

# A Primer in Antitrust Law and Policy

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# I. Building Blocks of Antitrust Law and Policy

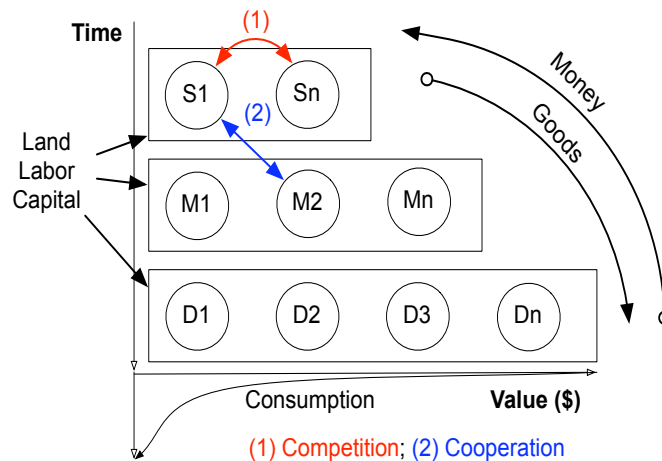
## 1. A Stylized Economy

In economic terms, the “wealth of a nation” consists of the goods and services (“goods”) that fulfill the consumer’s immediate and future wants. Increasing wealth means expanding the quantity, quality, and variety of consumer goods. As most goods do not exist in usable form (for example, bauxite or iron ore), they have to be transformed from raw materials to consumer goods in order to be usable. The basic purpose of economic activity is just that, turning unfinished, unusable goods into finished, usable goods.

The actors performing that transformation are firms, defined as arrangements of production factors, land, labor, and capital, organized for the purpose of bringing finished goods (one step closer) to the consumer. The production factors derive their value from the value of the ultimate consumer good; therefore, ownership of production factors is also wealth, because land, labor, and capital contribute to fulfill future wants. Most goods move through various stages of production before they reach the consumer, for example, prospecting, drilling, refining, manufacturing, wholesale, and retail. At each stage of production, the value of the good increases, measured in units of currency (for example, dollars or euro), as it moves closer to a usable state. Once the good reaches the consumer, its value is quite literally consumed in the satisfaction of the consumer’s wants, either immediately, for example, a slice of pizza, or over time, for example, a movie ticket or a car. Note that, while goods travel downstream, money travels upstream – and back to the consumer at every stage of the process in the form of wages.

The multi-layered economic transformation process requires both cooperation and competition among the participating firms. Broadly speaking, firms cooperate vertically across stages of production and compete horizontally within stages of production. For example, manufacturers enter into distribution agreements with wholesalers (cooperation) and compete with other manufacturers. Competition and coordination are thus not unrelated as competition is often competition for cooperation. For example, manufacturers compete for the contracts with the best wholesalers, and retailers compete for sales to consumers.

Figure 1: Aggregate Production Structure



Based on M. Skousen, Economic Logic, 2000

At each stage of the process, firms seek to maximize profits. Profits, in this simplified model, are the best indication that a firm is supplying something that consumers want more of. As profits are revenues minus costs, firms have incentives to maximize revenues (that is, increase the quantity, quality, and variety of those products that consumers want) and decrease costs (that is, increase efficiency by making more with less). Successful firms will earn above-average profits, which investors will reward with additional capital for expansion and innovation; by the same logic, unsuccessful firms will ultimately exit the marketplace, as profits dwindle and investors will transfer their capital to more promising ventures, that is, ventures that better serve the customer's wants.<sup>1</sup>

## 2. Competition

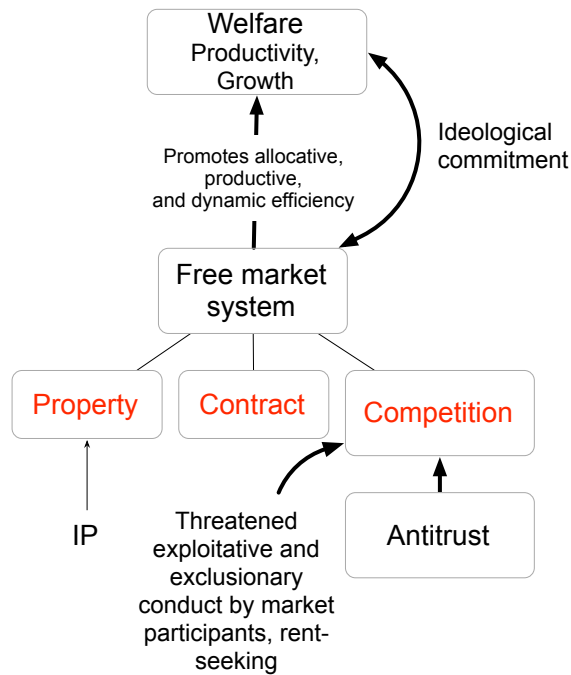
A functioning market economy requires at a minimum (i) private property in rivalrous goods, (ii) freedom of contract, including the freedom to organize firms, and (iii) competition. Competition creates the incentives for firms to increase (a) productive efficiency, i.e., to produce more with less, (b) allocative efficiency, i.e., to deploy resources where the value placed on a good by the consumer is greater than the cost of making it, and (c) dynamic efficiency, i.e., to invest in innovation. Moreover, competition (d) disperses private power and thus protects the democratic process and (e) smaller but efficient firms in the marketplace from being deprived of their freedom to compete by more powerful firms. As a result, competition ensures that, by and large, individual profit seeking is at least directionally aligned with the public interest, including the promotion of societal wealth, efficiency, and the democratic process. The Supreme Court described the varied benefits of competition as follows:

1. This sketch of the economic transformation process is based on Skousen, Economic Logic (2000).

The Sherman Act was designed to be a comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade. It rests on the premise that the unrestrained competitive forces will yield the best allocation of our economic resources, the lowest prices, the highest quality and the greatest material progress, while at the same time providing an environment conducive to the preservation of our democratic political and social institutions.<sup>2</sup>

The rules of competition are among the most basic marketplace design choices a society can make.<sup>3</sup> The antitrust laws reflect and protect those choices.

Figure 1a: The role of antitrust in promoting welfare



The above chart locates the place of antitrust policy in this broader framework. The goal of economic policy is maximizing welfare. For most goods, we believe that a free market system is the best means to achieve that goal – better certainly than the alternatives to large scale coordination of production that have been tried and in large part failed: tradition and command and control.<sup>4</sup> Antitrust protects a key element of free markets, competition, from being undermined by

2. *Northern Pacific Railway Comp., v. U.S.*, 356 U.S. 1, 4 (1958).

3. Here is not the place to discuss the various flavors of competition, e.g., perfect competition, workable competition, fair competition, rivalry, etc., which to a large extent follow from the emphasis placed on the *goals* of competition.

4. This is not to say that social norms and command and control regulation do not have a place in an economic

market participants. In addition, antitrust protects the the moral legitimacy of the economic system by promoting competition as a condition of contractual fairness. The ultimate subject of antitrust regulation is not individual transactions but markets, and the goal is to keep (or, more ambitiously, to make) markets competitive. Buyer competition ensures seller choice, and under conditions of meaningful seller choice, buyer—seller agreements can plausibly be presumed to be not only efficient but also fair.<sup>5</sup> Antitrust also protects the integrity of the legal system. The operation of the legal system critically depends on its ability not to deal with certain problems. For example, the legal system refuses to decide political questions. It refuses to settle scientific or religious disputes. And it fights tooth and nail to stay out of the price setting business. In fact, when it comes to the latter, the display of humility by the judiciary is quite remarkable. Why such (self-) restraint? Because the legal system would quite literally overload and collapse if it had to deal with price setting in all but the rarest of circumstances. The operation of the legal system depends on prices being inputs, not outputs. Because the legal system is structurally coupled to the economic system through the institution of the contract, the law must insist on certain minimal conditions of justice in the economic system's price setting mechanism. The maintenance of competitive markets through antitrust regulation is one of those important self-restraint-enabling interventions of the legal system in the operations of the economic system. Only as long as markets can plausibly be trusted to produce just results can the law simply transform market results (prices) into enforceable obligations without fear of undermining its own legitimacy. The almost complete disengagement from substantive review at the transaction level requires certain procedural oversight of the market process. Antitrust performs that supervisory role.

### 3. Perfect Competition and Monopoly

Under *perfect competition* every customer has an unlimited number of suppliers to satisfy their demand. From a producer's (P) viewpoint, demand is thus infinitely elastic. If P1 raises price by just a cent above the market price, *all* of its customers will switch *all* of their purchases to P2...Pn. Any price increase above the competitive price will therefore result in zero sales, zero revenues, and zero profits. As a result, producers maximize profits by making all the units for which there is a buyer who is willing to pay more than the costs of making the unit. Firms

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system. They most certainly do as *unregulated* markets have a tendency to undermine their own foundations and self-destruct. The point is that as a *default choice*, free markets have proven to be far superior to tradition and command and control in creating societal wealth. One of the primary advantages of free markets is that the actors do not have to pay attention to much information beyond the cost of their inputs and the price of their products. The market processes information in a distributed fashion, which dramatically reduces the internal complexity required by each individual node while enabling the system as a whole to quickly absorb and react to changes. To what extent vastly improved central information processing at petabyte scale and beyond will make a partially planned economy viable again is open to debate. Moreover, alternative forms of large scale productive coordination have emerged that fall neither into the market nor in the command and control categories, for example the collaborative peer production that created the operating system, the word processor, and the graphics tools used to write this document.

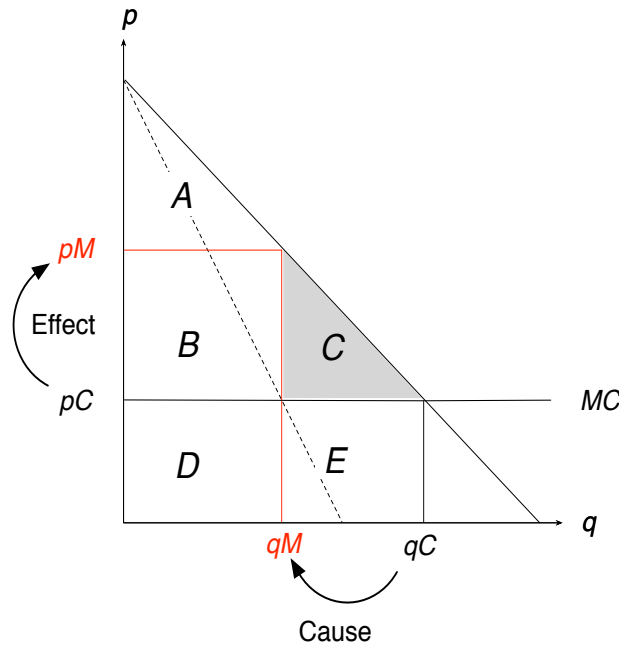
5. Here is an important, under-explored link between antitrust policy and social justice.

produce until price (or marginal revenue) equals marginal cost ( $P = MR = MC$ ).<sup>6</sup> In a perfectly competitive market, the individual profit motive is aligned with the social welfare goal such that maximizing individual profit has the effect of maximizing social welfare as well.<sup>7</sup> Under perfect competition, the only way to get rich is by serving others, not by exploiting them. The close alignment of the individual profit motive with the promotion of social welfare is at the heart of the hopeful creed of laissez-faire capitalism. Under perfect competition individual greed is indeed good for all.

Not so under *monopoly conditions*. Monopoly is the absence of competition, because a true monopolist is the only seller of a good. Unlike a firm in a competitive market, the monopolist is able to raise prices above the competitive level without losing all of its customers. The mechanism by which a monopolist raises price is by reducing output below the competitive level. The resulting artificial shortage induces some customers, who would otherwise walk away empty-handed, to bid up the price. The welfare effects from monopoly lend themselves to a simple graphic representation.

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6. If each and every customer has an unlimited number of suppliers to satisfy his or her demand for widgets, demand is infinitely elastic from a widget-supplier's (S) point of view, because if  $S_1$  raises its price just a tiny little bit above the market price, all of its customers will switch their entire purchases to widget makers  $S_{2..n}$ . In other words, any price increase above the competitive price will result in zero sales, zero revenues, and zero profits.
  7. Assuming for simplicity's sake that all externalities are being fully internalized. In reality, that is not the case. So even under perfect competition, individual profit and social welfare maximization are never *perfectly* aligned.

Figure 2: Deadweight loss from foregone trades



Under perfect competition,  $q_C$  units are being produced at price  $p_C$ . Assuming for simplicity's sake that each customer purchases one unit,  $q_C$  is also the number of buyers who get to buy the goods. With the exception of the one buyer at the intersection of  $MC$  and  $q_C$ , who values the good *exactly* at price  $p_C$  and is thus indifferent between buying the good or keeping her money, all other buyers value the good more highly than the money that have to pay to get it. They are all richer after they leave the store with their purchase than they were before. The areas C, B, and A represent that consumer surplus, i.e., the difference between what the customers was willing to pay (the subjective value of the good for the consumer) and what he or she had to pay to get the good (the sales price,  $p_C$ ).

The monopolist, in contrast, reduces output from  $q_C$  to  $q_M$ . As a result, prices rise from  $p_C$  to  $p_M$ . (Note that in economic diagrams, the cause is commonly drawn on the x-axis and the effect on the y-axis.) Now the customers located between  $q_M$  and  $q_C$  walk away empty handed, they have been priced out of the market. Only those customers to the left of  $q_M$  value the good higher than  $p_M$  and thus willing to pay  $p_M$  or more. The first effect of monopoly pricing is therefore a *wealth transfer* from consumers to producers. Under perfect competition, the consumers realize 100% of the profits from trade (areas A, B, C). The producers have zero profits, and thus no area in the diagram.<sup>8</sup> Under monopoly conditions, the producer gains area B as

8. Zero profits include, by way of assumption, a normal rate of return on capital. In normal times that would probably be somewhere around 5%.

producer surplus.<sup>9</sup> Consumer surplus is reduced from areas A, B, and C to area A. Monopoly pricing thus slices the pieces of the economic pie differently, with a larger slice for the producer (B, instead of “nothing”) and a smaller slice for the consumer (A, instead of A, B, and C). But that is not all, because area C disappears entirely under monopoly conditions.<sup>10</sup> The cake, in other words, is not only sliced differently, but it also loses in absolute size, from A, B, and C to A and B. Area C represents the “deadweight loss” of monopoly, that is, lost opportunities for welfare enhancing trades. Those customers between  $q_M$  and  $q_C$  are all willing to pay more than it costs to make the goods (MC), they are just not willing to pay  $p_M$  or more. In order to protect its higher profits (B), the monopolist thus refuses to make efficient trades. The disconnect between the individual profit incentive and social welfare is obvious.

Another effect of monopoly pricing is a reduction in cost from  $D + E$  to  $D$ . However, far from mitigating the negative effects of monopoly, not using the inputs represented by  $E$  makes the welfare loss worse, because now the inputs in area  $E$  will have to be put to less valued uses.

It gets worse once we take the effects of monopoly on innovation into account. Monopoly on balance retards the *incentives* to innovate and thus reduces dynamic efficiency. On the one hand, large firm monopolies are arguably better *able* to innovate. They can self-finance, spread the risk across scale and scope, may have learning curve advantages and, maybe most importantly, have no disclosure problem. Unlike small firms, large monopolies do not have to shop and disclose their ideas to investors and venture capitalists whose compliance with non-disclosure agreements may be less than absolute, in particular if they have already invested in similar firms. On the other hand, if a monopolist introduces a new invention in a related market, it replaces some of its pre-invention monopoly sales. This replacement effect has time and time again cost successful firms their edge. Firms without an installed base have much greater incentives to radically innovate. Lastly, monopolies tend to seek government protection (“rent seeking”) for their supracompetitive returns, for example by extending copyright retroactively. Lobbying is expensive, and the money spent on influencing the political process is not available for productive investment. Some economists have estimated that the cost to society from rent seeking is greater than the monopoly deadweight loss.<sup>11</sup>

Most real-world market structures fall in between the extremes of perfect competition and monopoly and thus between zero and (near) infinite market power. The greater the market power, the more pronounced the negative distributive, allocative, and dynamic welfare effects. Be-

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9. At  $p_M$ , the monopolist sells  $q_M$  units, so its revenues are areas B and D. Area D, however, also represents the costs of making the goods, i.e., MC times  $q_M$ , which must be subtracted from revenues.

10. Assuming that the monopolist cannot engage in perfect price discrimination.

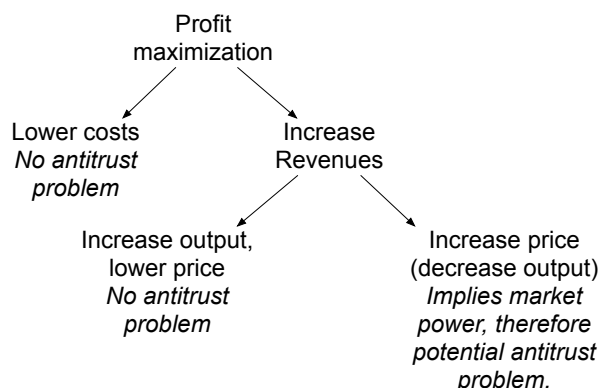
11. The issue of rent seeking is related to the concerns that an undue concentration of economic power undermines the democratic process. Rent seeking identifies the *welfare losses* from the corruption of the political process from the vantage point of economic theory. The democratic theory of antitrust, in contrast, focuses on the damage done to the *value of democratic participation*.

cause market power is at the root of these varied distortions of the ideal market process, courts and commentators have identified market power as the core concern of the antitrust laws.

#### 4. Profits

A firm's profits are determined by revenues minus costs, where revenues are a function of price times number of units sold. That leaves a firm with two basic strategies for increasing its profits. The firm can (i) lower its costs or (ii) increase its revenues. Lowering costs is never an antitrust problem, because it is a profitable strategy irrespective of whether a firm has market power. Increasing revenues, on the other hand, may be an antitrust issue if the increase is the result of an unreasonable exercise of market power. The chart below provides an overview of the basic strategy choices faced by any firm. Antitrust only comes into play in the lower right hand corner.

Figure 3: Profit maximizing strategies



#### 5. A Simple Model

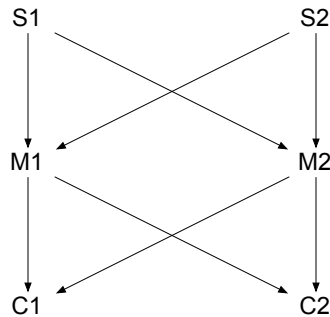
In what follows, we will analyze the most common ways in which firms increase, use, and abuse market power within a toy economy with only six players: two suppliers of raw materials (S1, S2), two manufacturers or retailers (M1, M2), and two consumers (C1, C2). In a state of competition, M1 and M2 compete for the business of C1 and C2, and S1 and S2 compete for the business of M1 and M2. The straight arrows indicate the flow of goods. The model further assumes (unless explicitly stated otherwise) that there is no new entry, no alternative products, and no additional suppliers, manufacturers, or consumers.<sup>12</sup> Virtually every antitrust problem can usefully be analyzed within this relatively simple framework. Figure 4 below shows the default

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12. Note that these assumptions are different from the traditional model of perfect competition, which is characterized by homogenous products and prices, free and costless entry and exit, perfect information, and an infinite number of firms.

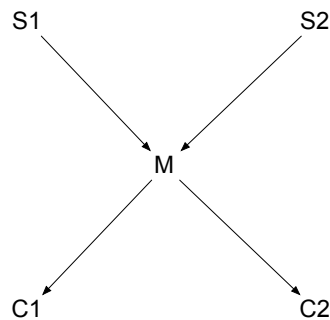
position of “unfettered competition.”<sup>13</sup>

Figure 4: Competition  
= M1 and M2 bid against each other



A monopoly at the manufacturer level, as shown in Figure 5, results in fewer choices for C1 and C2 and for S1 and S2. The customers are now facing a single seller (monopoly) and the suppliers are facing a single buyer (monopsony).

Figure 5: Monopoly  
= M is the only seller/buyer



In our model, Figures 4 and 5 are the end-points of what is in reality a continuum of market structures between competition and monopoly. Thus, every strategy that in the real world *increases* market power tips the market structure in the model from competition (Figure 4) to monopoly (Figure 5).

The proper focus of antitrust analysis is thus on the adverse effects of the conduct in question on (i) competition and of the follow-on effects of reduced competition (ii) on the ability of the defendant to better exploit consumers. Note that some measure of power – or proof of ability – is required for both steps. Without the power to exclude competitors (in an exclusion offense), the

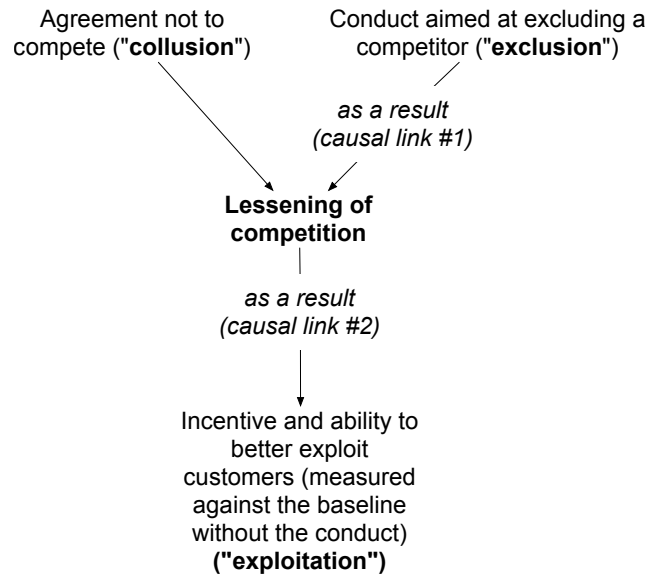
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13. For simplicity’s sake, competition in this model is limited to *only two players* at each level of production. The results will thus be binary: two players (= competition) or one (= monopoly). This is a feature, not a bug.

conduct cannot harm the competitive process. Without the harm to competition conferring upon the defendant some incremental power over price, there can be no consumer exploitation. Usually, the power or ability requirement is cast as a market definition issue (more on that later), but it really is a causation requirement. There are instances in which exclusion is “cheap,” and requires very little existing market power<sup>14</sup> yet the effects on competition can be profound. The ultimate question is thus whether the conduct enables the defendant to better exploit consumers.<sup>15</sup> Note that consumer harm, properly understood, is thus *offense specific*. It means that the defendants have the ability and the incentive to raise prices above a competitive benchmark that would exist without the conduct in question.<sup>16</sup> (“Raising prices” is a shorthand for all adverse competitive effects, including reduced output or innovation.) This two step relationship between the conduct and the exploitative effect (conduct – lessening of competition – exploitation) can be summarized as follows:

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14. Measured, for example, in market shares at the time of the conduct.
  15. The relationship between exploitation and exclusion is subject to debate. *See, e.g.,* Fox, What is Harm to Competition, 70 Antitrust L.J. 371 (2002). The key issue is whether exclusion is an independent or a derivative offense. If exclusion is a derivative offense, then the only harm to competition recognized by the antitrust laws is consumer exploitation. We care about competitor exclusion if and only to the extent that it enables consumer exploitation. If exclusion is an independent offense, then the freedom of a business to compete on the merits is protected as an end in itself, not merely as a means to promote consumer welfare. Consequently, a competitor could bring an antitrust claim for exclusion even in the absence of consumer harm.
  16. “The proper competitive benchmark for evaluating alleged anticompetitive restraints in antitrust is the price that would prevail in the absence of the alleged anticompetitive restraints or conduct.” Salop, The First Principles Approach to Antitrust, *Kodak*, and Antitrust at the Millennium, Antitrust L.J. (2000), p.196.

Figure 5a: Conduct specific competitive effects



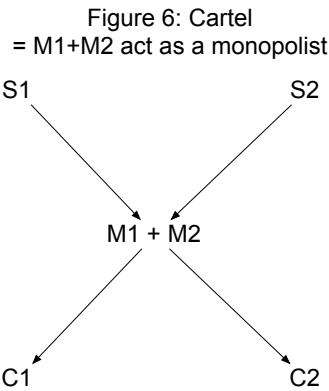
## 6. Collusion: Limiting Competition Among the Participants

If M1 and M2 enter into an agreement not to compete on price, quantity, and variety, then they effectively create a monopoly, the profits of which they share. The immediate effect is a lessening of competition (which obviates the need for elaborate proof of the first causal link between conduct and effect), resulting in the reduction of output<sup>17</sup> which gives S1 and S2 the incentive and ability for consumer exploitation and deadweight loss as shown in Figure 6.<sup>18</sup>

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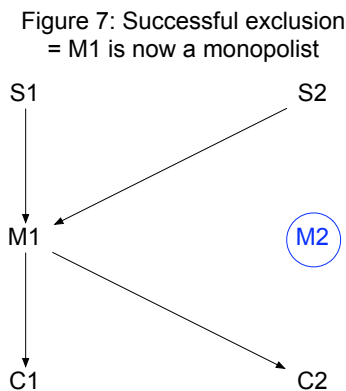
17. Note again that the model assumes a *duopoly* as the starting point. In a real-world case, the second causal link between a lessening of competition and the exploitative effects would still have to be established – unless it is irrebuttably presumed by law as is the case for *per se* offenses. (More below.)

18. From a welfare economics standpoint, effective cartels are worse than monopolies, because one huge firm (monopoly) is more likely to realize efficiencies of scale than two large firms that merely agree not to compete (cartel). The potential for creating efficiencies is also the key rationale for the “merger privilege,” that is, the rationale for the more lenient treatment of mergers, even though the result of a horizontal merger is the elimination of a competitor.



## 7. Exclusion: Limiting Competition from Others

The goal of a successful exclusionary strategy is to isolate a competitor from its suppliers and/or its customers. Where a collusive agreement directly results in a lessening of competition because its whole point is to limit competition *among the participants*, exclusion limits competition *from others*. The result, as shown in Figure 7, is an industry structure similar to that in Figure 6.

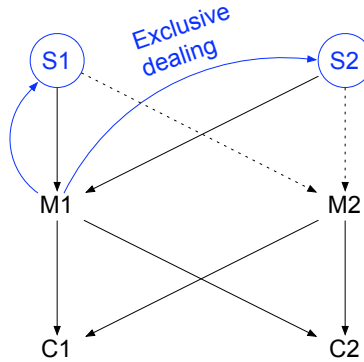


In contrast to collusive exploitation (Figure 6), there is no shared monopoly here; the winner M1 takes all. In this sense, exclusion may lead to a more stable form of monopoly than a cartel, because there is no partner with an incentive to cheat. In almost all markets, however, successful exclusion is much harder to achieve than a cartel agreement, because a competitor under attack has every incentive to fight back. Exclusionary strategies generally take the form of indirect attacks, aimed at the competitor’s supply lines or its customer base. Collusion harms the competitive process (and given power over price) the consumer directly, it is a “one punch” offense. Exclusion harms the consumer indirectly, it is a “one–two punch” offense. The first punch takes out the competitor, which, given power to exclude, results in a lessening of competition, and the second punch is the subsequent exploitation of the newfound monopoly position.

### a. Upstream Foreclosure

Suppose that M1 enters into exclusive supply contracts with S1 and S2, that is, S1 and S2 agree to only sell to M1. As a result, M2 is denied access to essential inputs and will exit the market once its inventories are depleted (Figure 9). Once M2 has left the picture, M1 enjoys monopoly power (Figure 7).

Figure 9: Upstream foreclosure

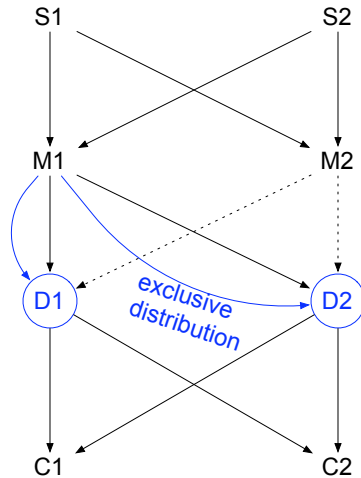


It is important to recall the assumptions made at the outset, in particular the absence of other firms at the supplier and the manufacturer level and the lack of entry. If any of these conditions fails, exclusion doesn't work – or at least not as well. Specifically, in order for the exclusive supply arrangements to harm M2, there must be no other present or potential suppliers (S3...Sn); in order to harm the consumers, there must be no other present or potential manufacturers of the same or a close substitute good (M3...Mn). Thus, harm to competitors and harm to competition both depend on the existence of barriers to entry.

### b. Downstream Foreclosure

Downstream foreclosure follows the same logic as upstream foreclosure. Suppose that M1 enters into exclusive distribution agreements with the only two available distributors D1 and D2, that is, D1 and D2 agree to only sell M1's goods. Here, M2 continues to have access to supplies and can still produce its goods, however, it has lost access to its customer base (Figure 10). Unable to generate revenues, M2 will exit the market and M1 will remain as a monopolist (Figure 7).

Figure 10: Downstream foreclosure



Of course, in the real world there will often be alternative channels of distribution, substitute supplies, and an abundance of caution on the part of the suppliers and the distributors, who have few incentives to support M1 in its quest for monopoly power. However, in a directional sense, the model is valid. Foreclosure does not have to be absolute in order to slow the growth of a competitor, and to allow the market share leader to enjoy significant (yet not absolute) monopoly profits. In many instances, exclusionary conduct is not aimed at destroying competitors outright but rather at raising a rival's costs, for example, by forcing the rival to resort to more expensive or less efficient means of distribution. Raising a rival's cost is often sufficient to substantially increase a company's market power or to defend a market leadership position.

Note that as a matter of convention we follow the flow of goods, not services, in identifying upstream and downstream markets. Goods travel from the upstream manufacturer to the downstream retailer. If we were to focus on the provision of services instead, the retailer would be an upstream supplier of distribution services to the downstream manufacturer.

## 8. The Antitrust Laws Protect “Competition, not Competitors”

No discussion of antitrust law is complete without a brief discussion of the oft-quoted yet confusing meme that antitrust “protects competition, not competitors.”<sup>19</sup> The claim is vexing on a number of levels. First, competitors are entities, competition is a process. Given that there is no question that antitrust operates at the market or process level, not the individual entity or transaction level, the claim appears to be a truism – even though the juxtaposition suggests a debate where there is none. Second, and relatedly, “competition, not competitors” sets up a false dichotomy – without competitors, there is no competition. At some point, one has to start protecting competitors if one wants competition. The real question is not whether antitrust protects competitors or not but *at what point* competitors must be protected in order to maintain competitive markets. The question is quantitative, not qualitative. It is not an “if” but a “how much” question. Third, if the meme is understood as a statement of statutory purpose, it is simply wrong. The *ultimate goal* of the antitrust laws is neither to protect competition nor competitors but consumer welfare.<sup>20</sup> Protecting competition and (at some point) competitors is a means to an end, not an end in itself. The most useful technical reading of the “competition, not competitors” quote is thus a limited but important reminder that in order to be of interest to the antitrust laws, exclusionary conduct must at least be able to result in a lessening of competition as a necessary predicate for subsequent harm to consumers.

- 
19. The vexing history of the “competition, not competitors” meme begins with its appearance in *Brown Shoe v. US*, 370 US 294 (1962). The court uses the phrase twice. The first time, the discussion supports a “derivative offense” meaning. “Taken as a whole, the legislative history illuminates congressional concern with the protection of competition, not competitors, and its desire to restrain mergers only to the extent that such combinations may tend to lessen competition.” The second time, however, the court leaves no doubt that the right to compete on the merits is independent of short run consumer welfare. “[S]ome of the results of large integrated or chain operations are beneficial to consumers. Their expansion is not rendered unlawful by the mere fact that small independent stores may be adversely affected. It is competition, not competitors, which the Act protects. But we cannot fail to recognize Congress’ desire to promote competition through the protection of small, locally owned business. Congress appreciated that occasional higher costs and prices might result from the maintenance of fragmented industries and markets. It resolved these competing considerations in favor of decentralization. We must give effect to that decision.”
  20. Consumers are also participants in the democratic process. So the focus on protecting consumers does not necessarily sever the connection to antitrust’s original republican tradition of participatory citizenship that the Sherman Act was meant to protect.

## II. Taxonomy of Antitrust Offenses

The distinction between unilateral and coordinated conduct is antitrust's *law's* most fundamental divide, even though conceptually, the division into collusive and exclusionary conduct is more useful. Section 1 of the Sherman Act (§1) and Section 7 of the Clayton Act (§7) both require an agreement, that is, coordination. In contrast, Section 2 of the Sherman Act (§2) merely requires unilateral conduct by a firm with "monopoly power."

### 1. Section 2 of the Sherman Act

Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony. (§2)<sup>21</sup>

A violation of §2 requires (i) monopoly power, (ii) some form of exclusionary conduct, and (iii) a causal connection between (ii) and (i).<sup>22</sup> "Monopoly" means significant but not absolute market power, in practice a market share of 60% or more. A firm must thus be both "big and bad" to trigger §2 liability – bigness as such is not actionable. In *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko*, the Supreme Court held that:

[t]he mere possession of monopoly power, and the concomitant charging of monopoly prices, is ... an important element of the free-market system. The opportunity to charge monopoly prices – at least for a short period – ... induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct.<sup>23</sup>

This definition deviates significantly from the perfect competition ideal of welfare economics. Far from viewing monopoly as an evil, Justice Scalia embraces it as "an important element of the free-market system." The stated reason is that "[t]he opportunity to charge monopoly prices ... induces risk taking that produces innovation and economic growth." The intuition is presumably that while every firm wants to be a monopolist, as long as everyone is trying to achieve that goal, usually no one will. In the unlikely event that one player reaches the pot of

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21. Full text at [http://assembler.law.cornell.edu/uscode/html/uscode15/usc\\_sec\\_15\\_00000002----000-.html](http://assembler.law.cornell.edu/uscode/html/uscode15/usc_sec_15_00000002----000-.html)

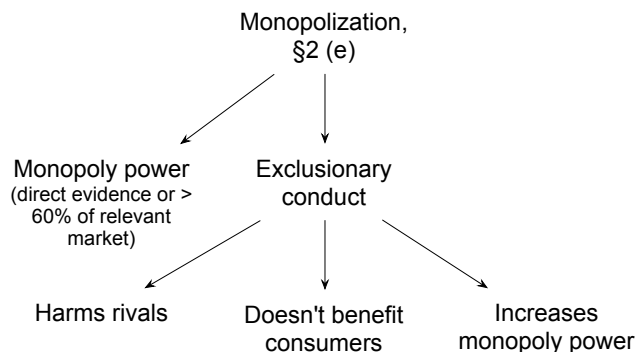
22. Section 2 also covers (i) the attempt to monopolize and (ii) the conspiracy to monopolize. The elements of each Section 2 offense vary slightly. An attempt to monopolize requires less market power (50% market share) but proof of specific intent. A conspiracy to monopolize requires (a) an agreement, (b) an act in furtherance of the agreement and (c) specific intent. Notably, the conspiracy does *not* require any proof of market power. It is thus the only "monopolization" offense without any market power requirement.

23. *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398 (2004)

gold at the end of the rainbow, that firm is then free to enjoy the welfare-diminishing benefits of monopoly for however long they last. The welfare loss from monopoly is the price that society pays for greater incentives to compete along the way. There is indeed significant empirical evidence connecting the rate of innovation to GDP growth. However, there is little evidence connecting monopoly with positive effects on the rate of innovation. Moreover, the “monopoly as incentive” theory faces some basic plausibility hurdles as countless firms enter and innovate at a rapid pace in markets where they cannot reasonably expect to ever become monopolists (fashion, cars, bikes, text editors, furniture, economics, law, etc.). And even if the dream of monopoly were to create some incremental incentives in markets where monopolization is indeed in the cards, it remains an open question whether the possible welfare gains from the added inducement outweigh the certain static efficiency losses.

Historically, the question of whether and to what extent society is willing to tolerate monopolies has been negotiated in the context of the *conduct* element. Not surprisingly, what qualifies as exclusionary conduct (i.e., “bad”) has been a subject of intense dispute since the passage of the Sherman Act. That said, most courts and commentators agree that in order to be exclusionary, conduct must be (a) harmful to a rival and (b) without benefit to consumers. As indicated above, the conduct must further (c) create or help to maintain the monopoly position, which amounts to a causation feedback requirement between the conduct and the monopoly element. But for this causation requirement, any business tort by a dominant firm could easily be converted into an antitrust offense. The harm from monopolization is always exclusionary in nature.

Figure 11: Monopolization



Violations of §2 may be prosecuted civilly by the government or by injured parties for treble damages. Violations may also be prosecuted criminally by the Department of Justice, even though criminal monopolization cases are exceedingly rare. As a practical matter, the bar for proving a §2 violation is high, which is sensible because most business conduct is unilateral and almost all of it is competitively benign – price setting, introducing new products, marketing, etc.

## 2. Section 1 of the Sherman Act

Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. (§1)<sup>24</sup>

Section 1 requires (i) an agreement (express or implied), resulting in (ii) a net restraint on trade such that the anticompetitive effects from the agreement (AE) outweigh the procompetitive effects (PE). For the agreement prong, conscious parallelism is not sufficient. Two gas stations across the street from each other do not “agree” in a manner relevant to §1 if all they do is observe and react to the other station’s price changes. Section 1 covers both horizontal and vertical restraints. Horizontal restraints are between competitors, and vertical restraints between companies in a buyer-seller relationship. Potential harm from horizontal restraints is exploitative, and harm from vertical agreements is (mostly) exclusionary.

Over time, two standards have emerged to determine whether an agreement in restraint of trade is unreasonable: per se illegality and rule of reason. For certain categories of hardcore restraints, the law conclusively presumes that  $AE > PE$ . Such per se illegal restraints are price fixing, market division (territory, customer, time<sup>25</sup>), naked output reduction, and group boycotts to defend a cartel. Those agreements, “because of their pernicious effect on competition and lack of any redeeming virtue, are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use.”<sup>26</sup> In other words, the courts will consider neither PE nor whether there are, in fact, any AE. The latter is particularly important. For per se illegal conduct, the agreement completes the offense. Thus, if two hot dog vendors in Central Park agree to charge \$4/dog, they engage in a per se illegal price fixing conspiracy, even though the agreement has virtually no effect. Per se violations are routinely prosecuted criminally by the Department of Justice.

The default standard for §1 analysis – and, arguably, for antitrust generally – is the rule of reason. While theoretically straightforward ( $AE > PE = \text{illegal}$ ), the practical obstacles to determining and then balancing the anticompetitive and procompetitive effects of an agreement are daunting. The courts have thus transformed the substantive rule of reason ( $AE > PE$ ) into a procedural sequence of conceptual and empirical inquiries, shifting the burden of persuasion back and forth between plaintiff and defendant. Only as a measure of last resort will the courts actually engage in a balancing of the restraint’s effects. The modern, structured or procedural rule of reason proceeds as follows:

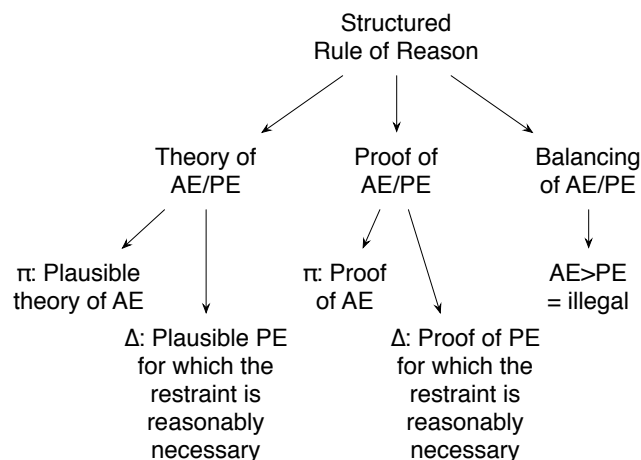
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24. Full text at [http://assembler.law.cornell.edu/uscode/html/uscode15/usc\\_sec\\_15\\_00000001----000-.html](http://assembler.law.cornell.edu/uscode/html/uscode15/usc_sec_15_00000001----000-.html)

25. A common example of market division by time is bid rigging, where the conspirators “take turns.”

26. *Northern Pacific Railway Comp., v. U.S.*, 356 U.S. 1, 5 (1958)

Figure 12: Rule of Reason



The first step, usually at the motion to dismiss stage, is a *conceptual inquiry* into whether there is a plausible theory of harm to competition. The plaintiff must present a plausible theory of harm, including market power on the part of the defendant. The burden then shifts to the defendant to show plausible PE for which the restraint is reasonably necessary. If the plaintiff fails, the case should be dismissed. The second step, which usually corresponds to the summary judgment stage, involves *empirical proof* of harm. The plaintiff must present evidence of AE, either directly or circumstantial, i.e., through a showing of actual harm or market shares and entry barriers respectively. The burden then shifts to the defendant to produce proof of PE and that the restraint is reasonably necessary to achieve them. If the plaintiff fails, summary judgment should be granted to the defendant. The third and final step, often requiring a full trial, includes the actual balancing ( $AE > PE$ ) by the court in addition to any proof of contested facts.<sup>27</sup>

### 3. Section 7 of the Clayton Act

No person ... shall acquire ... any part of the stock ... or any part of the assets of another person ... where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly. (§7)<sup>28</sup>

A violation of §7 requires (i) the acquisition of stock or assets of a firm; resulting in (ii) a likelihood of a substantial lessening of competition ("SLC").

Violations of §7 may be prosecuted civilly by the government or by injured parties for treble damages. The SLC test is structurally similar to a ROR inquiry. If  $AE(\text{merger}) > PE(\text{merger})$ ,

27. For details see Elhauge & Geradin, *Global Antitrust Law and Economics* (2007), p.190-91.

28. Full text at [http://assembler.law.cornell.edu/uscode/html/uscode15/usc\\_sec\\_15\\_0000018----000-.html](http://assembler.law.cornell.edu/uscode/html/uscode15/usc_sec_15_0000018----000-.html)

then the acquisition is unlawful. Similar to the transformation of the substantive rule of reason into a sequence of procedural events, the courts have developed a burden-shifting approach to §7.

By showing that a transaction will lead to undue concentration [i.e., a market share measure] ... the government establishes a presumption that the transaction will substantially lessen competition. The burden of producing evidence to rebut this presumption then shifts to the defendant. If the defendant successfully rebuts the presumption, the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times.<sup>29</sup>

The use of presumptions and inferences from market shares is more prominent in merger cases than in §1 cases because the SLC test is forward looking and requires a showing that *future* anticompetitive effects are likely.<sup>30</sup> In contrast, most §1 cases address past injury and are thus backward looking.

Similar to the classification of agreements under §1, mergers are either horizontal (i.e., a merger between competitors) or vertical (e.g., a manufacturer buying one of its suppliers). The harm to competition from horizontal mergers is exploitative, that from vertical mergers exclusionary. For horizontal mergers, the theory of exploitative competitive harm is either based on coordinated or on unilateral effects.

A *coordinated effects theory* is based on the concern that after the merger, collusion among the remaining competitors is more likely than before. Suppose that past efforts to forge a cartel among firms A, B, C, and D have failed because B, the lowest cost producer refused to join or kept cheating on the cartel. An acquisition of D by A may not change the likelihood of post-merger collusion at all, because B is still around as a disruptive force. In contrast, an acquisition of B by A would make post-merger coordination more likely, because the acquisition eliminated the cartel-disruptor.

A *unilateral effects theory* reflects the concern that after the merger the combined company will be able to profitably raise prices all by itself – for example because firm A acquires the next best substitute to its product by merging with B. Before the merger, A could not profitably raise prices because customers defected overwhelmingly from A's product to B's product. After the merger, A can profitably raise prices for its product, because it recaptures the defectors to product B, which it now owns.

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29. *U.S. v. Baker Hughes*, 908 F.2d 981 (D.C.C. 1990).

30. Of course, there are also post-consummation challenges to mergers where direct evidence of past effects from the merger is available. In such cases, there is no need to fall back on inferences.

## 4. Application of the Federal Antitrust Laws

To illustrate some applications of the legal principles outlined above, we will take another look at some examples of collusion (Figure 6) and foreclosure (Figures 9, 10).

### a. Price Fixing and Competitor Collaborations

The agreement between M1 and M2 in Figure 6 to fix prices is per se illegal under §1. Note that it doesn't take much to "fix" a price in a horizontal conspiracy. It is not required that the parties determine price as a fixed dollar amount (for example, M1 and M2 agree to both sell for \$10/unit). Rather, any (naked) agreement that influences price comes under the per se ban. Moreover, "price" in a horizontal setting is an extremely broad concept that encompasses virtually every factor contributing to the economic value of the trade, including terms of sale, discounts, advertising, and credit.

The problem with a categorical per se ban on price fixing, market allocation and similar agreements is overdeterrence. The per se rule captures agreements that are demonstrably efficient and welfare enhancing. Easy labels, as the Supreme Court observed, do not always produce ready answers.

Consider the facts in *BMI v. CBS*,<sup>31</sup> where thousands of composers granted non-exclusive licenses for playing their songs to ASCAP (75%) and BMI (25%). ASCAP sold blanket licenses to all of the songs in its library to radio stations and TV networks ("stations"), among them CBS. Most stations paid a "fixed" flat fee for the right to play any song in the inventory as often as they wanted. The stations also provided ASCAP with usage metrics, i.e., how often they played what song. Since the stations paid a flat fee, they had no incentive to shade the numbers (e.g., over-report the playing of cheap songs and under-report the playing of hits). On the basis of those metrics, ASCAP then paid the composers a share of the flat fee profits. CBS sued ASCAP/BMI for price fixing, alleging a conspiracy among the composers. Instead of competing individually for the licensing of their compositions, the composers – through ASCAP/BMI – agreed to charge CBS one uniform price for access to all of their works.

There is no question that the blanket license involved price fixing in a literal sense.<sup>32</sup> There is also no question that the blanket license arrangement was highly efficient and that without the restraint the ASCAP/BMI venture could not have worked. Where there are hundreds of stations and thousands of composers, individually negotiated agreements would have been prohibitively

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31. *BMI v. CBS*, 441 U.S. 1 (1979). The "easy labels" phrase above is from *BMI*.

32. Note that the composers were free to license songs on an individual basis, bypassing ASCAP/BMI. Such non-exclusivity is another reason for why the agreement was unlikely to harm competition. However, the composers were barred from licensing songs to competing collection societies, which explains why there are only ASCAP and BMI. Interestingly, this latter restraint did not play a major role in deciding the case, even though it is not apparent why it would be reasonably necessary to make the venture work.

expensive. It is too hard for an individual composer to monitor every radio station for infringement. And it is too hard for every radio station to go out and negotiate a “per song” license with hundreds of composers each. The blanket license thus minimized transaction costs, created the correct incentives for both stations and composers, and dramatically increased the “output” of legally performed compositions.

In these and similar situations, the key question is whether the restraint is “naked,” that is, an end in itself to exploit consumers or “ancillary,” that is, a means to a procompetitive end. The clearest statement of the rule is from *Rothery Storage & Van Co. v. Atlas Van Lines*, 792 F.2d 210, 224 (D.C.Cir. 1986):

To be ancillary ... an agreement eliminating competition must be subordinate and collateral to a separate, legitimate transaction. The ancillary restraint is subordinate and collateral in the sense that it serves to make the main transaction more effective in accomplishing its purpose.

In *BMI*, the underlying “legitimate transaction” is the agreement to set up and maintain the collecting society. The blanket license is “is subordinate and collateral in the sense that it serves to make the main transaction more effective in accomplishing its purpose.” If the restraint is ancillary, then the ROR applies. If the restraint is naked, then the per se rule applies. The ancillary restraints doctrine is thus the ultimate arbiter of whether a prima facie per se illegal agreement is *really* per se illegal.<sup>33</sup>

## b. Exclusive Dealing, Tying, and other Vertical Restraints

All vertical agreements of antitrust relevance are *conditional transactions*, where the problem is with the condition, not the underlying transaction.<sup>34</sup>

### *Interbrand Restraints: “Don’t sell my rival’s products”*

Some vertical restraints imposed by the upstream manufacturer limit the ability of a distributor to deal in products of *the manufacturer’s rivals*. For example, McDonald’s has agreed to only sell Coke, not Pepsi. In this “interbrand” restraint setting the manufacturer says to the distributor: “I will sell you my widgets under the condition that (i) you don’t sell any competing products (exclusive dealing as in the McDonalds/Coke example), or (ii) you also purchase another product from me (tying).” There are less absolute variants of exclusive dealing and tying, where the contractual obligation (“you shall/not”) is replaced by economic incentives (“it sure would pay if you did/didn’t”). For example, a manufacturer might say to the distributor: “I will sell you my widgets at a much lower price if you buy 100%, 80%, etc., of your requirements from me (loyal-

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33. See also the Competitor Collaboration Guidelines: [www.ftc.gov/os/2000/04/ftcdojguidelines.pdf](http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf)

34. That pattern alone strongly suggests rule of reason treatment across the board, as long as the restraint is ancillary to the underlying transaction.

ty rebate / exclusive dealing light).” Similarly, the manufacturer might say to the distributor: “I will sell you a bundle of my products A and B at a much lower price than A and B separately (bundling / tying light).”

The problem with interbrand restraints is the *foreclosure* of a rival’s access to upstream suppliers or downstream customers. In Figure 9, for example, M2 is foreclosed from access to *all* of its suppliers, which is unlawful under the rule of reason as the exclusionary effects outweigh the benefits. As a practical matter, foreclosure of less than 30% of a relevant market is generally lawful, 30-60% is a gray area, and foreclosure of more than 60% tends to be unlawful, barring exceptional circumstances. In addition to the immediate effects of denying a rival access to effective distribution or supplies, foreclosure may also prevent the rival from achieving minimum efficient scale or scope. Vertical restraints are common because most of the time they are (also) imposed by firms without market power and thus presumably efficient. For instance, exclusive dealing better aligns the incentives of the retailer with the manufacturer – irrespective of the manufacturer’s market power. If the retailer cannot sell anyone else’s product, he or she has every incentive to promote the manufacturer’s product line. Exclusive dealing also enables relationship-specific investments that would otherwise be too risky. For example, if Ford asks an auto body maker to relocate its plant right next to the Ford plant, the auto body maker is likely to insist on an exclusivity or minimum volume commitment from Ford to ensure sufficient demand.<sup>35</sup> But for some such guarantee, Ford could opportunistically renegotiate the agreement after the auto body maker made irreversible investments. In other words, Ford could say: “Now that you’ve spent \$10 million on a plant that can only be used for my cars, let’s revisit that price we’re going to pay you.” Similarly, tying and bundling have clear procompetitive effects across a wide range of business practices. It is cheaper to distribute cars with tires, printers with toners, and razors with blades (i.e., transaction cost savings and distribution efficiencies). In addition, tying is a useful metering device to make heavy users pay more for a product than light users. Suppose that Xerox were to require users of its copiers to only purchase Xerox paper. The copiers could be sold at a rock-bottom prices, because all the money would be made from the sale of paper. Heavy users pay more and effectively subsidize light users – all without any cumbersome hardware requirements such as page counters, inspections, and complex long-term contracts. As long as the supplier of both products has no appreciable market power in the tying and the tied product market, this arrangement enables more users to buy copiers and is thus efficient. As a practical matter, the ubiquity of tying in competitive markets proves that it is generally net beneficial.

*Intrabrand Restraints: “Don’t sell my widget for less than \$10.”*

Another type of vertical agreements limit what a distributor can do *with the manufacturer’s own products*. Those “intrabrand” agreements do not limit the distributors right to sell products of rival manufacturers. Rather, the manufacturer says to the distributor: “I will sell you my wid-

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35. See Elhaage & Geradin, p.501 for a more detailed example.

gets under the condition that (i) you do not resell them for less than \$10/unit (resale price maintenance), or (ii) you only sell them to academic buyers (customer restraint) or in a specific territory (territorial restraint).”

Interbrand and intrabrand restraints are not of equal concern to the antitrust laws. “Interbrand competition ... is the primary concern of antitrust law.”<sup>36</sup> Focusing on the interbrand restraints makes good legal and economic sense. The point of intrabrand restraints is to give distributors a reliable profit margin – to induce loyalty and effort, ensure better service, break into otherwise locked up distribution channels, etc.<sup>37</sup> It is hard to imagine how a manufacturer could use such restraints to exploit consumers, because giving downstream distributors a greater margin for one’s own product does not increase the *manufacturer’s* market power. The manufacturer is simply paying more for presumably better distribution services. Moreover, as intrabrand restraints do not limit the distributors’ ability to carry competing brands, there are no plausible foreclosure effects.

A commonly cited concern with intrabrand restraints that has some theoretical credibility is that downstream distributors X, Y, and Z may want to form a cartel for the sale of manufacturer M’s product. Collectively, they go to M and say: “We will boycott your product unless you grant each of us exclusive territories (or set a minimum price of \$10/unit) in order to set up, facilitate, and police our cartel.”<sup>38</sup> But in this case the real concern is the horizontal conspiracy between X, Y, and Z, not the fact that they draft M to organize and provide cover for the cartel through a series of phenotypically vertical agreements.<sup>39</sup>

Vertical agreements – including tying – are analyzed under the rule of reason. The “per se” rule against tying only kicks in if the defendant has a share of 30% or more of the tying product

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36. *Continental TV Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 FN. 19 (1977).

37. Another commonly cited reason is to deter free riding. For example, a computer equipment retailer specializes in excellent in-store service. (Please email me if you find this mystical store in the real world.) Shoppers take advantage of the in-store service to choose their equipment and then order it from Newegg or Amazon. Here, Newegg and Amazon are free riding off of the retailer’s investment in superior service. While theoretically appealing, the real world significance of free riding is likely very limited.

38. Other concerns include “first sale” and “restraints on alienation”-type arguments, which may ultimately be far more significant than the (rare) downstream cartel. As a normative matter, one could argue that once goods have been released into the flow of commerce, upstream control over those goods or the economic agents involved in their distribution should end. Recall that antitrust laws reflect basic marketplace design choices, and trade in goods with no strings attached (and thus no uncertainty about their legal status) may be preferable from a policy standpoint.

39. Note that the same economic effect – elimination of competition between X, Y, and Z in the sale of M’s products – is per se illegal if brought about by X, Y, and Z and perfectly lawful under the rule of reason if imposed by M. This, too, makes both legal and economic sense. As long as M imposes the restraints, chances are that M’s interests are aligned with those of the consumers. Paying X, Y, and Z a healthy margin must, from M’s point of view, be worth it in terms of increased sales through better placement, in-store service, etc. In contrast, a cartel among X, Y, and Z is exploitative both vis-a-vis the consumers and M.

market. And even then, courts usually neither (strictly) presume anticompetitive effects nor do they deny defendants the opportunity to introduce (some) procompetitive business justifications. The ill-fitting *per se* label for tying illustrates the real practical difficulty with vertical restraints. Nowhere in antitrust jurisprudence have courts and agencies changed their minds more often than with respect to vertical agreements. Layers of incompatible precedent make vertical restraints law especially crufty. The bad code situation is made worse by the fact that vertical agreements are captured by virtually every antitrust statute, including §1, §2, §3 Clayton Act (for downstream restraints on goods only), and §5 FTC Act, all of which have slightly different standards. Careful analysis of the economic effects and the intent behind a vertical restraint and judicious selection of precedent is of paramount importance for crafting a persuasive argument in this area.

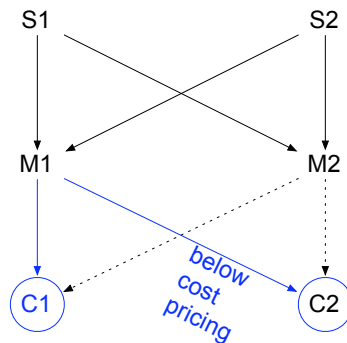
### c. Vertical Integration

Vertical integration may also result in foreclosure and exclusion. In Figure 10, for example, M1 entered into exclusive distribution agreements with D1 and D2. Alternatively, M1 could have acquired control over D1 and D2 by purchasing their stock and subsequently directed D1's and D2's management to terminate any agreements with M2. The effect on M2 (foreclosure of access to C1 and C2) would be the same in both instances. As discussed above, exclusive distribution agreements are analyzed under the rule of reason, and given that M2 would be entirely foreclosed from access to customers, the agreement would be in violation of §1. If M1 chooses to acquire D1 and D2 instead, the acquisition would be subject to §7. (Section 1 remains applicable, however, in an acquisition context, §7 is normally *lex specialis*). The effect of the acquisition would be to "substantially lessen competition," because M1 would control 100% of the relevant market and M2 would be excluded from access to C1 and C2.

### d. Predatory Pricing

One of the more clearly defined monopolization offenses is predatory pricing. Monopolist M1, the predator, consistently underprices M2, the prey. As a result, C1 and C2 will purchase from M1, and M2 will go out of business. Once M2 has been driven from the market, M1 remains as the only seller of the product and will raise prices to the monopoly level.

Figure 13: Predatory Pricing  
(*de facto* downstream foreclosure)



Structurally, predatory pricing is a form of incentive-driven downstream foreclosure. Through lower prices, M1 “monopolizes” the business of C1 and C2. The problem is to distinguish bona fide low prices (which are good for C1 and C2) from predatorily low prices (which are good for C1 and C2 in the short run, but bad in the long run). The line is drawn where M1 sells its goods below a reasonable measure of marginal or avoidable cost, because such sales diminish M1’s short run profits and are thus irrational unless offset by the expectation of future monopoly profits.<sup>40</sup> Predatory pricing has traditionally been of significance in high fixed costs and low margin industries, such as the airline industry, where incumbent carriers have constrained new entry on profitable routes by underpricing the new entrant, subsidizing their losses on the competitive city pairs with supracompetitive profits from non-competitive city pairs.

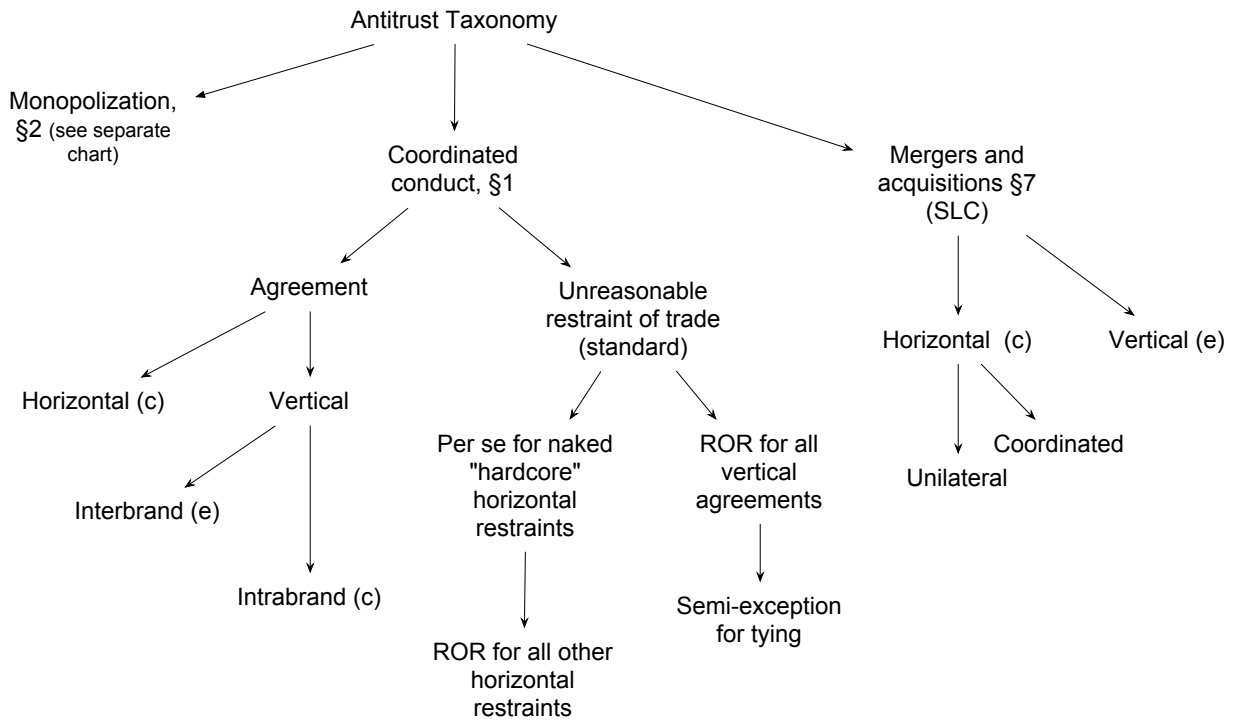
## 5. Taxonomy Chart

The chart below summarizes and concludes the taxonomy of the antitrust laws. Exploitative or collusive effects are indicated by (c) and exclusionary harm by (e).

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40. If the cost of the marginal unit is \$6 and M1 sells the unit for \$5, M1 loses money no matter what. Because it is difficult to observe marginal costs, courts have accepted average variable cost as a proxy.

Figure 14: Antitrust Taxonomy

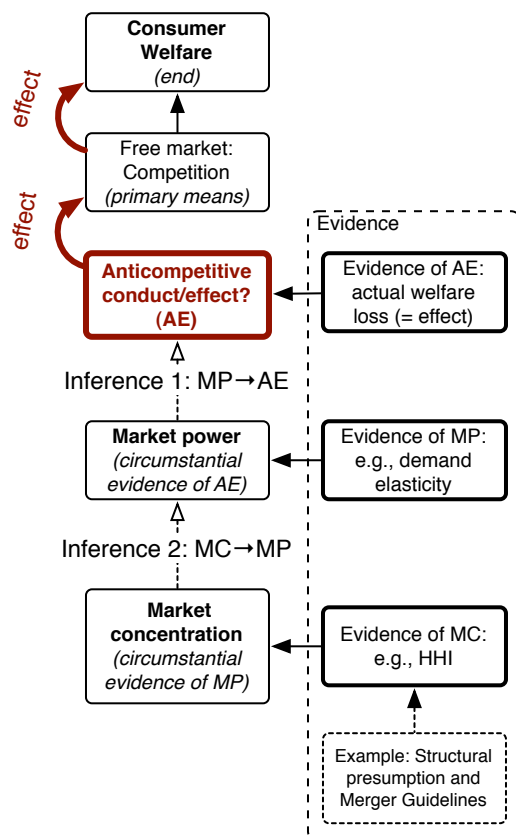


### III. Market Power Revisited

The stylized examples above assume that there is a defined market with no alternative distribution channels, no new entry, and stagnant technology. Since there are only two players at each level, M1 and M2 both have significant market power, and after M2 exits the market, M1 is a true monopolist. In reality, questions of market power are rarely ever that simple and defining the relevant antitrust market and assessing the degree of actual or likely power in that market is often the most critical issue for any rule of reason analysis under §1, the finding of monopoly power under §2, and the SLC test under §7. In practice, most antitrust cases turn on market definition – as a proxy for the power to exclude and the power over price.

Before we discuss the algorithm for defining a relevant antitrust market, it is helpful to put the market definition exercise in context.

Figure 15: Circumstantial proof, twice removed



Assuming that the ultimate goal of economic policy is to maximize consumer welfare (top box), the primary means of achieving it is the free market system, of which competition is a nec-

essary component. Antitrust protects and promotes competition and, thus, indirectly consumer welfare by providing agencies and private plaintiffs with the legal foundations to prosecute collusive and exclusionary conduct having net anticompetitive effects (AE). Ideally, there is direct evidence of AE, for example, the overcharges by the Vitamins cartel (collusion) or the elimination of Netscape through Microsoft's exclusionary practices. However, proof of AE is not limited to direct evidence. AE may be proven circumstantially by "motive and ability," i.e., incentive and market power (MP). For example, a showing of inelastic demand is evidence of market power. Combined with the incentive to exercise that power, a plaintiff in a merger case, for example, can prove that the merger is likely to substantially lessen competition. This circumstantial proof relies on the MP–AE inference. Again, in most cases, direct proof of market power will not be available. Few firms keep demand elasticity studies on file.<sup>41</sup> Thus, in most cases antitrust plaintiffs have to rely on a double inference, first from market concentration (MC) to market power, and then from market power to anticompetitive effects, i.e., MC–MP–AE. This inference is sometimes called a "structural presumption." In practice, the structural presumption means that a showing of few competitors and high market shares permits the double inference of anticompetitive effects from a merger or exclusionary conduct.<sup>42</sup>

It is only in the context of establishing the market concentration predicate, the launching pad for the double inference, that the market definition exercise becomes significant.<sup>43</sup> The motivation for using proxies and inferences is that the most relevant information, i.e., direct evidence of anticompetitive effects, is also usually the least accessible. Market concentration measures, e.g., the number of firms in a market and market shares, in contrast, are less relevant but (seemingly) easy to observe. The exercise is thus about *identifying the number of competing sellers* and assigning market shares to them. Competing sellers, in turn, are identified on the basis of *whether their products* are substitutes in the eyes of the consumers.

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41. Even though this is changing. Many firms now regularly estimate the own demand elasticity for their products and with the help of third party market observers (e.g., Gartner/Dataquest, Nielsen, etc.) attempt to estimate cross-elasticity of demand as well.

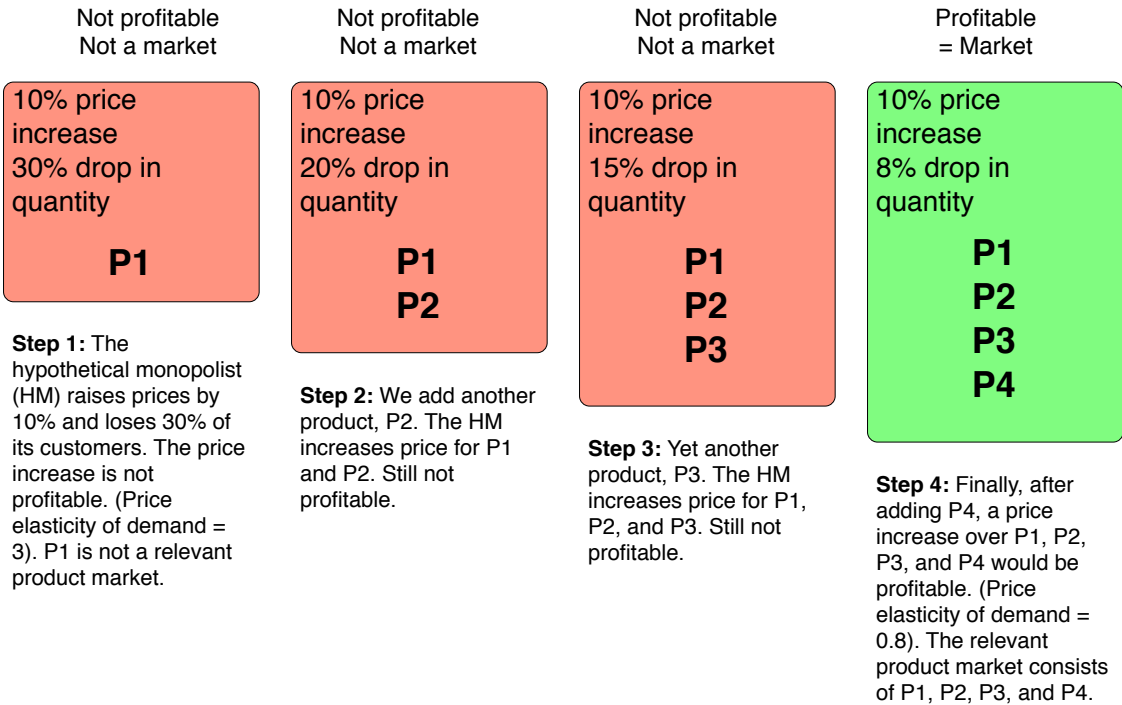
42. Economically, the structural presumption is based on the structure–conduct–performance (SCP) paradigm, where few competitors (structure) leads to oligopolistic behavior (conduct), which in turn results in consumer overcharges (performance) compared to benchmark of perfect or near-perfect, atomistic competition. In the 1970s the Chicago School began to challenge the conduct–performance inference, i.e., that oligopolistic competition leads to higher prices compared to atomistic competition.

43. Market definition is thus an evidence-driven, legal concept, even though it uses an economic algorithm aimed at approximating demand elasticity. This is why *economics* textbooks usually do not discuss market definition at all.

# 1. Relevant Product Market Definition

Frequently, the market definition inquiry is based on a variant of the “hypothetical monopolist plus price increase thought-experiment.” (HM+SSNIP).<sup>44</sup> Suppose that M sells small batch, high-end bourbon. What is the relevant product market? Is it “small batch, high-end bourbon,” in which case M would command a significant market share? Or is it “all spirits, excluding wine,” in which case M’s share of the market would be a tiny drop in a huge bucket, as the denominator increases? For antitrust purposes, a relevant product market is defined as that set of products for which a hypothetical monopolist could *profitably raise prices* for a non-trivial period of time.

Figure 16: HM + SSNIP Test; own elasticity ("How many customers did we lose?")



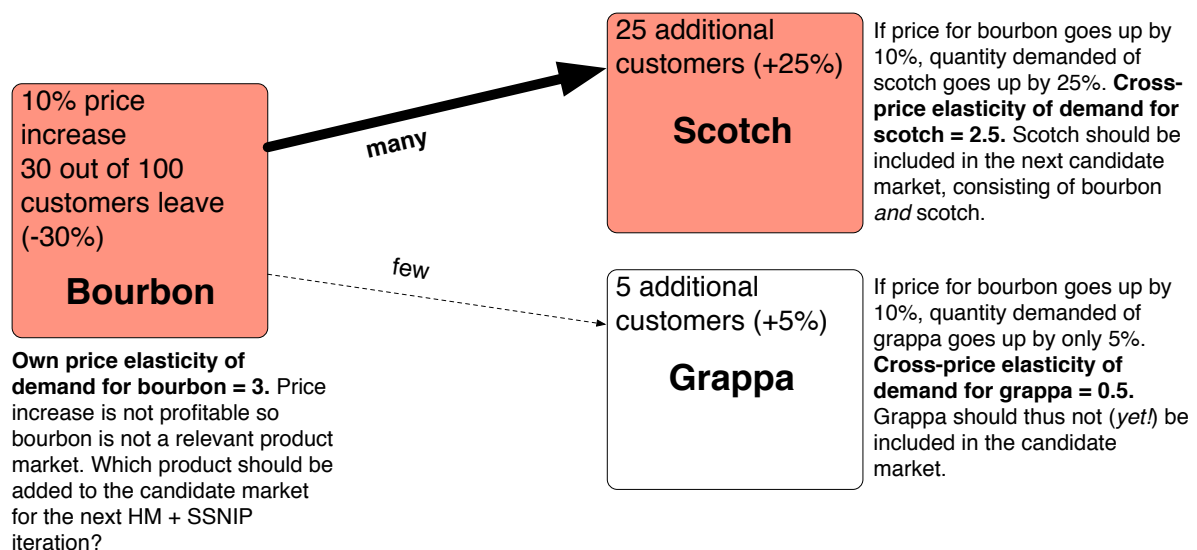
First, assume that M is the only seller of small batch, high-end bourbon (= P1) in the entire world. (Or assume that M owns every other seller of P1, which amounts to the same thing.) This step of the thought experiment transforms M into the hypothetical monopolist (“HM”). Second, assume that M raises the price for P1 by 10% for a non-trivial period of time, say one year. This second step is the SSNIP test, where SSNIP stands for “small, significant, non-transitory price increase.” Would M’s price increase be profitable? Not in the above example. In response to a

44. See in particular the influential 1992 DOJ/FTC Horizontal Merger Guidelines. [www.ftc.gov/bc/docs/horizmer.htm](http://www.ftc.gov/bc/docs/horizmer.htm)

10% price increase M sells 30% less of P1. As revenues = price \* quantity, the price increase is not profitable. What's next? We add another product, "all other bourbon" (= P2), and repeat the process. What if M was the only seller of small batch, high-end bourbon (= P1) and all other bourbon (= P2) and were to raise prices for P1 and P2 by 10%? Would that price increase be profitable? Again, it wouldn't. We add "Canadian Whiskey" (= P3) and repeat. Again, the price increase would be defeated by a relatively greater decline in quantity demanded. Finally, after adding "Scotch Whiskey" (= P4) the customers are cornered. They can no longer avoid a 10% price increase over P1–P4 because there are no viable substitutes. We now have an antitrust market.<sup>45</sup>

An obvious question at this point is how we know which products to add at each step? It is one thing for M to know how many sales were lost in response to a price increase (i.e., own price elasticity of demand). It is quite another to know *where* all those lost sales went (i.e., cross price elasticity of demand). That is a question that M alone cannot answer. It requires a broader study of the candidate market and the interaction of the various products in that space. Consider the example below.

Figure 17: Cross-elasticity ("Where did they all go?")



M is the only seller of bourbon (= P1) and raises price by 10%. He loses 30% of sales. For simplicity's sake, assume that 30% are represented by 30 customers, each of whom accounts for 1% of bourbon purchases. Looking at the candidate market broadly, we learn that of the 30

45. The example is hypothetical. In reality, substitution patterns for high-end spirits are much less clearly delineated. For example, there is surprisingly strong substitution between high-end bourbon and vodka.

bourbon defectors, 25 resort to buying scotch and 5 to buying grappa. We thus add scotch (= P2) for the next round of SSNIP. Ideally, one would always seek to add the product with the next highest cross-elasticity to the candidate market. In practice, however, due to incomplete information, this step is more art than exact science. As a result, many antitrust cases are tried on the basis of a range of candidate markets, e.g., “no smaller than high-end bourbon and no broader than all bourbon.”

## 2. Relevant Geographic Market Definition

The algorithm for determining the product market is similarly applied to determine the geographic boundaries of the relevant antitrust market. Suppose that M is the only seller of the set of products that make up the relevant product market (P1...Pn), as defined above, in the smallest possible territory T1 (for example, a city block), and that M raises prices for P1...Pn by 10%; would that price increase be profitable? If not, expand T1 by adding T2 (the entire city)...Tn (the county, the region, the state, the nation, the world) and repeat the 10% price increase until the price increase becomes profitable. The sum of the territories (T1...Tn) for which the price increase would be profitable constitutes the geographic market.

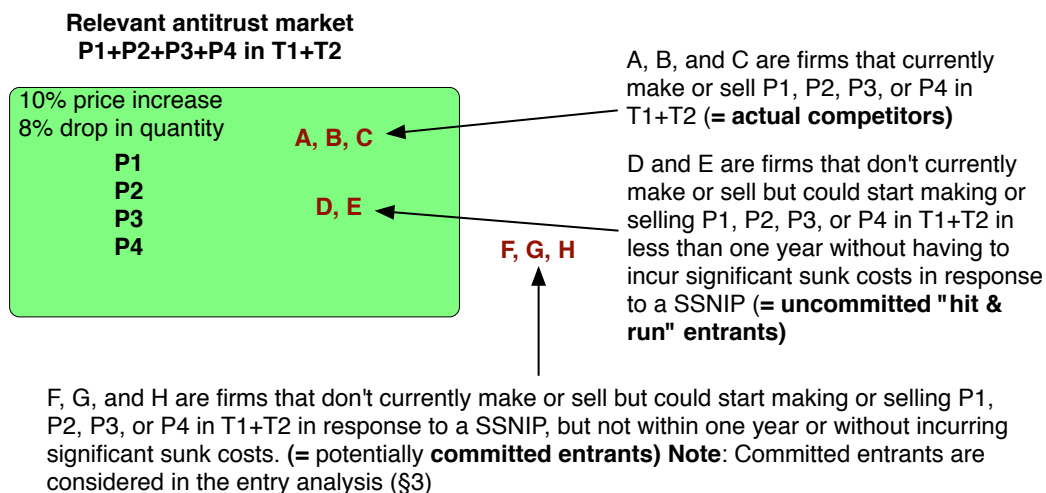
## 3. Market Participants and Market Shares

Once the antitrust market is properly defined both in terms of products and geographies, we can determine *how many firms participate in that market*. Market participants include firms that are presently manufacturing products and firms that could enter the market quickly, without having to incur significant capital costs upon exit.<sup>46</sup>

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46. These firms are called “uncommitted entrants.” Uncommitted, because they don’t have to invest in specialized assets, and are therefore likely to be “hit and run” players in the relevant market, should prices go up.

Figure 18: Market participants ("Who is in the relevant market?")



Finally, we can now calculate the *market shares* of the participating firms on the basis of revenues (that is, dollars/year), capacity (that is, maximum output of units/year), or units sold and plug those numbers into one of formulas for determining market concentration indices, which will be discussed below.

As a rule of thumb, if a firm controls < 30% of a relevant market, it has usually no significant market power for antitrust purposes, 30%-60% are a gray area, and anything > 60% is considered an indication of significant market power. Monopoly power in the context of §2 usually requires a > 60% market share. Note that this sketch provides by no means a complete picture. The possibility of entry, the ease of supply-side substitution, and changes in technology may significantly alter the share-based estimate of market power.

#### 4. Market Concentration Measures

A simple market concentration measure is to add the market shares of the top four firms, sometimes referred to as the “C4” index. The maximum C4 score is 100, the minimum is 4. A market with a C4 score of 75 is highly concentrated, whereas a market with a C4 score of 25 is not. The problem with the C4 measure is that it fails to capture relative differences among the top four firms. Consider the following example.

Figure 19: C4 Index

	A	B	C	D	C4
M1	25%	25%	25%	25%	100
M2	97%	1%	1%	1%	100

M1 and M2 both have a C4 index of 100. However, the structure of M2 is vastly less competitive than that of M1. M2, for all intents and purposes, is a monopoly, because firm A controls 97% of the market and B, C, and D are fringe players without sufficient capacity to constrain A in any meaningful way. In contrast, M1 may well be a highly competitive (if concentrated) market. Simply adding the shares of the top 4 firm fails to capture this critically important difference.

The Herfindahl-Hirschmann Index (HHI) first squares and then adds the market shares of all firms in the relevant market. As a result the HHI emphasizes the *relative significance* of high market shares and thus captures the difference between M1 and M2. (Squaring the market share increases the significance of high market shares relative to smaller shares.)

Figure 20: Same market structure, different C4 and HHI

	A	B	C	D	C4/HHI
M1	25%	25%	25%	25%	100
<b>M1 (HHI)</b>	<b>625</b>	<b>625</b>	<b>625</b>	<b>625</b>	<b>2,500</b>
M2	97%	1%	1%	1%	100
<b>M2 (HHI)</b>	<b>9,409</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>9,412</b>

The higher the HHI, the more concentrated the market. HHIs range from 10,000 ( $100^2 * 1$ ) to 100 ( $1^2 * 100$ ). In the table above, the HHI reflects the difference in the relative size of the firms that the C4 index fails to capture.

For the same reasons, the C4 index does not properly distinguish between competitively relevant and competitively irrelevant *changes* in the market structure. Consider the following two mergers, one between the market leaders A and B and another between A and a fringe player E.

Figure 21: A acquires B; A acquires E. Same change in C4.

Firm	pre	post	$\Delta C4$
<b>A</b>	40%	70%	
<b>B</b>	30%	-	
C	20%	20%	
D	9%	9%	
E	1%	1%	
<b>C4</b>	<b>99</b>	<b>100</b>	<b>1</b>

Firm	pre	post	$\Delta C4$
<b>A</b>	40%	41%	
B	30%	30%	
C	20%	20%	
D	9%	9%	
<b>E</b>	<b>1%</b>	-	
<b>C4</b>	<b>99</b>	<b>100</b>	<b>1</b>

In both cases, the change in the C4 index (i.e.,  $\Delta C4$ ) is 1. However, the merger between #1 (A) and #2 (B) completely changes the industry by creating a dominant firm with a market share more than three times that of the next closest competitor (C), whereas the merger between A and E essentially leaves the market structure unaffected. Once again, the C4 index fails to reflect this important difference.

The HHI index, in contrast, properly reflects that the anticompetitive potential of the A–B transaction far outweighs that of the A–E transaction.

Figure 21: A acquires B; A acquires E. Different change in HHI

Firm	pre	post	$\Delta HHI$
<b>A</b>	40%	70%	
<b>B</b>	30%	-	
C	20%	20%	
D	9%	9%	
E	1%	1%	
<b>HHI</b>	<b>2,982</b>	<b>5,382</b>	<b>2,400</b>

Firm	pre	post	$\Delta HHI$
<b>A</b>	40%	41%	
B	30%	30%	
C	20%	20%	
D	9%	9%	
<b>E</b>	<b>1%</b>	-	
<b>HHI</b>	<b>2,982</b>	<b>3,062</b>	<b>80</b>

The  $\Delta HHI$  (A–B) is 30 times greater than  $\Delta HHI$  (A–E), which appropriately reflects the much greater likelihood of the merger between A and B to substantially lessen competition.

The 1992 Merger Guidelines use a combination of (i) post merger HHI and (ii) increase in HHI (i.e.,  $\Delta HHI$ ) to determine whether a merger is presumably lawful, warrants significant scrutiny, or should be presumed unlawful.

Figure 22: The 1992 Guidelines Grid

$\Delta$ HHI / post HHI	< 50	50 - 100	> 100
< 1,000 low	no challenge	no challenge	no challenge
1,000- 1,800 moderate	no challenge	no challenge	high scrutiny
> 1,800 high	no challenge	high scrutiny	presumed unlawful

In this grid, the rows list the three post-merger HHI ranges: low, moderate, and high concentration and the columns the increase in HHI.<sup>47</sup> The HHI grid as contemplated by the guidelines is far more sensitive than real-world practice. Mergers in the 2,000–3,000 range routinely get approved by both the FTC and the DOJ. That said, the methodology makes sense, and for purposes of triggering the double inference, some measure of post-merger HHI combined with the HHI increase from the acquisition is a useful proxy for anticompetitive effects.

## 5. Putting it All Together: An Example

Here is an example to illustrate the three conceptual steps from market definition to market concentration.<sup>48</sup> Suppose that A, B, C and D make copper wires, which customers use for underground wiring. E, F, G, and H make aluminum wires, which customers use for above-ground wiring. Each firm sells 25 units/year, and there are no other makers of copper or aluminum wires. A proposes to acquire B. If prices for copper went up after the merger, customers would not switch from copper to aluminum. But E, F, and G would shift capacity from aluminum to copper (15, 10, and 5 units/year, respectively). The capacity switch would be quick and costless.

*Step 1:* What's the relevant market? Copper wires, because aluminum wires are no substitutes (focus on the demand side).

*Step 2:* Who are the market participants? A, B, C, D as actual producers of copper wire and E, F, G as uncommitted entrants (focus on the supply side).

*Step 3:* What's the market concentration? The total size of the copper wire market is 130 units/year (A=25, B=25, C=25, D=25, E=15, F=10, G=5). The combined share of A and

47. I've seen this grid first in Randy Picker's (University of Chicago) lecture slides.

48. The example is based on Baker, *Market Definition: An Analytical Overview* (2006). Another excellent article on market definition is Fisher, *Market Definition: A User's Guide*, in: Finnish Competition Authority, *Workshop on Market Definition: Compilation of Papers*, Helsinki 2002, pp. 38-54.

B is 38%. The post-merger HHI is 2,426 ( $\Delta 740$ ).

## 6. Theory and Practice

While theoretically appealing, it is at best difficult and usually impossible to apply the HM+SSNIP test to real world products in any rigorous fashion. Imagine a proposed merger between the only two cable networks with dedicated SF subscription movie channels. Is there a market for “SF subscription movie channels?” For some viewers, romantic comedies or action films are unlikely to be acceptable substitutes for *Battlestar Galactica*, *Heroes*, and the like. These viewers would be willing to pay a higher post-merger price. Applying the SSNIP + HM test *to them* would result in a narrow market definition and a likely challenge to the merger. The problem is that the market to be proved is assumed implicitly in one of the premises of the argument, because there will almost always be customers with strong brand loyalties or narrow bands of preferences. But what if 95% of the viewer population doesn’t care? What if these 95% are perfectly content to catch the occasional *Star Wars* rerun on any of the other channels? Which viewer group should serve as the benchmark to establish patterns of substitution or the lack thereof – the loyalists or the average customer? There is no principled way to answer this question, but there is a legal mandate. Section 7 of the Clayton Act requires a “substantial” lessening of competition, which strongly suggests that the unavoidable disappointment of brand loyalists should, as a legal matter, not be sufficient. The hypothetical monopolist test works best with homogenous products, such as sugar, corn syrup, aluminum, oil, gas, coal, etc., where there are established patterns of industrial consumption and “natural experiments” that provide evidence for real-world substitution behavior (for example, a steep increase in the price of oil). Analytically, it is always preferable to ground the analysis in the question that ultimately matters, namely whether the collusive or exclusionary conduct in question (i) lessens competition and, as a result, (ii) increases the defendants’ ability to exploit consumers, measured against a world without the conduct in question.

## IV. Where to Go From Here?

This little primer is intended to add the “missing first chapter” to the many excellent antitrust textbooks. My pick for “best textbook” is Gavil, Kovavic, Baker, *Antitrust Law in Perspective: Cases, Concepts and Problems in Competition Policy*, 2d. Ed. (2008). For those interested in an integrated U.S. and EU perspective, I recommend Elhauge & Geradin, *Antitrust Law and Economics* (2007). As to basic microeconomics, my favorite text is Cabral, *Introduction to Industrial Organization* (2000). It is impressive how much ground Cabral covers in less than 300 pages of crisp, lucid prose. Another excellent choice is Landsburg, *Price Theory*, 7th ed (2007). Helpful internet resources are the ABA’s antitrust online journal “Antitrust Source” ([www.antitrust-source.com](http://www.antitrust-source.com)), the Federal Trade Commission’s website at [www.ftc.gov](http://www.ftc.gov), the Antitrust Review ([www.antitrustreview.com](http://www.antitrustreview.com)), and the Antitrust Institute ([www.antitrustinstitute.org](http://www.antitrustinstitute.org)), which maintains a useful list of links, sorted by political affiliation.

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