometimes called an “oligopoly” or “oligopolistic market”), each participant might realize that aggressive competition could hurt its overall profits. And so each player may look for ways to cooperate and coordinate—without explicitly colluding, if they want to avoid antitrust trouble—so as to avoid aggressive competition and keep margins high.

Example: Two Service Stations

Consider a very simple example. Suppose a market with only two players and high price transparency: let’s say two service stations, North and South, set up across the road from each other, with no other service stations nearby. Each service station posts its gas price prominently in a manner that is visible to the other. Suppose that the strict competitive price for gas is \$1, equal to marginal cost, and that, on Monday morning, both service stations are selling gas for \$1.01. At these identical prices, each service station serves 50% of the customers on the road, of which there are 1,000 a day. (Ignore the impact of which way the consumers drive: suppose that it’s very easy and safe to turn around, so consumers have an equal choice between the two.) This means each service station is making one cent of profit on 500 consumers per day, for a total of \$5 profit each per day.

On Tuesday, suppose that North does something that sounds odd: it *increases* its price by ten cents to \$1.11. Of course, if South keeps its price at \$1.01, it will clean up: making one cent of profit on all 1000 customers for a daily profit of \$10. But South may now start to think: well, North *knows* that if I keep my price at the same level I will clean up, and North isn’t crazy. So what is North’s game? Well, thinks South, North’s strategy would only be profitable for North if I, South, increase my price too. What would that look like? At \$1.11, we’d both be making *eleven* cents of profit on every consumer rather than just one. Depending on the overall elasticity of market demand, we are probably losing some consumers: let’s say 10% fewer people will buy at \$1.11. If we were each serving 50% of that demand, that means we are equally splitting 900 consumers, each of which brings 11 cents of profit, for a total daily profit of \$49.50 each. That is a huge improvement over the \$5 profit per day we were each making at the competitive price. It is also a huge improvement over the \$10 profit per day South would make if it stuck to the competitive price and served every customer that came through. So South thinks, ok, well, let’s try it and see how it goes: and increases its price to \$1.11 as well.

What happens next depends on a variety of things. You can see that if both North and South stick to their position, each holding steady at \$1.11, each of them will make money hand over fist compared to life at the competitive price point. But the situation may be fragile. One morning it may occur to North that if it dropped its price by just one cent, to \$1.10, it would immediately pick up 100% of the market and make 9 cents on every customer, taking its profit from \$49.50 all the way up to \$90. But of course we know what would happen next: South would probably retaliate with a price reduction, and the parties would compete back down to the competitive price. Game theory teaches that, if the parties will face each other indefinitely, each party will do best by demonstrating that it will follow price increases but swiftly punish attempts at discounting.

Notice that the expectation of retaliation is crucial. If either participant thinks it can get away with cutting prices to win more sales without triggering a competitive reaction from the other, it will surely do so. So each of them will closely watch the other, and weigh the chances of detection against the benefits of “cheating” on the implicit deal.

Of course, North and South might feel more confident about their chances of keeping prices high if they sat down and explicitly *agreed* that they will price at \$1.11, or whatever, for a certain period of time. But this kind of nakedly anticompetitive agreement (a “price fixing” agreement) would be a criminal antitrust violation, so they might well decide to just take their chances in watching one another carefully rather than risk going to prison. As we will see in Chapter IV, simply watching your rivals and setting a price that you think will maximize your profits is not an antitrust violation!

As this example illustrates, the profits of tacit collusion depend on each participant individually refraining from aggressive price competition on the basis that, if it does so, others will also hold off. And in the example we have given—two service stations across the street from one another, with posted prices, identical products, and no other competitors—the oligopolistic equilibrium would probably have a fairly good chance of surviving. Each service station would know that any discounting would likely trigger an immediate and aggressive response by the other, so their incentive to try it in the first place would be limited. In fact, each party might even be tempted to venture an occasional price *increase*, to see whether the other participant would match it and whether they would increase their profits by doing so.

But of course things are often more complicated, and those complications can make it harder to sustain an oligopoly. To see this, we could amend our two-station hypothetical. For example, we could add more players to our hypothetical, so that instead of simply two stations we have seven or fifteen, making it harder for each participant to keep track of all the others. We could eliminate the public posting of prices, so each service station would have to send someone over to visit the others to find out what they were pricing. We could provide for individual and confidential price negotiations (including discounting) with consumers who stop to get gas, so it would be hard or impossible for each station to be sure of what the other was really charging. And we could introduce product differentiation: one service station supplies regular gas; another premium; another diesel; others are located in different locations, making it hard to figure out who is really competing directly with whom, or what prices would amount to “cheating” on the terms of coordination.

These changes all have the same directional effect: they make it harder to sustain coordination. With each such change, each participant will find it harder to be sure that others are sticking to the implicit terms of the bargain. As its confidence falls, each player becomes less certain that the others are not “cheating” on the implicit terms of coordination: and the result that that player’s *own* incentive to stick to the higher oligopoly price is eroded, and the incentive to compete rather than coordinate becomes stronger.

As the parable of the service stations demonstrates, the likelihood of coordination—supracompetitive pricing emerging not from the unilateral market power of one supplier, but from the emergence of a tacit agreement to collude—is a function of several different things. Tacit collusive pricing is most likely when¹⁶¹:

- the market is *highly concentrated* (*i.e.*, dominated by a small number of companies with large market shares);
- products are *homogeneous*, rather than differentiated, such that it is easy to compare prices to one another and to the terms of tacit coordination;
- it is easy for each participant to *monitor*, with confidence, the terms on which other participants are dealing with purchasers;
- there are *barriers to new market entry*, such that oligopolistic pricing will not simply serve to attract new players into the market;
- there are *capacity constraints and/or barriers to expansion* by existing suppliers, such that each participant knows that the others could not quickly or easily sell more products or services, limiting the potential gains from competition;
- the participants are *symmetrical*, in that their incentives are broadly aligned (*e.g.*, similar levels of vertical integration);

¹⁶¹ Explicitly collusive pricing—that is, price fixing—is also more likely in the presence of these factors.

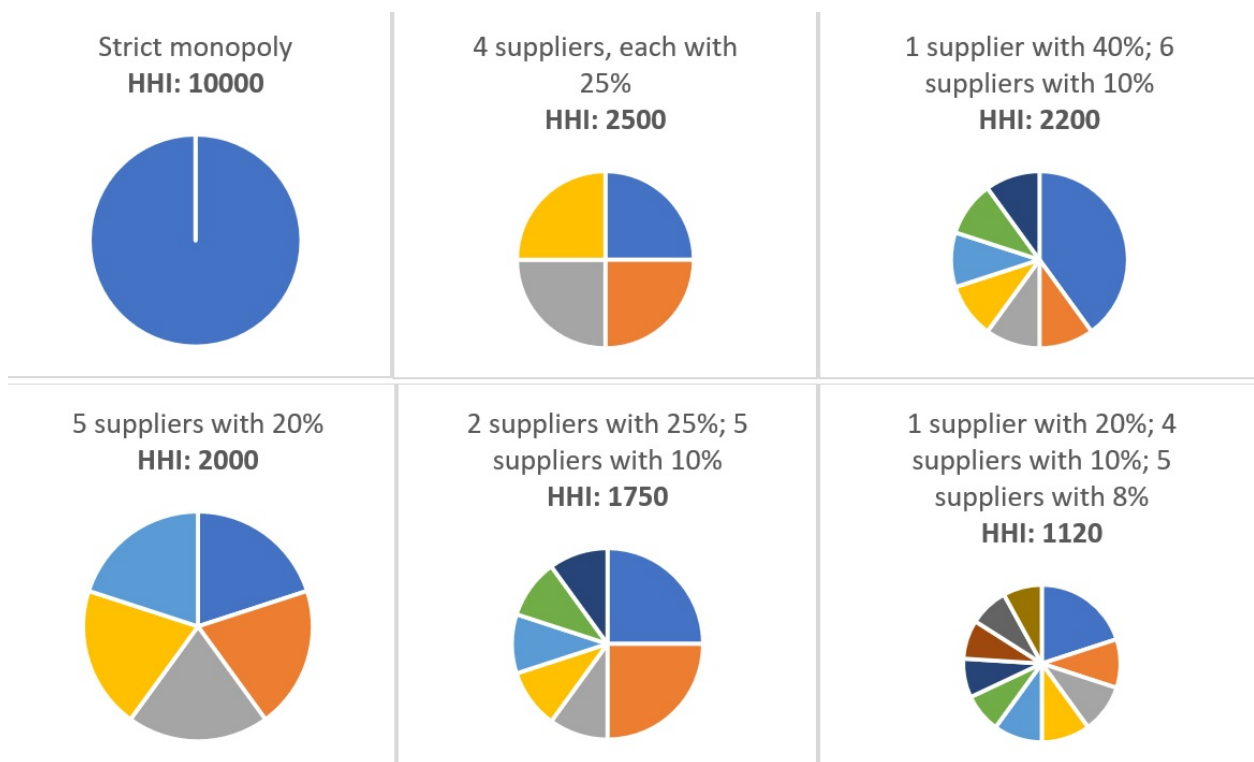
- no participant is pursuing a *different and disruptive business model or revenue strategy* that involves aggressive or low-cost competition (sometimes called a “maverick”); and
- there are credible ways for the participants to “*punish*” those who are caught defecting from the terms of coordination (*e.g.*, the market works in such a way that the other participants could immediately lower their own prices or otherwise inflict punishment on discounters).

One of the most important of these criteria is concentration. A key concept in antitrust, concentration is the extent to which a market is dominated by a small number of companies with large market shares. A highly concentrated market has a few players, each with a large share of the market; an unconcentrated market has many players, each with a small share of the market.

Concentration makes tacit collusion easier to sustain. In a concentrated market, among other things, there are fewer other players to keep an eye on, and each of them—by virtue of its large market share—has more capacity to exert an impact on the market, including to punish those who violate the terms of coordination.

A common way to measure market concentration is a quantitative measure known as the Herfindahl-Hirschman Index (“HHI”). It is easy to calculate an HHI: you calculate the market share of every participant in the market, square each value, and total up the results. The following charts demonstrate how different structures can give rise to different HHIs.

Figure 5: Example market structures and HHIs



As you might expect, different commentators have different views about when we should consider a market “concentrated,” or the point at which oligopoly effects are likely to set in.¹⁶² The 2023 Merger Guidelines define a market as “highly concentrated” if the HHI is above 1,800, and as “concentrated” if it is above 1,000.¹⁶³

This marks a return to an earlier approach. The 2010 Horizontal Merger Guidelines—which the 2023 Guidelines replaced—had defined a market as “moderately concentrated” if the HHI was between 1,500 and

¹⁶² See generally, *e.g.*, Volker Nocke & Michael D. Whinston, *Concentration Thresholds for Horizontal Mergers*, 112 Am. Econ. Rev. 1915 (2022).

¹⁶³ U.S. Dept. of Justice & FTC, MERGER GUIDELINES (2023) §§ 2.1, 2.4 n.21.

2,500, and as “highly concentrated” if it was above 2,500. The 1982, 1984, 1992, and 1997 Guidelines had set lower thresholds, defining a market as “moderately concentrated” if the HHI exceeded 1,000, and “highly concentrated” if it exceeded 1,800. The 1968 Guidelines did not use HHI at all. Rather, they used the “four-firm concentration ratio” (or “CR4”): that is, the combined shares of the four largest firms in a market. It defined a market as “highly concentrated” if the combined shares of the four largest firms amount to “approximately 75% or more.” A market with a CR4 of 75 could in theory have an HHI as low as roughly 1,400 (*i.e.*, if the 75% was equally divided among four firms, and the remainder of the market was entirely atomistic), but in practice would likely be rather higher.

HHI is a handy metric because it is often easy to calculate (at least, as long as market shares are easy to calculate), and because it corresponds roughly to something that can matter to competition. But it would be a mistake to think that a change in the HHI inevitably, or even usually, implies a change in price, or that HHI and price have a consistent relationship. As a piece co-authored by a group of former antitrust agency chief economists pointed out, it is unhelpful (and may be actively misleading) to simply measure the relationship between HHI and price in an industry and to use that relationship to try to predict future price effects, in merger analysis in particular:

[R]egressions of price on the HHI do not predict the competitive effects of mergers and should not be used in merger review. The core of our analysis is that analyses based on regressions of price on the HHI mistake correlation for causation. There are many reasons why the HHI can vary across markets or time periods. Whether the HHI is positively or negatively correlated with price depends on what gives rise to the variation across the markets or periods. . . . [I]f a small firm reduces its costs, then both its price and the HHI in its market may decrease, creating a positive correlation between price and the HHI. But if instead a large firm reduces its costs, then its price may decrease and the HHI in its market may increase, creating a negative correlation. Yet whether the large firm or the small firm benefits [by acquiring more market share] from a cost reduction has little bearing on the competitive effects of a merger (which indeed might not involve either firm).¹⁶⁴

More generally, as we saw in Chapter I, most economists today agree that more concentrated markets are not always less competitive than less concentrated markets.¹⁶⁵ Some markets have a small number of players but appear very competitive; other markets are not highly concentrated but do not seem competitive. In particular, in some markets, competitors are more efficient at higher levels of scale, meaning that competition among a small number of large firms may be more vigorous than competition among a large number of smaller businesses.

NOTES

- 1) Should we ban concentration beyond a certain HHI threshold? Why or why not?
- 2) What are the advantages and disadvantages of using HHI to measure the competitive conditions in a market?
- 3) Suppose that lawmakers want to ban “tacit collusion” or oligopoly pricing as described above. Can you draft statutory language to do this? And would you advise Congress to enact it?
- 4) Can you think of three real-world markets that exhibit signs of oligopoly pricing?
- 5) What does it mean for a market to be “competitive”? How can we tell whether one is?

J. Buyer Side Power: Monopsony and Oligopsony

So far in this chapter we have focused on market power held individually or collectively by sellers, including in the form of monopoly power, substantial market power, and oligopoly. But buyers can have power too! The

¹⁶⁴ Nathan Miller et al., *On the Misuse of Regressions of Price on the HHI in Merger Review*, 10 J. Antitrust Enforcement 248 (2021).

¹⁶⁵ See generally, e.g., Steven Berry, Martin Gaynor & Fiona Scott Morton, *Do Increasing Markups Matter? Lessons from Empirical Industrial Organization*, 33 J. Econ. Persp. 44 (2019); Leonard W. Weiss, *The Structure-Conduct-Performance Paradigm and Antitrust*, 127 U. Pa. L. Rev. 1104 (1979).

term for a buyer-side monopoly is a *monopsony*.¹⁶⁶ In the simplest case, consider a single buyer—a monopsonist—that faces a competitive set of sellers. That buyer knows that the sellers have no alternatives if they want to sell their output: thus, the buyer can force the sellers to accept prices *below* the competitive level (that is, *infracompetitive* prices) because the alternative is to get nothing at all. Of course, a buyer’s ability to extract a price below cost is limited by the fact that no-one will stay in business very long at that rate, but an infracompetitive price may be set between the sellers’ cost and the competitive price. It may also exploit the reality that even exiting a business may involve some costs—which may be significant—so a supplier may be forced into selling at or below cost for some period, rather than paying those costs of exit.

The antitrust analysis of monopsony power poses a dilemma: aren’t low prices good? Well, recall that part of the social value of the market-price mechanism is that, at least in theory, it helps to induce the socially optimal level of supply and demand by nudging market participants toward the market-clearing levels of supply and demand. Setting prices below the competitive level drives supply away from its optimal use.

To see this in action, think about a labor market: consider the set of persons who would be, say, nurses or authors in a perfectly competitive market. Now imagine that wages for nurses and authors were subject to labor monopsony—*i.e.*, there is only one firm hiring nurses, or authors—with the result that wages for these jobs are reduced by 10% below the competitive level. The result is that many of those persons would go and do other things, even if society would most highly value them as nurses or authors. As this example illustrates, an important harm from monopsony is that it leads to the suboptimal allocation of resources across our economy.¹⁶⁷ (This is similar to the concern that is sometimes raised in connection with price caps: the cap dampens the incentive that would otherwise exist for suppliers to move to meet the demand, reducing output of the product or service.)

Another important harm from monopsony arises in labor markets. Unlike corporations, humans have to live and eat! This means that under extreme conditions a human may be forced to work for very much less than a competitive wage, simply by virtue of the practical need to survive. Here the harm is expressed not just in the inefficient deployment of economic resources across our economy, but in human misery and suffering.

Just as monopsony is the buy-side equivalent of monopoly, “oligopsony” is the label for a buyer-side oligopoly. To imagine this in operation, recall our example from the previous subsection involving two service stations. Now suppose that in addition to advertising gas for sale, the North and South stations were also advertising for labor help, and that they were the only two employers in town. They each post a prominent “help wanted: \$20/hour” sign, reflecting the competitive price for certain labor services. But, just as before, if North decided to *decrease* its wage offering, from \$20 to \$18, South might decide to follow suit rather than compete. The result could be an infracompetitive wage equilibrium which depended on mutually interdependent conduct by both service stations: that is, a labor oligopsony.

NOTES

- 1) Is monopsony bad? Why or why not?
- 2) What kind of labor markets might be susceptible to monopsony?
- 3) Is there any tension between the protection of workers from monopsony and the protection of consumers from monopoly, or are these two goals compatible?
- 4) If we have an enduring monopsonist, social welfare can under some circumstances be increased if the monopsonist’s suppliers are allowed to form a monopoly cartel. (This is the theory of “bilateral monopoly.”) When do you think we should rely on this observation to license what would otherwise be price-fixing?¹⁶⁸

¹⁶⁶ See generally Roger D. Blair & Jeffrey L. Harrison, *MONOPSONY IN LAW AND ECONOMICS* (2010).

¹⁶⁷ See, e.g., OECD Background Note, *Monopsony and Buyer Power* (2008) 29.

¹⁶⁸ See, e.g., Laura M. Alexander, *Countervailing Power: A Comprehensive Assessment of a Persistent but Troubling Idea* (Oct. 15, 2020).

K. Price Discrimination

Throughout the foregoing discussion, we have assumed that every supplier—whether a monopolist, a participant in a competitive market, or something in between—sets one uniform price for all of its own output, and every purchaser pays that price. This means that inframarginal purchasers, who would be willing to pay more than the marginal purchaser for a product or service, benefit from the existence of the marginal purchaser. After all, even a strict monopolist will set the profit-maximizing price in light of marginal demand. But now we will consider what happens if we relax the assumption of equal pricing to all purchasers, by allowing the supplier to engage in price discrimination: that is, charging different prices to different purchasers.

The main consequences of price discrimination are: (1) to get inelastic purchasers to pay more than elastic ones, and by doing so to give the seller some of the surplus that the purchasers would otherwise enjoy; and (2) to allow the seller to sell to some of those who would not buy at the monopoly price.

Of course, if competition is perfect then price discrimination is impossible. In that case there are no inelastic purchasers who can be squeezed for any more than the competitive price. But when there is some inelastic demand for the supplier's output, there may be some additional profit to be made from price discrimination.

To successfully execute this strategy, the supplier must find a way to do at least two things: first, it must be able to identify the inelastic purchasers so that they can be targeted for higher prices; second, it must be able to prevent the inelastic purchasers from evading those higher prices and benefiting from the lower prices intended for the marginal purchasers. One common form of such evasion is “arbitrage” by inelastic purchasers: that is, buying the output from the marginal purchaser, who can get it at a lower price and resell it, rather than from the seller.

Economists generally talk about three types of price discrimination, known (somewhat unhelpfully) as “degrees” of price discrimination. *First-degree price discrimination* is individually personalized pricing: the supplier knows the identity of each purchaser and sets an individualized price for everyone, which is higher for more inelastic purchasers. This kind of price discrimination is rare in practice, particularly to end-consumers, but may be becoming more feasible as more companies acquire more access to individualized data.

Second-degree price discrimination involves differentiating the supplier's product or service in some way and charging a higher margin on versions that are likely to attract inelastic consumers. This system relies on purchasers to sort themselves into categories by virtue of their own purchasing or consumption choices. First-class and business-class seating on an airplane is a superb example of second-degree price discrimination. Airlines know that most people who choose to buy first- and business-class tickets are less responsive to price (*i.e.*, they are the inelastic purchasers) and so the profit margin on those tickets is much higher than the profit margin on economy-class seating.

This kind of discrimination is sometimes accomplished by charging a higher margin to more intensive users. For example, some users of computer printers are intensive users; others are less so. By offering the printer for a *lower* price than it otherwise would, and offering the replaceable printer cartridges for a *higher* price than it otherwise would, a printer supplier can effectively charge a lower margin on purchases by low-intensity users and a higher margin on purchases by high-intensity users, thus extracting more surplus overall. You can immediately see that this strategy would fail if users could buy the cheap printer and then turn to a third party for cheap printer cartridges. Supplier efforts to stymie this kind of thing, and protect a price-discrimination strategy, can lead to the kind of practices that we will consider in later chapters, such as tying and bundling.

Third-degree price discrimination involves sorting customers into categories that correlate to elasticity, and then charging category-specific prices. Categories corresponding to more inelastic customers can be charged a higher price than categories corresponding to more elastic ones. This strategy can be defeated through arbitrage if customers in the first group can find a way to buy the product or service “through” the customers in the second group. Third degree price discrimination is most likely to be encountered in settings where arbitrage is difficult: thus, for example, discounted event tickets for youth or senior purchasers rely on the supplier's ability to make sure those tickets are not being resold to people who do not qualify.

Price discrimination has interesting results. If accomplished perfectly, it allows the supplier to extract more of the surplus from purchasers: it thus transfers welfare from purchasers to the discriminating seller, compared to the world in which discrimination were prohibited, and makes investment in the underlying product or service more attractive to the supplier. It also means that more purchasers can end up buying, compared to the result without discrimination: the price paid by the most elastic purchasers is lower than the supplier would charge if discrimination were prohibited. If done perfectly, price discrimination need not result in deadweight losses. However, in the real world, price discrimination can be difficult and costly. Whether the practice is socially beneficial or desirable can and does vary with context and one's values.

Without more, the practice of discriminatory pricing is almost always lawful, but it can affect the application of antitrust rules in some interesting ways. For one thing, as we will see in later chapters, when price discrimination is a realistic possibility—because inelastic purchasers can be identified and targeted in some way—antitrust law may recognize the distinctive vulnerability of those purchasers. In particular, an antitrust market may be defined to include *only* the purchasers that are vulnerable to discriminatory pricing, to the exclusion of purchasers who have better outside options and, as such, do not have to fear especially adverse treatment from a supplier. This is called a “price discrimination market.”¹⁶⁹

For another thing, though, defendants in antitrust cases sometimes also point to price discrimination as a *procompetitive* explanation for particular conduct. In particular, a practice that might have some exclusionary effect on rivals—for example, a “tying” requirement that forces customers of a printer to purchase cartridges from the same supplier, rather than from a rival manufacturer of cartridges—might be explained as a means of making a price discrimination system work successfully, and thus fully extracting the value of the supplier's existing market power, without increasing the magnitude of that power or making it harder for rivals to compete.

NOTES

- 1) Should we ban price discrimination? How could we do so?
- 2) Why should purchasers with idiosyncratic demand for a product or service be specially protected by antitrust?
- 3) Is the ability to price discriminate a form of market power?
- 4) Can you identify three examples of price discrimination from your own experience?

L. The Relationship Between Antitrust Economics and Antitrust Law

The relationship between antitrust law and antitrust economics is a complex one. On the one hand, the foundational concepts of antitrust law—competition, monopoly, market power, markets, and so on—are inherently “economic,” in that they are part of the subject matter of the field of microeconomic theory and analysis. It is hard to imagine anything that we could recognize as antitrust that would not rely heavily on economic concepts and ideas, or on propositions borrowed from the teachings of economic theory. On the other hand, antitrust law is still *law*. It is made by federal Congressional statute, interpreted by judges, and administered by federal agencies, just like much of the federal regulatory ecosystem.

Antitrust's dual legal-economic character has important implications for the nature of what we call “legal analysis” in this area, and for the shape and direction of the antitrust project more generally. It means that debates among economics, and changes in the economics profession—including the emergence of new ideas and claims, and shifting views about old ones—influence the fabric and operation of antitrust in a variety of ways. We will encounter these dynamics repeatedly throughout the rest of this book. The following extracts offer some brief perspectives on this complex relationship.

¹⁶⁹ See *infra* § III.C.3.

Matthew T. Panhans & Reinhard Schumacher, Theory in closer contact with industrial life: American institutional economists on competition theory and policy

17 J. Instit. Econ. 781 (2021)

During the early 20th century . . . the field of economics was broad and diverse in terms of methods of inquiry and ideological underpinnings. . . . One set of economists in this earlier period was the American institutionalists. . . . [They] tended to focus on the role of institutions in shaping incentives and behavior, while also drawing on social psychology to characterize human behavior and pragmatist philosophy to describe their approach to defining problems and methods of investigation. [. . .]

Though institutionalists saw many virtues in market competition, they also questioned the widespread assumptions about the benefits of competition per se. They recognized that modern corporations realized unprecedented efficiencies of scale. Although many economists argued that more competition is always preferable, institutionalists rejected the assumption that unregulated competition leads to economic harmony and stability. For institutionalists, this view rested on unsound theoretical assumptions. In the theory of perfect competition, supply and demand cause prices to rise and fall and arrange industrial matters efficiently. However, [the institutionalist Walton Hamilton wrote,] “As a theory it is a little too beautiful; it looks too much like the textbooks and too little like things in the real world.” In reality, Hamilton and other institutionalists argued, demand is fickle and fluctuating, production takes a long time and requires planning under great uncertainty, and overhead has become a dominant expense.

Institutionalists argued, often based on case studies, that competition could have harmful effects. . . . Hamilton argued that each industry had its own circumstances, such that competition provided different degrees of success in different industries. Based on his studies of American industries, especially bituminous coal, Hamilton saw instances where competition could be a disruptive force. [. . .]

What did institutional economists want competition to do for society? Like progressive economists from earlier decades and prominent progressive figures such as Brandeis, institutionalists appealed to a wide range of virtues to justify the importance of effective and vigorous competition policies. And institutionalists championed broader goals for competition than what would later be adopted in the consumer welfare standard in antitrust, which focuses on prices and output. For example, excessive competition could lead to low prices, but would not be desirable if at the expense of industrial stability or when it depressed wages. Institutionalists regarded consumer welfare as important; but they also proposed a much broader and more complex way to measure the consequences of competition, because the public interest is affected by businesses in many ways. [. . .]

The diverse policy proposals [offered by institutionalists] can be broadly categorized into (i) self-control by competing corporations, (ii) control by the various stakeholders, and (iii) direct control by the state. Self-control could be achieved by facilitating the self-regulation of industries, where competitors could agree on industry-wide trade practices and standards. Control could also be exercised by all stakeholders, where it would be important that workers and consumers be involved in the management of a corporation or somehow given a say. Finally, direct control exercised by the state included direct regulations, regulatory agencies, reforming the antitrust system, and other state actions. Institutionalists did not want an overreaching government or a system of central planning. Rather, the main aim of social control by the state was to ensure fair competition where possible and, where not, to avoid the abuse of monopoly powers.

William E. Kovacic, The Influence of Economics on Antitrust Law

30 Econ. Inquiry 294 (1992)

Economic analysis influences antitrust litigation because the federal antitrust system is unusually permeable. This permeability is the result of . . . important features of the antitrust system. [One such feature] is the wide range of analytical criteria that courts are permitted to consider in resolving antitrust disputes. . . . Outcomes under the Sherman Act depend crucially upon the construction of ambiguous terms such as “conspiracy in restraint of trade” and “monopolize.” As [Steven Salop and Lawrence White have noted], the decision to cast the statutes in

general terms has given judges substantial discretion to determine litigation outcomes by defining the content of the statutes' operative terms.

In conferring this interpretive role upon the federal courts, Congress has allowed judges to devise standards of conduct at least in part by reference to the likely economic effects of various forms of business behavior. Despite sharp disagreement over the weight Congress meant to accord productive and allocative efficiency as judicial decision-making criteria: few scholars seriously argue that Congress intended that courts treat such concerns as irrelevant. Economists would play a far less important part in antitrust adjudication if Congress had precluded judicial consideration of efficiency in implementing statutory commands. The open-ended language and indeterminate goals of the antitrust statutes allow economists to affect adjudication and rule formulation to a degree unattainable under most other federal regulatory schemes. [. . .]

The relative ease with which new economic concepts can enter the courtroom has major implications for the direction of doctrine and analysis over time. First, the antitrust system's porosity ensures that today's accepted wisdom will face periodic challenges by rival theories that eventually may become the prevailing analytical approaches. Second, owing to the discretion conferred by the antitrust statutes, litigation outcomes in close cases will depend substantially upon the preferences of individual judges. A jurist's receptivity to specific economic arguments will hinge largely upon her tastes, training, and experience. Thus, a president can determine how economics and particular economic views affect antitrust litigation by his choice of judicial nominees. [. . .]

The creation of new economic ideas results from a variety of motivations. One is the economist's ethic of scientific inquiry. [. . .]

. . . A second stimulus to research in antitrust economics is the demand of various antitrust system participants for useful economic ideas. The needs of corporate plaintiffs and defendants, private attorneys, federal enforcement agencies, and state enforcement bodies generate a demand for theories to support favored policy and litigation outcomes. The largest and most prominent part of the demand is for theories that exculpate defendants. This does not mean that the demand for pro-enforcement theories is trivial. [. . .]

. . . From 1945 until the early 1970s, many economists embraced . . . enthusiasm for dispersing market power and preventing further concentration via merger. Carl Kaysen's and Donald Turner's *ANTITRUST POLICY* (1959), the chief "law and economics" antitrust text of its time, elevated deconcentration to the status of a major antitrust goal in the 1960s and early 1970s. President Johnson's White House Task Force Report on Antitrust Policy (1968) used the Kaysen-Turner proposals to develop its own deconcentration proposal. Task Force members who endorsed the measure included economists . . . and economically astute attorneys As late as 1971, economists such as Roger Sherman and Robert Tollison backed deconcentration and strict antimerger policies.

The consensus among economists supporting deconcentration crumbled, and scholars such as Meehan and Lamer have extensively recounted the demise of the structure-conduct-performance paradigm that supported attacks on corporate size. However, as [later] Chicago perspectives gained prominence in the late 1970s and the 1980s, the federal enforcement agencies had started an expansive collection of monopolization and shared-monopoly lawsuits that drew upon structuralist economic theories. . . . [Other work has found that the] agencies' commitment of massive resources to deconcentration in the late 1960s and early 1970s would not have occurred without an apparent consensus of support from economists. By the time the deconcentration measures were fully launched, the consensus that inspired them had vanished. [. . .]

Modern adjustments in policy and doctrine are simply the latest signs of how changing economic visions affect the antitrust system. Antitrust law and industrial organization economics have evolved in tandem, with doctrine and enforcement policy lagging behind the formation of a consensus among economists about appropriate liability rules. This process will continue as developments in economic learning, debate among researchers about the proper interpretation of business phenomena, and changes in the political environment move courts and enforcement agencies to modify doctrine and policy. The evolution will be gradual, as the interaction of these elements generally discourages dramatic swings in doctrine.

New York v. Deutsche Telekom AG**439 F. Supp. 3d 179 (S.D.N.Y. 2020)**

Judge Marrero.

[1] Adjudication of antitrust disputes virtually turns the judge into a fortuneteller. Deciding such cases typically calls for a judicial reading of the future. In particular, it asks the court to predict whether the business arrangement or conduct at issue may substantially lessen competition in a given geographical and product market, thus likely to cause price increases and harm consumers. To aid the courts perform that murky function demands a massive enterprise. In most cases, the litigation consumes years at costs running into millions of dollars. In furtherance of their enterprise, the parties to the dispute retain battalions of the most skilled and highest-paid attorneys in the nation. In turn, the lawyers enlist the services of other professionals—engineers, economists, business executives, academics—all brought into the dispute to render expert opinions regarding the potential procompetitive or anticompetitive effects of the transaction.

[2] The qualifications of litigants' specialists, impressive by the titles they have held and the tomes their CVs fill, can be humbling and intimidating. And those witnesses' authoritative views stated on the stand under oath in open court can leave the lay person wondering whether word so expertly crafted and credentialed can admit room for error or even doubt. Together, counsel and experts amass documentary and testimonial records for trial that can occupy entire storage rooms to capacity. [. . .]

[3] Perhaps most remarkable about antitrust litigation is the blurry product that not infrequently emerges from the parties' huge expenditures and correspondingly exhaustive efforts. Each side, bolstered by the mega records of fact discovery and expert reports it generates, as supplemented by the product of any governmental investigation and resulting action, offers the court evidence the party declares should guide the judge in reaching a compelling and irrefutable decision in the declarant's favor. In fact, however, quite often what the litigants propound sheds little light on a clear path to resolving the dispute. In the final analysis, at the point of sharpest focus and highest clarity and reliability, the adversaries' toil and trouble reduces to imprecise and somewhat suspect aids: competing crystal balls.

[4] . . . [Litigating] parties' costly and conflicting engineering, economic, and scholarly business models, along with the incompatible visions of the competitive future their experts' shades-of-gray forecasts portray, essentially cancel each other out as helpful evidence the Court could comfortably endorse as decidedly affirming one side rather than the other.

[5] The resulting stalemate leaves the Court lacking sufficiently impartial and objective ground on which to rely in basing a sound forecast of the likely competitive effects of a merger. But the expert witnesses' reports and testimony, however, do not constitute the only or even the primary source of support for the Court's assessment of that question. There is another evidentiary foundation more compelling in this Court's assessment than the abstract or hypothetical versions of the relevant market's competitive future that the adversaries and their experts advocate. Conceptually, that underpinning supports a projection of what will happen to competition post-merger that emerges from the evidence in the trial record that the Court heard, admitted through the testimony of fact witnesses, and evaluated with respect to its credibility and the weight it deserves.

[6] How the future manifests itself and brings to pass what it holds is a multifaceted phenomenon that is not necessarily guided by theoretical forces or mathematical models. Instead, causal agents that engender knowing and purposeful human behavior, individual and collective, fundamentally shape that narrative. Confronted by such challenges, courts acting as fact-finders ordinarily turn to traditional judicial methods and guidance more aptly fitted for the task. Specifically, they resort to their own tried and tested version of peering into a crystal ball. Reading what the major players involved in the dispute have credibly said or not said and done or not done, and what they commit to do or not do concerning the merger, the courts are then equipped to interpret whatever formative conduct and decisive events they can reasonably foresee as likely to occur.

[7] For this purpose, however, the courts rely less on the equipoise of mathematical computations, technical data, analytical modeling, and adversarial scientific assumptions that the litigants proffer. Rather, they apply the

judge's own skills and frontline experience in weighing, predicting, and judging complex and often conflicting accounts of human conduct, those actions and inactions drawn from the factual evidence. In performing that function, courts employ various behavioral measures that even the most exhaustive and authoritative technical expert study could not adequately capture or gauge as a reliable prognosticator of likely events set in motion fundamentally by business decisions made by various live sources: relevant market competitors, other market participants, public agencies, and even consumers.