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ANTITRUST AND THE COSTS OF MOVEMENT

HERBERT HOVENKAMP*

Antitrust is concerned about the structure of markets as well as with the bargaining that goes on within them. As a result, the absolute cost of re-deploying resources is as important as the transaction costs of arranging for their movement. Building a new plant, refitting a facility from the production of one product to another, or moving inputs from point A to point B may all involve numerous transaction costs. But they also involve the nontransactional costs of the design, engineering, or transportation that such movement requires.

What makes antitrust policy relevant is not merely transaction costs but also the costs of choices about initial resource deployments and subsequent movement. At various times in its history, antitrust policy has given greater or lesser weight to the role of transaction costs, on the one hand, rather than the absolute costs of resource movement, on the other. For example, the antitrust structuralism that was ascendant in the 1960s and earlier tended to see the absolute costs of moving resources as governing many elements of economic performance, and transactions as feeble instruments for making corrections. At the other extreme, the orthodox Chicago School tended to see markets as self-correcting, which is another way of saying that transacting could undo most of the mischief that inefficient initial deployments may have brought about. The need for government intervention was, accordingly, rare. In between the extremes are several possibilities, including “Post-Chicago” and “Neo-Chicago” as well as “Neo-Harvard” approaches. Each of these reflects a set of beliefs about the kinds of costs that are involved in moving resources from a current, inferior position to a superior one or, in some cases, in preventing resources from being deployed in an inferior position in the first place.

Following the introduction in Part I, Part II briefly examines structuralism as a theory underlying antitrust enforcement. The premise of structuralism was not high transaction costs, but rather the high costs of resource movement

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generally. Part III turns to barriers to entry or rival expansion, looking particularly at the differing definitions provided by Harvard and Chicago School economists and showing why the Harvard definition is superior for antitrust purposes. Part IV contains a brief discussion of antitrust's two principal tests for welfare, total welfare and consumer welfare, and how they relate to our assumptions about the costs of movement. Typically implicit in the argument for a general welfare test is that producer gains from a practice will move to consumers, provided that markets are competitive and other costs of movement do not serve to limit their flow. Implicit in defenses of a consumer welfare test is strong doubt that this will occur.

Finally, Part V looks at various antitrust practices and considers how both transaction costs and the more general costs of movement might play a role in analyzing them. First, we need to rethink current antitrust doctrine about refusal to deal in dominated networks, which are networks that both dominate the markets in which they operate and are themselves dominated by a single firm. Second, problems related to vertical integration and product complementarity are particularly prone to cost of movement analysis, particularly in cases involving asset specificity and the possibility of double marginalization. Finally, this essay examines some specific problems of pricing and vertical control, looking in particular at the wide range of theoretical attacks and defenses of so-called loyalty discounts and bundled discounts. In particular, it faults the drawing of broad conclusions from models with restrictive assumptions and untested conclusions about the range of rivals' or customers' responses.

I. INTRODUCTION: RESOURCE MOVEMENT AND THE "SCHOOLS" OF ANTITRUST

Writing in the mid-1970s, Phillip Areeda and Donald Turner (1) dismissed claims for antitrust goals other than economic efficiency, such as fairness, as being "vagrant";¹ (2) were fairly obsessed with error costs and problems of administration in the recognition of exclusionary practices;² and (3) discussed and rejected the then-existing more adventuresome theories of above cost strategic entry deterrence, which, notwithstanding successes in modeling, were not empirically robust and were not administrable by antitrust tribunals.³ The debate that ensued between Areeda and Turner, on one side, and Williamson, Baumol, and Scherer, on the other, underscored the critical but necessarily limited role that economic assumptions play in antitrust analysis. Areeda and

¹ 1 PHILLIP AREEDA & DONALD F. TURNER, ANTITRUST LAW ¶ 109a (1978); *see also id.* ¶¶ 105–109.

² *Id.* ¶¶ 713–714.

³ *Id.* ¶ 714.

Turner's critics consistently advocated more complex models of above cost strategic behavior that they thought worthy of consideration. Areeda and Turner consistently rejected these, largely on administrability grounds.⁴

In those same 1978 volumes Areeda and Turner firmly rejected the "leverage" theory of tying arrangements and other vertical practices, in a tradition that "Neo-Chicago" firmly claims, although with some qualifications.⁵ Areeda and Turner also took a position closely resembling the Neo-Chicago position on vertical integration by the monopolist, completely rejecting structuralist hostility and generally developing a highly benign set of antitrust rules that the courts have followed.⁶ Uncharacteristically, however, they also advocated a purely structural, "no fault" theory of unlawful monopolization under which the government, but not private parties, could obtain divestiture or other structural re-ordering of persistent monopolies, without any proof of anticompetitive conduct.⁷

The Neo-Chicago assessment of dominant firm exclusionary practices tracks Areeda and Turner's own lack of confidence in theoretical economics to help "juries, courts, and regulators to reason their way to the right answer."⁸ Nevertheless, economics has an essential role to play. The task for antitrust is to distinguish what is robust and administrable from that which is merely interesting and provocative. In order to do antitrust one must get economics away from the blackboard.

⁴ See Oliver E. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 YALE L.J. 284, 292 (1977); Phillip E. Areeda & Donald F. Turner, *Williamson on Predatory Pricing*, 87 YALE L.J. 1337, 1348 (1978); Oliver E. Williamson, *Williamson on Predatory Pricing II*, 88 YALE L.J. 1183 (1979); William J. Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 YALE L.J. 1, 4–5 (1979); see also William J. Baumol & Robert D. Willig, *Fixed Cost, Sunk Cost, Entry Barriers, and Sustainability of Monopoly*, 96 Q.J. ECON. 405 (1981); F.M. Scherer, *Predatory Pricing and the Sherman Act: A Comment*, 89 HARV. L. REV. 869 (1976); Phillip Areeda & Donald F. Turner, *Scherer on Predatory Pricing: A Reply*, 89 HARV. L. REV. 891 (1976); F.M. Scherer, *Some Last Words on Predatory Pricing*, 89 HARV. L. REV. 901 (1976). The debate is recounted in 3A PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 736 (3d ed. 2008); Paul L. Joskow & Alvin K. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 YALE L.J. 213, 253–54 (1979).

⁵ 2 AREEDA & TURNER, *supra* note 1, ¶ 347a, b (repudiating leverage theory of tying). On qualifications, see David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. CHI. L. REV. 73, 75–78 (2005).

⁶ 3 AREEDA & TURNER, *supra* note 1, ¶ 725b, c (repudiating leverage theory of vertical integration); *id.* ¶ 724 (rejecting hostile view of vertical integration and finding it procompetitive in nearly all instances); *id.* ¶ 725c (accepting elimination of double marginalization as procompetitive rationale for vertical integration when downstream market is not competitive).

⁷ See *id.* ¶¶ 618–623. This proposal paralleled one offered by President Jimmy Carter's National Commission to Review Antitrust Law and Procedures. See AN INTELLECTUAL HISTORY OF AMERICAN ANTITRUST LAW, ch. 10 (Daniel A. Crane & Herbert Hovenkamp eds., forthcoming 2012).

⁸ Evans & Padilla, *supra* note 5, at 80.

Those advocating a Neo-Chicago approach to antitrust emphasize several points. First, antitrust rules should be “assessed on their consequences in terms of efficiency.” Second, “Distinguishing procompetitive from anticompetitive actions with certainty is impossible.” Third, socially desirable antitrust rules should “minimize the expected cost of errors” from both over- and under-identifying correctable anticompetitive situations. Fourth, an antitrust policy aware of the problems associated with error costs would be based on “current economic knowledge and experience” rather than the more adventuresome forms of economics, such as refined game theory showing that certain practices might be anticompetitive.⁹ Neo-Chicago is particularly critical of the Post-Chicago willingness to accept “possibility theorems” as an alternative to more rigorous technical or empirical analysis.¹⁰ The fact that something can be modeled does not mean that it has important policy implications or, for that matter, that the modeled result occurs frequently or ever obtains at all.

To this I would add one additional point: Antitrust must be aware that the cost of moving resources can be as important as the particular place where they land, and that these costs are not limited to the cost of bargaining. Antitrust’s economic doctrine is based on a set of assumptions about the ease with which resources move through the economy. In a healthy economy resources are put to their best use. Further, they move around continuously as people die and new ones are born, tastes and needs change, productive assets are worn out or destroyed and replaced, innovations are created and brought to the market, and firms exit or enter. Both individuals and many institutions move resources. Resource movements occur through orderings of the resources a person already has based on individual preferences, market exchange, government and democratic voting processes, family gifting, inheritance, and theft, to name a few. One feature of classical and neoclassical economics is their largely exclusive concern with markets and individual preference orderings as movers of resources. Resource movement theorems based exclusively on individual preference orderings and markets, such as the First Welfare Theorem, show that if resources can be costlessly reassigned through trading to their

⁹ *Id.* at 74–75 (developing all four propositions).

¹⁰ According to Evans and Padilla:

The post-Chicago literature is a collection of what we call “possibility theorems.” In the vertical foreclosure strand of the literature, these theorems all begin with the assumption that vertical foreclosure does not generate any benefits such as reductions in production costs and transaction costs, or improved convenience for consumers. The theorems are based on further assumptions about demand, cost, and firms’ strategic interactions. Finally, the theorems show that a practice reduces social welfare if specific parameters of the model (elasticity of demand, the magnitude of fixed costs, etc.) fall within a particular range of values. But they are of limited practical value because the data critical to deciding whether reality fits the models is typically unavailable.

Id. at 79–80.

most valuable uses the resulting economy will be Pareto efficient.¹¹ Under similar assumptions the same thing cannot be shown of democratic voting, gifting, inheritance, or theft.

In the real world resources do not automatically move to their best uses. This is because the cost of moving resources is sometimes greater than the resulting gains. In general, the cost of moving resources is what makes legal policy relevant, including antitrust policy. Coase famously argued this proposition with respect to transaction costs.¹² One of Coase's conclusions was that transaction costs are distinctive in the sense that the state can make policy to compensate for high transaction costs, even though it cannot do very much about the larger costs of moving resources. "If we move from a regime of zero transactions costs to one of positive transactions costs, what becomes immediately clear is the crucial importance of the legal system."¹³ The proper role of legal policy, in those cases where legal policy is necessary at all, is to take the absolute costs and values of moving resources as a given, while using the legal system to compensate for high transaction costs by assigning rights the way they would be assigned if transactions costs did not interfere with efficient bargaining.

But in one important sense Coase's view was too limited: One can say precisely the same thing about the nontransactional costs of moving resources, and also about the way resources are deployed in the first place. If they were initially deployed in their most efficient uses then neither the cost of transacting for their movement or of actually moving them would be necessary. Just as high bargaining costs hinder the efficient deployment of resources, so too the high costs of initial mis-assignments are a hindrance.

Prior to Coase, Arthur Cecil Pigou had argued that the cost of moving resources drives policy decisions about the efficacy of moving them, but he did not limit his observations to transaction costs as such; nor did he relate them to the justification for a legal system. Pigou's conception of the costs of movement was much broader than "transaction" costs and included *any* cost of getting a resource from one use to another.¹⁴

Pigou was certainly right on one point: The cost of moving resources is hardly limited to transaction costs. For example, the cost of navigating boats

¹¹ See, e.g., Kegan Teng Kok Tan, *The First Fundamental Theorem of Welfare Economics* (2008), available at <http://www.math.uchicago.edu/~may/VIGRE/VIGRE2008/REUPapers/Tan.pdf>.

¹² R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

¹³ R.H. Coase, *The Institutional Structure of Production*, 82 AM. ECON. REV. 713, 717 (1992) (Alfred Nobel Memorial Prize Lecture in Economic Sciences delivered Dec. 9, 1991).

¹⁴ A.C. PIGOU, *THE ECONOMICS OF WELFARE* 138–39 (4th ed. 1932); see Herbert Hovenkamp, *The Coase Theorem and Arthur Cecil Pigou*, 51 ARIZ. L. REV. 633, 636–40 (2009).

down a river might be much less if a bottleneck did not force captains to portage around it. However, if the costs of dredging the river are greater than the gains, then this obstacle will remain. This is not fundamentally a transaction cost problem because the same thing applies even if the same person owns both the shipping company and the river. Positing that a third party owns the riverbed at the bottleneck does not change the basic story. To be sure, the navigators would have to reach a bargain with the land owner, so transaction costs might interfere with dredging even if it is otherwise cost justified. Nonetheless, questions about the social efficacy of dredging cannot be reduced to these transaction costs; they must also consider the absolute costs of dredging in relation to the gains. For example, if the cost of dredging the river were \$1 million while the transportation value of dredging is only \$800,000, the river will not be dredged. However, if one of these numbers were to change, then the situation might be different. For example, the construction of a large plant downriver with an important upriver source of supply might increase the transport value of dredging to \$2 million, and suddenly dredging the river acquires a positive value.

In the Coasean analysis of this situation the role of legal policy is to compensate for high costs of transacting, but the nontransactional values are generally assumed as given. These costs are generally treated as part of the laws of nature or as valuations that depend on prior economic decisions that are not sufficiently relevant to the currently contemplated decision to warrant concern.

For example, in Coase's famous account of the physician and confectioner, whose professional lives are joined together by a party wall, Coase observes how bargaining costs might determine where the right in question will be assigned.¹⁵ However, he is not particularly interested in the question of why the two parties established their businesses around a party wall in the first place, and whether legal policy should have done anything about it. For example, a zoning statute might have prevented the confectioner's noisy mortar from being operated in close proximity to a physician's office. In that case this particular cost of movement could have been avoided.

Of course, the initial assignment of resources can also be subject to bargaining. Costless bargaining by everyone affected and in some ex ante position could result in efficient initial assignments as well. Even an individual's nonmarket preferences could be more efficient if made subject to cost free bargaining. For example, if I value chartreuse as the next color for my house but my aggregated neighbors value a more subtle color by a greater sum,

¹⁵ *Sturges v. Bridgman*, LR 11 Ch. D. (Eng.) 852 (1879) (discussed in R. H. Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 26-28 (1959); Coase, *Problem of Social Cost*, *supra* note 12, at 8-10).

perhaps they could purchase the right from me before I began painting. We might respond by a legal rule that assigned the right in the first instance to my neighbors, or perhaps that gave my neighbors an opportunity to bid against me with respect to all of my personal choices that impose externalities. This reasoning soon takes us into a place that Coase would almost certainly not want to go, which is a society in which virtually every decision is subject in the first instance to a kind of objectively determined cost-benefit analysis.

Nevertheless, an important purpose of the legal system is to ensure that resources are deployed efficiently in the first instance. For example, suppose that a resource currently at point A would have a better use at point B, increasing value by \$80. Two different things might hinder the resource's movement, \$100 in bargaining costs or \$100 in transport costs. *Either* of these would prevent the resource from moving to the more valuable use. If the problem is the transaction costs, the Coasean solution would be to assign the resource to point B in the first place. Precisely the same thing is true of the purely non-transactional transport costs, however. Welfare would be improved if the resource had initially been assigned to point B rather than point A.

One place where the *non*-transaction costs of moving resources are important is when we are not talking about markets at all but rather about the "internal" preference orderings of a single economic actor. An excessive focus on transaction costs tends to obscure the fact that many resource movements do not involve transaction costs for the simple reason that they do not involve transactions. This can be of special relevance when we consider firm organization and unilateral conduct. To be sure, firms live in markets, but they also make *non*-transactional choices about structure and choice of technology. To the extent these choices are inframarginal they do not affect the boundaries of the firm.¹⁶

Antitrust law is concerned mainly with the way that resources are moved by means of markets. In some cases, however, it is also concerned about resource allocations made internally by business firms, including but not limited to such things as choice of technology or distribution mode. Antitrust would not have a place in an economy where resources moved costlessly and without any frictions from lower value to higher value uses. All markets would be competitive, production would be optimized, as would the satisfaction of consumer wants. With zero costs of movement monopolies would not exist because the losers from monopoly could substitute without cost and would do so until all returns were equalized. The market would become efficient and the

¹⁶ At the margin, the firm's boundaries are determined by the point of equality between the marginal cost of internal production and the marginal cost of external procurement. See R.H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386 (1937). But it is hardly the case that every decision about the structure of production lies on this margin.

parties would divide up the gains, although possibly in a generally indeterminate fashion. That is to say, there would be wealth transfers and some of these might strike some people as unappealing, but there would not be any efficiency losses.

The trick for the monopolist is to make such moves unlikely to occur, which will happen if the cost of movement exceeds its value. The monopolist can certainly do this by creating situations in which bargaining costs restrain a market from moving toward a competitive equilibrium. But it can accomplish the same thing by investment in resources for which the absolute cost of movement, quite aside from transaction costs, exceeds the gains. Commonly, it will do some combination of the two. Indeed, in situations where the absolute costs of moving resources to a competitive position is relatively low in relation to value, the imposition of transaction costs alone will often not be sufficient. For example, cartels are likely to be unstable in markets that are not structurally conducive to collusion to begin with. Specialized plants and engineering constraints on entry or output have at least as much to do with cartel success as do the transaction costs of cartel management.

II. STRUCTURALISM

“Structuralism” generally refers to the industrial organization and antitrust policy that we associate with the Harvard economics department and law school from the 1930s through the early 1960s.¹⁷ It showed up in antitrust policy in the structure-conduct-performance (S-C-P) paradigm, and aggressive antitrust enforcement heavily preoccupied with structural manifestations of monopoly, as well as structural remedies such as divestiture. Under the S-C-P paradigm market structure dictates conduct and conduct dictates performance. As a result, conduct drops out as a variable of interest. In the words of one follower, “Under the structure theory behavior is irrelevant: the law proscribes monopoly itself and not merely monopolization; it reaches the fact of market power rather than the manner of its exercise.”¹⁸

The most prominent characteristic of structuralism was its belief that resources would not flow freely from lower to higher value uses because of numerous market impediments. Some of these impediments could be characterized as transactions costs, although most could not be. The lingering effects of structuralism showed up in Areeda and Turner’s 1978 proposal for a law of “no fault” monopolization, with divestiture available in actions brought by the

¹⁷ See Herbert Hovenkamp, *United States Competition Policy in Crisis: 1890–1955*, 94 MINN. L. REV. 311, 346–66 (2009).

¹⁸ G.E. HALE & ROSEMARY D. HALE, MARKET POWER: SIZE AND SHAPE UNDER THE SHERMAN ACT 89 (1958).

government.¹⁹ The trigger for them was at least five years of substantial monopoly, indicating that resources were unlikely to flow toward a more competitive equilibrium. Areeda and Turner advocated a test under which persistency could not be established if the monopoly was less than five years old. It could be proven, however, if the duration of the monopoly was between five and ten years, and would be presumed if the monopoly had existed more than ten years.²⁰

One characteristic of both antitrust “structuralism” and the historical Chicago School is that both tended to minimize the role of transaction costs, while focusing on the broader, non-transactional costs of moving resources from one spot to another. The two schools came at this from opposite positions. The structuralists tended to emphasize such things as structural barriers to entry, market imperfections such as information costs or product differentiation that impaired resource movement, and what they saw as the inherently exclusionary impact of practices such as vertical integration.²¹ Because conduct was unimportant, transaction costs were not particularly important either.

In very sharp contrast, the Chicago School was much more strictly neoclassical, seeing resources as moving with little to constrain them from positions of lesser to greater value. As a result, members of the Chicago School tended to see monopoly as relatively rare and the opportunities for increasing or extending it as rarer still. A premise of the structuralist preference for structural relief, such as dissolution of dominant firms or breakups of mergers, was that markets were poorly equipped to correct for these things on their own. By contrast, the Chicago School tended to prefer no intervention at all, other than perhaps fines or other penalties to take away the profitability of egregious conduct.²²

Today, structuralist orthodoxy and the S-C-P paradigm are dead and not likely to rise again. The “orthodox” Chicago School is certainly not as dead, but it has not produced the kind of excitement that it did forty years ago. It has become commonplace to say that the Harvard School has gradually moved to the right and the Chicago School to the left, and that the two are now almost indistinguishable on many issues,²³ and there is certainly much truth to such

¹⁹ See discussion *supra* text accompanying note 7.

²⁰ See 1 AREEDA & TURNER, *supra* note 1, ¶ 623d.

²¹ *E.g.*, JOE S. BAIN, INDUSTRIAL ORGANIZATION 223–35, 251–52, 372–86 (2d ed. 1968); see Herbert Hovenkamp, *The Law of Vertical Integration and the Business Firm: 1880–1960*, 95 IOWA L. REV. 863 (2010).

²² See HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 17.2 (4th ed. 2011); William M. Landes, *Optimal Sanctions for Antitrust Violations*, 50 U. CHI. L. REV. 652 (1983).

²³ *E.g.*, HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION 35–38 (2006); William E. Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for*

statements. In addition, the last three decades have seen a proliferation of attempts at some kind of middle position. Within economics one speaks of new industrial economics or transaction cost economics or even New Institutional Economics. Within antitrust policy one speaks of Post-Chicago or Neo-Chicago antitrust.²⁴

Without detracting from the importance or usefulness of these names or the distinctiveness of their adherents' views, one can observe that all of them have some important characteristics in common. First, nearly all of them reject the strong form of structuralism that characterized the S-C-P paradigm and that saw significant barriers to resource mobility. Second, all of them also tend toward the belief that the orthodox Chicago School exaggerated the ease with which resources move through the economy. Third, transaction costs have assumed greatly increased importance in competition policy analysis, although other costs of movement continue to count as well. The significance of transaction cost analysis in antitrust has been to re-introduce a stronger conception of the costs of movement, in general disagreement with the orthodox Chicago School position. But the costs are different from the absolute costs contemplated by the S-C-P paradigm.

III. BARRIERS TO ENTRY

A prerequisite for market power is high costs of movement, which refers mainly to the engineering and transport costs of redeploying resources, although power can also be created or enhanced by high transaction costs. On the demand side, market power exists when it is cheaper for consumers to pay the price than to go elsewhere *and* the price is significantly above cost. On the supply side, there must be costs of movement that limit the ability of potential rivals to compete with the firm or firms in question.

One of the great accomplishments of structuralism was Joe S. Bain's highly influential studies of entry barriers and the definition that he gave to them.²⁵

Dominant Firm Conduct: The Chicago/Harvard Double Helix, 2007 COLUM. BUS. L. REV. 1, 32, 38–39 (2007); Alan J. Meese, *Debunking the Purchaser Welfare Account of Section 2 of the Sherman Act: How Harvard Brought Us a Total Welfare Standard and Why We Should Keep It*, 85 N.Y.U. L. REV. 659 (2010). Then-Professor Posner made the observation already in the late 1970s. See Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 925 (1979) (“[T]he distinctions between these schools have greatly diminished.”).

²⁴ Daniel A. Crane, *Chicago, Post-Chicago, and Neo-Chicago*, 76 U. CHI. L. REV. 1911 (2009).

²⁵ JOE S. BAIN, BARRIERS TO NEW COMPETITION (1956); see also BAIN, INDUSTRIAL ORGANIZATION, *supra* note 21, at 210–66. Bain was a Harvard-trained economist and strongly associated with the Harvard School of the 1950s and 1960s; however, he spent virtually his entire academic career at the University of California at Berkeley. See Herbert Hovenkamp, *United States Competition Policy in Crisis*, *supra* note 17, at 348; Herbert Hovenkamp, *Introduction to the Neal Report and the Crisis in Antitrust*, COMPETITION POL'Y INT'L, Spring 2009, at 217, 219–22 [hereinafter *Neal Report Introduction*].

Bain defined the conditions of entry as determining the robustness of potential competition, measured by “the advantages of established sellers in an industry over potential entrant sellers, these advantages being reflected in the extent to which established sellers can persistently raise their prices above a competitive level without attracting new firms to enter the industry.”²⁶ This approach enabled Bain to give quantitative measures of entry barriers on a scale ranging from zero, in a situation where any incumbent price above cost would induce entry, to some very high number. It also enabled Bain to distinguish factors such as barriers “realized ex post or anticipated ex ante” and to speak of the minimum scale needed for entry, the sufficiency of entry to bring prices back to the competitive level, and to rank outsider firms by their ability to attain entry.²⁷ Bain did something that Neo-Chicago scholars heartily embrace, which is a great deal of empirical testing of his assumptions.²⁸ Notwithstanding the many critiques of Bain’s conception of entry barriers, it remains highly influential and is largely incorporated in the 2010 Horizontal Merger Guidelines issued by the antitrust enforcement agencies, as well as the predecessor 1992 Guidelines.²⁹

The Chicago School’s principal criticism of Bain’s conception of entry barriers was that it included *all* factors that permitted incumbents to earn supracompetitive returns without encouraging entry. As a result, it did not exclude barriers that were the product of efficiency. Most significantly, under Bain’s definition, an economy of scale is a barrier to entry. If minimum efficient scale in an industry is, say, 30 percent of the market (at a competitive price) and the market is already occupied by three efficient firms, there is no room for a fourth. Bain counted such a market as having high entry barriers even though the entry barrier was efficiency itself.³⁰

In his very influential monograph on industrial organization George Stigler gave this alternative definition, which is often identified with the Chicago School: A barrier to entry is “a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is

²⁶ BAIN, BARRIERS TO NEW COMPETITION, *supra* note 25, at 3.

²⁷ *Id.* at 10.

²⁸ *E.g.*, Joe S. Bain, *Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936–1940*, 65 Q.J. ECON. 293 (1951); Joe S. Bain, *Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence*, 40 AM. ECON. REV. 35, 37–38 (1950); Joe S. Bain, *The Profit Rate as a Measure of Monopoly Power*, 55 Q.J. ECON. 271 (1941); *see also* Dave Rosenberg, Note, *Allocating the Burden of Persuasion for Entry Issues in the Government’s Horizontal Merger Cases*, 90 B.U. L. REV. 1937 (2010).

²⁹ U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 10 (2010) [hereinafter 2010 Merger Guidelines], *available at* <http://www.justice.gov/atr/public/guidelines/hmg-2010.html>.

³⁰ *See, e.g.*, BAIN, BARRIERS TO NEW COMPETITION, *supra* note 25, at 93–110.

not borne by firms already in the industry.”³¹ Stigler’s definition excluded economies of scale because attainment of scale economies was not a cost unique to new entrants; everyone had to attain them. Ever since, the Stigler definition has been presented in the Chicago School antitrust writing, and even a small amount of case law, as superior to the Bain definition for anti-trust purposes.³²

It is not superior, however, because it does not address the questions that antitrust policy asks.³³ When Stigler wrote his chapter on entry barriers in the late 1960s,³⁴ Congress, many academics, and some of the case law were contemplating purely structural, or “no fault,” approaches to monopolization. The *Neal Report* had been commissioned by President Johnson in 1967 and was published in 1969.³⁵ That Report took a heavily structuralist approach to anti-trust and even recommended a “concentrated industries act,” which would have broken up firms in markets thought to be overly concentrated. In 1978 Areeda and Turner, who were much less interventionist than the *Neal Report* on most issues,³⁶ published the first three volumes of the *Antitrust Law* treatise, including their previously discussed proposal for a “no fault” monopolization rule permitting government-initiated breakups without proof of anticompetitive conduct.³⁷

Against this background, which was heavily influenced by the S-C-P paradigm, Stigler’s critique was valuable and powerful. Breaking up firms that had done nothing improper except to take advantage of scale economies, thus bringing lower costs to the market, seemed quite wrong. More to the point,

³¹ GEORGE J. STIGLER, *THE ORGANIZATION OF INDUSTRY* 67 (1968).

³² *E.g.*, *Ball Mem’l Hosp., Inc. v. Mutual Hosp. Ins., Inc.*, 784 F.2d 1325, 1335 (9th Cir. 1986) (applying Stigler test and finding low entry barriers); *Reazin v. Blue Cross & Blue Shield of Kan., Inc.*, 635 F. Supp. 1287, 1329 (D. Kan. 1986) (similar). *Cf.* *United States v. Microsoft Corp.*, 253 F.3d 34, 56 (D.C. Cir. 2001) (noting dispute over definition but declining to choose a side because entry barriers were sufficiently high under either definition); *L.A. Land Co. v. Brunswick Corp.*, 6 F.3d 1422, 1428 (9th Cir. 1993) (defining entry barrier as “the disadvantage of new entrants as compared to incumbents”).

³³ *See* 2B AREEDA & HOVENKAMP, *supra* note 4, ¶ 420 (3d ed. 2007); Richard Schmalensee, *Sunk Costs and Antitrust Barriers to Entry*, 94 AM. ECON. REV. 471 (May 2004) (preferring Bainian definition).

³⁴ *Id.* Nearly all of Stigler’s book had been previously published as articles in various economics journals. However, his Chapter 6, entitled “Barriers to Entry, Economies of Scale, and Firm Size,” appeared in this volume for the first time. *See also* Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J.L. & ECON. 1 (1973); Harold Demsetz, *Barriers to Entry*, 72 AM. ECON. REV. 47 (1982).

³⁵ *See* REPORT OF THE WHITE HOUSE TASK FORCE ON ANTITRUST POLICY, *reprinted at* 115 CONG. REC. 13,890, 13,897 (May 27, 1969); *see also* Stephen Calkins, *Antitrust Modernization: Looking Backwards*, 31 J. CORP. L. 421 (2006); Hovenkamp, *Neal Report Introduction*, *supra* note 25.

³⁶ Herbert Hovenkamp, *Harvard, Chicago, and Transaction Cost Economics in Antitrust Analysis*, 55 ANTITRUST BULL. 613 (2010).

³⁷ 3 AREEDA & TURNER, *supra* note 1, ¶¶ 618–623.

breaking up firms whose size results from scale economies will produce more firms in a market but they will have higher costs. There was no basis for thinking that courts would do a better job of determining optimal firm size than markets did.

But the rejection of structuralism in the 1970s and after largely took the wind out of Stigler's sails. Today the monopolization offense requires anti-competitive conduct as well as market dominance, and the courts have taken some care that anticompetitive conduct not be defined too broadly.³⁸ In a monopolization case today what we want to know is the answer to the question that Bain asked: whether a firm in this market can profitably maintain prices above cost without encouraging entry.³⁹ For example, if a dominant firm files a fraudulent patent infringement suit intended to keep a threatening technology out of the market⁴⁰ it should not be an answer that the dominant firm's market position results from scale economies, so the market does not contain high entry barriers and a Section 2 claim is inappropriate. We are not punishing the firm for attaining economies of scale in the existing technology, a backward-looking question, but rather for the anticompetitive, forward looking act of excluding a new technology. Of course, we may not want to break up the firm as a penalty for its conduct, but that is a different question.

Underlying this debate are some fairly strong assumptions about the cost of movement. For the structuralists, resources had been deployed in ways that would prevent them from being redeployed without government intervention. For Stigler, the market would correct monopoly unless one of two things were true. First, scale economies may be a consequence of technological and engineering factors that make them more or less inevitable. In that case the government cannot improve economic performance by structural relief. Second, entry barriers might result from state-imposed licensing requirements or other market deficiencies that do permit incumbent firms to keep rivals out, but in such cases the best corrective is removal of the defect.

In contrast, antitrust use of a Bainian conception of entry barriers today, coupled with a requirement of anticompetitive conduct, captures something

³⁸ *E.g.*, *Pac. Bell Tel. Co. v. linkLine Commc'ns, Inc.*, 555 U.S. 438 (2009) (rejecting price squeeze claims where there was no duty to deal and no showing of prices below cost); *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co., Inc.*, 549 U.S. 312 (2007) (similar, predatory purchasing); *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408–09 (2004) (no liability for unilateral refusal to deal); *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993) (predatory pricing requires both prices below cost and structure indicating likelihood of recoupment).

³⁹ For example, this is the question posed by the "recoupment" requirement in *Brooke Group*.

⁴⁰ *See, e.g.*, *Prof'l Real Estate Investors, Inc. v. Columbia Pictures Indus., Inc.*, 508 U.S. 49 (1993) (limiting *Walker Process*-style suits to objectively unreasonable infringement actions); *Walker Process Equip. Inc. v. Food Mach. Corp.*, 382 U.S. 172 (1965) (approving antitrust counterclaims based on assertion of patent allegedly obtained by fraud).

that neither the structuralists themselves nor the Chicago School accounted for satisfactorily—namely, that dominant firms could manipulate technology choices or market patterns in ways that would prevent or delay their market's movement to a more competitive equilibrium.

IV. ANTITRUST'S WELFARE TESTS

Antitrust is often touted as a “consumer welfare” prescription, and many argue that antitrust should adopt a “consumer welfare” test rather than a “general welfare” or “economic welfare” test for anticompetitive practices.⁴¹ Of course, these two policies need not exhaust the field, but they have certainly accounted for most of the debate over antitrust's test for welfare. The Chicago School, the Harvard School, Post-Chicago, and Neo-Chicago all agree that antitrust must pursue some conception of competition that is driven by concerns for economic welfare.

The same thing was true, however, of structuralism within economics. Mid-20th century economists, such as Edward S. Mason and Joe S. Bain, generally believed that competition relates to productivity, output, and marginal cost pricing. Kaysen and Turner, whose 1959 book on *Antitrust Policy* was written prior to Turner's “conversion” from structuralism,⁴² rejected any notion that antitrust should be concerned with “fair conduct” aside from welfare. Indeed, for them structuralism was a mechanism for getting away from the need to evaluate business conduct because such evaluations seemed to be inherently subjective and uncertain.⁴³ Kaysen and Turner could not find any criterion of “fairness” in conduct that would enable them to distinguish competitive from noncompetitive situations. They condemned as “superficial” any attempt to use antitrust laws to “[f]orbid[] the use of unfair tactics as a means of acquiring monopoly power.”⁴⁴ They were equally hostile toward any view that antitrust should limit big business for its own sake. They conceded that such ideas “often in inchoate form, undoubtedly provide an important emotional substratum on which political support for antitrust policy of some kind rests,”⁴⁵ and that Congress and the courts of their day were heavily focused on issues of

⁴¹ E.g., Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65, 74–77 (1982); Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The True Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336 (2010).

⁴² On Turner's “conversion,” see HOVENKAMP, *THE ANTITRUST ENTERPRISE*, *supra* note 23, at 37–38; Herbert Hovenkamp, *The Rationalization of Antitrust*, 116 HARV. L. REV. 917 (2003) (book review).

⁴³ CARL KAYSEN & DONALD F. TURNER, *ANTITRUST POLICY: AN ECONOMIC AND LEGAL ANALYSIS* 15–17 (1959).

⁴⁴ *Id.* at 16.

⁴⁵ *Id.* at 18.

fairness and size.⁴⁶ Nevertheless, they advocated for an antitrust policy focused on limiting the exercise of monopoly power, economically defined.⁴⁷ So even for the structuralists the debate was not about *whether* antitrust should adopt some version of economic welfare as its goal, but rather about the way that antitrust's welfare concerns should be measured.

One hesitates to delve too deeply into this problem because its practical consequences are limited. Further, antitrust does not use welfare tests of any kind very consistently. Nevertheless, one's position on the appropriate welfare standard for antitrust rests on some premises about how resources move through the economy. If resources moved freely, we would not need to worry because monopoly would be bought off by customers or dissipated by new competition. Where the movement of resources is costly, the tests make a difference.

A general welfare test could adopt potential Pareto, or Kaldor-Hicks, efficiency as a goal: a shift in resources is a gain if the sum of all gains exceeds the sum of all losses. That is, the gainers would be able to compensate the losers fully out of their gains without being worse of themselves. The movement of a market from monopoly to competition represents a potential Pareto improvement assuming that no one else is affected. The lower price on current output benefits consumers and injures producers by the same amount, so it is a wash. The elimination of monopoly deadweight loss benefits consumers, however, while also giving some benefit to producers. When such a market becomes competitive the producer is worse off, but consumers are better off by a greater amount.

By contrast, a "consumer welfare" prescription looks at consumer gains or losses and pays no attention to producer gains or losses. The movement from monopoly to competition in the previous illustration certainly passes this test as well as the general welfare test. The two tests produce different outcomes in situations where consumers lose but producers gain, and by a larger amount. In that case the movement of resources is Pareto superior and gainers could compensate the losers out of their gains. The practice would be permitted under a general welfare test but condemned under a consumer welfare test. The best known example is the merger in a concentrated market that simultaneously increases consumer prices but also produces efficiencies. If the efficiency gains from the merger exceed consumer losses, the merger is efficient by the potential Pareto criterion even though the only thing consumers see is a price increase. Oliver Williamson famously showed with a simple model that a merger with fairly modest efficiency gains could create net social wealth

⁴⁶ *Id.* at 16–20.

⁴⁷ *Id.* at 21–22.

even though prices went up.⁴⁸ The consumer welfare prescription would condemn the merger because it causes consumer losses even though the producer gains are larger. Indeed, theoretically, such a merger might result in consumer prices that are \$1.00 higher in the aggregate but production efficiency gains of \$1 million. Under the consumer welfare test, the merger would be condemned because we would look only at the \$1.00 price increase and ignore the production efficiencies gains that are many times larger.

General welfare and consumer welfare tests rest on differing assumptions about the cost of movement. If one has a high degree of confidence that resources will move toward consumers in the long run, then a general welfare test works well because it protects all efficiencies, trusting that consumers will eventually benefit. By contrast, if one is inclined to believe that producer gains tend to stay with producers, never getting passed on to consumers, then the solution is to insist on significant consumer gains right out of the box.

One deficiency in these tests is that they ignore the welfare of parties other than the antitrust defendant and its customers. As a result, the welfare of competitors is not taken into account at all. This approach might make some sense when we are thinking of monopoly in public utility terms, where its social cost results from the output reduction and we can debate how to treat the wealth transfer from consumers to the producer. But the business of antitrust is not concerned principally with franchise monopolies. It is heavily concerned with exclusionary practices, and these can be very costly, particularly if resources other than those of the dominant firm or cartel are wasted.⁴⁹ Lost investment is socially costly because specialized resources cannot costlessly be redeployed. This is an absolute cost of resource movement, not principally a transaction cost.

Suppose a dominant firm has Alpha technology and is enjoying monopoly prices. A newcomer develops Beta technology at a fixed development cost of \$100 million. The technology is never deployed, however, because the dominant firm fraudulently obtains a patent whose claims cover a significant portion of the Beta technology. The new firm exits, and its technology is never introduced. The relevant losses from this story include several components. First is the difference between the monopoly prices that consumers pay for the Alpha product and the competitive price they would have paid had Beta been introduced. This is largely a wealth transfer because the consumer losses are offset by Alpha's additional profits. Second are the unmade sales that would have been generated had Beta been introduced and output brought up to the

⁴⁸ Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18, 22-23 (1968).

⁴⁹ On the "external" welfare losses of monopoly created by exclusionary practices, see HOVENKAMP, FEDERAL ANTITRUST POLICY, *supra* note 22, §1.3; *see also* Salop, *supra* note 41.

competitive level. These are consumer losses that are not offset by producer gains; they most closely represent the classic deadweight loss of monopoly. Third are any unrealized gains that might result from the fact that Beta was a superior technology; so the unrealized gains may not have been limited to more units of the same thing, but also the incremental consumer value that might have accrued from something better.⁵⁰ Fourth, and finally, is the \$100 million investment, a fixed cost item which, if specialized, is sunk and simply lost.

In *The Antitrust Paradox* Judge Bork famously used the term “consumer welfare” to mean a variation on total welfare that included the sum of supplier and consumer surplus but ignored the welfare of excluded rivals or other third parties.⁵¹ In defending the definition he observed (1) antitrust should take no position on how wealth is distributed but only on the efficient allocation of resources; (2) looking at the market as a whole everyone is a consumer; and (3) in the longer run producer gains tend to be competed away into consumer gains.

The first point might well be correct, but rivals’ loss of unrecoverable investment is not a wealth transfer; a significant portion of it is deadweight loss. Bork assumed zero costs of movement, thus excluding the cost of unrecoverable losses imposed on rivals. On the second point, everyone does show up in the market as a consumer, but that point is largely irrelevant to policymaking. Yes, everyone is a speeder, but that does not justify the police in handing out speeding tickets at random rather than detecting speeders on an individual basis. The third point may or may not be true depending on one’s assumptions about how freely resources move.

When our concerns are purely collusive or vertical, involving high consumer prices but not exclusion of rivals, then the main question is whether producer gains must be “passed on” to consumers. This is another way of saying that we want a potential Pareto improvement to become a real Pareto improvement by actually requiring that the gainers (producers) compensate the losers (consumers) out of their gains.

Consider the statement on efficiencies in the 2010 Merger Guidelines, which is similar to the one contained in the predecessor Guidelines published in 1992:

The Agencies will not challenge a merger if cognizable efficiencies are of a character and magnitude such that the merger is not likely to be anticom-

⁵⁰ See CHRISTINA BOHANNAN & HERBERT HOVENKAMP, CREATION WITHOUT RESTRAINT: PROMOTING LIBERTY AND RIVALRY IN INNOVATION, ch.11 (2012).

⁵¹ ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 106–15 (1978).

petitive in any relevant market. To make the requisite determination, the Agencies consider whether cognizable efficiencies likely would be sufficient to reverse the merger's potential to harm customers in the relevant market, e.g., by preventing price increases in that market.⁵²

The Guidelines also include this footnote to the above passage:

The Agencies normally give the most weight to the results of this analysis over the short term. The Agencies also may consider the effects of cognizable efficiencies with no short-term, direct effect on prices in the relevant market. Delayed benefits from efficiencies (due to delay in the achievement of, or the realization of customer benefits from, the efficiencies) will be given less weight because they are less proximate and more difficult to predict. Efficiencies relating to costs that are fixed in the short term are unlikely to benefit customers in the short term, but can benefit customers in the longer run, e.g., if they make new product introduction less expensive.⁵³

In the longer run, if the costs of movement are sufficiently low, the efficiency gains from this merger will be at least partly passed on to consumers. The Guidelines state that the Agencies will consider some longer run effects, citing two possibilities: there might be a "delay in the achievement of" an efficiency, or there might be a delay in the "realization of customer benefits" from the efficiency. These are in fact two quite different things. First, some efficiencies cannot immediately be implemented. For example, while a merger may enable a firm to take advantage of another firm's superior technology, implementing that change could require re-outfitting of plants or production processes and could take several months or even years. In other cases the delay in consumer benefit may occur because, although the cost reduction takes effect immediately, the market will not immediately reflect these cost savings via lower prices.

However, the Guidelines appear not to make any allowance for a merger to be approved because of productive efficiency gains that will not in the foreseeable future be sufficient to offset a price increase. At first glance that might suggest that the Guidelines are adopting a consumer welfare rather than a general welfare test for merger efficiencies, although clearly there is more going on here. Most importantly, the Agencies are rightfully cynical about efficiency claims, which are frequently made but rarely proven, particularly in light of the fact that cognizable efficiencies must be merger-specific. Second, as predictions of promised merger specific gains extend over longer runs, the level of speculation becomes unacceptably high.⁵⁴ In contrast, the tools that

⁵² 2010 Merger Guidelines, *supra* note 29, § 10.

⁵³ *Id.* n.15.

⁵⁴ In part, the longer the relevant time period the greater the likelihood that the gains would have been realized without any need for the merger.

the Agencies use to predict price increases largely look toward price changes that are likely to occur in a relatively short time horizon.

Fundamentally, Bork's preference for a conception of efficiency that aggregates seller and consumer gains rests most strongly on an assumption about the costs and likelihood of resource mobility. With complete resource mobility all gains will accrue to consumers as some combination of new entry, rival expansion, and consumer choice forces prices closer to costs. In some cases the "run" may be very long, and in others there may be impediments that make monopoly relatively durable. Those favoring a consumer welfare approach assume that the costs of moving resources is sufficiently high that the burden of showing resource movement to competition rests on the defendant. The 2010 Merger Guidelines want to see some evidence that cost savings will really be passed on in a particular case. In sum, arguments favoring a general welfare or consumer welfare test for antitrust largely rest on differing assumptions about the costs and thus the likelihood of resource movement from producers to consumers.

V. ANTITRUST PRACTICES AND THE COST OF MOVEMENT

This section considers a few specific practices in which the absolute cost of resource movement plays a role in antitrust analysis.

A. NETWORKS AND REFUSAL TO DEAL

Networks are wonderful things. They enable markets to attain significant economies of scale and scope in both supply and consumption. If properly organized, they can also provide a platform for competitive behavior "on" the network. For example, today's telecommunications network gives us the scale and scope advantages of virtually universal interconnectivity,⁵⁵ plus a set of technological standards and operating protocols that enable thousands of firms to hook in and sell their services or products in competitive markets.

Dominant firms in networks generally profit when smaller firms develop complementary products and services, but not when they develop substitutes. This principle very largely accounts for Microsoft's behavior with respect to its market-dominating Windows computer operating system. The attachment of attractive complements tends to make the dominant firm's own technology more valuable, while substitutes tend to threaten it. The EU's "server" case

⁵⁵ Thanks to the 1996 Telecommunications Act, 47 U.S.C. §251(c)(3), and prior to that, an antitrust consent decree. *United States v. AT&T*, 552 F. Supp. 131, 136 (D.D.C. 1982), *aff'd mem. sub nom. Maryland v. United States*, 460 U.S. 1001 (1983). On the interaction between regulation and antitrust refusal to deal law, see 3B AREEDA & HOVENKAMP, *supra* note 4, ¶ 787c (3d ed. 2008).

against Microsoft illustrates this.⁵⁶ For some time the market for server systems (for clients, such as email and Internet access) was dominated by firms other than Microsoft, which had not entered that market. These firms largely provided hardware and an operating system to their own customers and relied on Microsoft's provision of interconnection protocols to link the servers into the Windows-dominated system. In that regime the existence of a complementary server market enhanced the value of the network and thus of Microsoft Windows. For example, the owner of a railroad could be expected to cooperate with someone who wanted to offer hotel services located along the tracks so long as it was not doing so itself. The hotels would make the railroad as a whole more attractive. However, as soon as the railroad began to set up and operate its own hotels its position would change. Now it can supply these benefits on its own and the third party becomes a competitor rather than a complement. Once Microsoft entered the server market its incentives changed in the same way.

Depending on the situation, networks can greatly decrease or greatly increase the cost of moving resources. For example, a competitive network with fairly open entry rules, such as the telephone system, makes it possible for firms to supply communications services without duplicating the entire network. This makes it much easier for a single small firm to enter the business. On the other side, technologically laden networks tend to generate significant path dependence, and the costs of migrating out of path dependent technologies rises dramatically as more firms and resources are invested in the existing technology. More specifically, networks can reduce the costs of innovating inside the network but increase the costs of innovating in competition with the network. The relevant costs are hardly limited to transactions but include the costs of producing and deploying alternative technologies, as well as lost investment in existing technologies. For example, the existence of the telephone network dramatically increases the costs of developing a new telephone that is technologically superior but incompatible with the existing network.

An important part of our antitrust agenda for the future must be the development of reasonable refusal to deal rules for dominated networks—that is, networks that (1) dominate the market in which they operate and (2) are themselves dominated by a dominant firm. Networks can greatly increase the costs of moving resources because so much has to be carried along. While the Supreme Court's *Trinko* decision imposed severe limitations on the antitrust law of unilateral refusal to deal, it did so in a regime in which an alternative regulatory authority had the power to compel precisely the dealing obligation that

⁵⁶ Case T-201/04, *Microsoft Corp. v. Comm'n*, 2007 E.C.R. II-3601, ¶¶ 1–28, available at <http://curia.europa.eu/juris/document/document.jsf?docid=62940&doclang=en&mode=&part=1>.

the plaintiffs were requesting under antitrust law.⁵⁷ In the absence of those dealing obligations the telephone system would very likely revert to single-firm dominance, but without price regulation. To be sure, competing technologies might emerge. In the telecommunications network they already have, aided by the broad sharing obligations of the Telecommunications Act. The best solution for global market dominating networks such as the telecom system is to let the network itself attain the size and shape that will achieve all available economies of scale and scope, but then to use legal policy to preserve competition within the network.⁵⁸ To the extent regulatory policy does not already do this, antitrust appropriately has a role.⁵⁹

Unilateral refusals to deal by monopolists raise a number of thorny issues about administrability and incentives. It is difficult to compel dealing without regulating the price, and aggressive dealing rules reduce the incentives of small firms to make their own investments in innovation or productive assets.⁶⁰ These issues do not go away in the case of dominated networks, but the stakes change because in networks the costs of movement are much higher than in markets where unlinked firms are free to pursue distinct technologies. Whether it deals with rivals or not, the dominant firm in a dominant network necessarily controls the technology choices of rivals, which can survive only by maintaining compatibility, and their survival is essential to network competitiveness.

B. VERTICAL INTEGRATION AND PRODUCT COMPLEMENTARITY

1. *Asset Specificity*

In the thirty-five years since Oliver E. Williamson published *Markets and Hierarchies*, transaction cost economics has transformed our understanding of vertical integration and other durable economic relationships.⁶¹ For the structuralists, vertical integration was a suspicious practice occasionally justified by economies of scale but often used to leverage additional profits or else to entrench dominance by creating barriers to entry or fringe expansion.⁶² For the

⁵⁷ *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408–09 (2004); see 3B AREEDA & HOVENKAMP, *supra* note 4, ¶¶ 772d, 773–74 (3d ed. 2008).

⁵⁸ See AREEDA & HOVENKAMP, *supra* note 4, ¶ 772h (Supp. 2010); Herbert Hovenkamp, *The Obama Administration and Section Two of the Sherman Act*, 90 B.U. L. REV. 1611 (2010).

⁵⁹ See BOHANNAN & HOVENKAMP, *supra* note 50, ch. 11.

⁶⁰ See 3B AREEDA & HOVENKAMP, *supra* note 4, ¶¶ 770–772 (3d ed. 2008).

⁶¹ OLIVER E. WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* (1975); see Hovenkamp, *Harvard, Chicago, and Transaction Cost Economics in Antitrust Analysis*, *supra* note 36.

⁶² *E.g.*, BAIN, *BARRIERS TO NEW COMPETITION*, *supra* note 25, at 142–43, 212; ARTHUR ROBERT BURNS, *THE DECLINE OF COMPETITION* (1936); CORWIN D. EDWARDS, *MAINTAINING COMPETITION* 130 (1949); DAVID LYNCH, *THE CONCENTRATION OF ECONOMIC POWER* 132 (1946); HENRY C. SIMONS, *A POSITIVE PROGRAM FOR LAISSEZ-FAIRE* 20–21 (1934). For a survey discus-

classic Chicago School, vertical integration was simply not a monopoly problem at all because it did not increase a firm's share in any market except insofar as integration efficiencies enabled firms to increase output at rivals' expense. That view rejected both the leverage theory and the foreclosure theory of competitive harm.⁶³

Transaction cost economics and its recognition of the importance of asset specificity persuasively showed why the structuralists' suspicion of vertical agreements is in most cases not justified; but it also provided a valuable critique of some of the assumptions underlying the Chicago School's attitude towards vertical restraints.

Coase's prescient observations about the costs of using the market in *The Nature of the Firm* (1937) inspired a generation of economists forty years later to rewrite the theory of vertical contracting and control.⁶⁴ They did this first by building on Coase's insight that the boundaries of a firm are determined by the comparative costs and benefits of internal production as against external procurement. Second, they observed that market alternatives to full ownership integration required markets to emulate certain features of firm production, the most important of which is asset specificity. This meant that most of the long-term, exclusive contracts that structuralist antitrust had found so suspicious were actually efficient coordination mechanisms.

Asset specificity creates costs of movement quite aside from transaction costs. For example, once Fisher Body Works has built its plant with a specialized technology and in a certain location, General Motors is its best customer and Fisher in turn is GM's best supplier of automobile bodies.⁶⁵ The cost of extraction from this situation is not so much a problem in transacting costs, but rather in the real costs of moving resources from point A to point B. Like Sturges and Bridgeman, the physician and confectioner in the nuisance case that Coase made famous, they are forced to bargain with each other as long as the (transaction) costs of reaching a satisfactory bargain are lower than the (nontransaction) costs of moving away.⁶⁶

sion, see Hovenkamp, *The Law of Vertical Integration and the Business Firm: 1880–1960*, *supra* note 21, 900–09.

⁶³ E.g., Robert Bork, *Vertical Integration and the Sherman Act: The Legal History of an Economic Misconception*, 22 U. CHI. L. REV. 157, 159 (1954).

⁶⁴ Coase, *The Nature of the Firm*, *supra* note 16; see WILLIAMSON, *MARKETS AND HIERARCHIES*, *supra* note 61; Benjamin Klein, Robert G. Crawford & Armen A. Alchian, *Vertical Integration, Appropriate Rents and the Competitive Contracting Process*, 21 J.L. & ECON. 297 (1978).

⁶⁵ See, e.g., Ronald H. Coase, *The Acquisition of Fisher Body by General Motors*, 43 J.L. & ECON. 15 (2000); see also Benjamin Klein, *Vertical Integration as Organizational Ownership: The Fisher Body-General Motors Relationship Revisited*, 4 J.L. ECON. & ORG. 199 (1988).

⁶⁶ See Herbert Hovenkamp, *Coasean Markets*, 31 EUR. J.L. & ECON. 63 (2011).

To say this somewhat differently, under product or process differentiation, contractual vertical integration and the investment it induces create tiny “markets” with boundaries similar to those of the Coasean business firm—namely, along the line of equipoise between the marginal (transaction) costs of reaching a bargain inside and the marginal (significantly nontransaction) costs of abandoning previous commitments and moving outside. While very small, these markets are also characterized by some of the features that neoclassical economics has found to be highly problematic, such as extreme product differentiation, bilateral monopoly, and the possibility of double marginalization vis-à-vis outsiders. Bargaining in such a setting can become complex and even ugly. Witness the large number of federal and state provisions that regulate franchise relationships, including car dealers and gasoline stations.⁶⁷

Making antitrust policy in such settings requires an awareness of these complications, the value that they have the potential to create, and possible risks. The possibilities for benefit are many while those for harm are few but cannot entirely be ignored. The structuralists were misled because they did not understand the role of specific interfirm commitments and the complications they can produce. As a result, they did not appreciate the role of complex contracting in markets for vertical or shared control. The thing that leads to high costs of movement, including transaction costs, is asset specificity, which is common in complex contractual hierarchies. This is in turn quite typically a function of product differentiation, something that also made structuralists suspicious. If automobile bodies were fungible across automobile producers, then GM and Fisher would not have had to “dedicate” their production to one another.

Most holdup problems are not a function of transaction costs as such, but rather of the absolute cost of moving resources when compared to the costs of transacting. Beginning with a model of distribution based largely on commodities and also a strong distrust of product differentiation, the structuralists tended to see complex vertical contracting devices (tying, exclusive agreements, and resale price and nonprice agreements) as problems of monopoly.

Antitrust and patent policy have been preoccupied with tying arrangements and similar exclusionary contracts ever since the beginning of the 20th century.⁶⁸ Notwithstanding the Chicago School’s withering critique of the “lever-

⁶⁷ See, e.g., ABA, FRANCHISE DESK BOOK: SELECTED STATES LAWS, COMMENTARY AND ANNOTATIONS (W. Michael Garner ed., 2d ed. 2008 & Supp.); FRANCHISING LAW (Martin Mendelsohn ed., 2d ed. 2004).

⁶⁸ E.g., *Henry v. A.B. Dick Co.*, 224 U.S. 1, 31 (1912) (rejecting first-sale doctrine attack on patent tie; finding no reason to condemn it under the Sherman Act); *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 518–19 (1917) (applying patent misuse doctrine and Clayton Act to condemn patent tie; overruling *Henry*); see Christina Bohannon, *IP Misuse as*

age” theory of tying arrangements, which began in the 1950s,⁶⁹ tying defined broadly remains a very important focus of antitrust concern. However, foreclosure and not leverage accounts for most of it.⁷⁰ The reason is not difficult to understand: ties can increase the cost of movement by preventing a switch in one of the products unless the buyer also switches the other product. For example, in order to compete with Kodak’s Instamatic package of streamlined camera and cartridge film, its rival Berkey Photo had to either re-engineer both the camera and the film or else find some alternative avenue of access.⁷¹

The Chicago critique discredited the orthodox leverage theory and attempted to discredit the foreclosure theory of ties by equating foreclosure with efficiency.⁷² But that theory was itself based on an orthodox model of a commodity monopolist whose output was readily moveable from one intermediary to another. Within that model vertical integration forced a realignment of purchasing patterns but did little else. For example, if a gasoline refiner acquired a chain of gasoline stations and engaged in exclusive supply, remaining refiners and stations would simply realign their sale and purchasing patterns. Bork used precisely this illustration to indicate why vertical control leads to a realignment of purchasing and sales patterns but not to competitive harm. His premise was that suppliers and purchasers could costlessly realign their deals.⁷³

This critique was in turn critiqued not by any “Post-Chicago” or “Neo-Chicago” economics, but by simple transaction cost analysis that showed both the efficiency possibilities and the occasional competitive risks of vertical contracting in markets subject to greater amounts of asset specificity. The defining characteristic of such markets is that the absolute cost of moving resources was higher because assets could not costly be shifted from one firm to another without substantial modification.

In any event, the necessary condition for harm is “external” market power, which means market power in the larger market for final distribution⁷⁴ rather than any opportunism that might exist between the parties themselves. This

Foreclosure, 96 IOWA L. REV. 475 (2011); Herbert Hovenkamp, *Post-Sale Restraints and Competitive Harm: the First Sale Doctrine in Perspective*, 66 N.Y.U. ANN. SURV. AM. L. 487 (2011).

⁶⁹ See Ward Bowman, Jr., *Tying Arrangements and the Leverage Problem*, 67 YALE L.J. 19 (1957); see also Posner, *supra* note 23 (identifying attack on leverage theory as defining characteristic of Chicago School critique).

⁷⁰ See Erik Hovenkamp & Herbert Hovenkamp, *Tying Arrangements and Antitrust Harm*, 52 ARIZ. L. REV. 925 (2010) [hereinafter *Tying Arrangements*].

⁷¹ *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2d Cir. 1979).

⁷² E.g., BORK, *supra* note 51, at 225–56 (1978) (discussing vertical integration); *id.* at 365–81 (discussing tying).

⁷³ See *id.* at 232–33.

⁷⁴ Or, in the case of monopsony, input procurement. See ROGER D. BLAIR & JEFFREY L. HARRISON, *MONOPSONY IN LAW AND ECONOMICS* 41–67 (rev. ed. 2010).

explains the error in the Supreme Court's 1992 *Kodak* decision and why it cannot be defended on any grounds, including Post-Chicago.⁷⁵ The Supreme Court confused the market complexities that result from a specialized contractual distribution system, in this case for long-run provision of photocopying through the sale and subsequent maintenance of copy machines, with real market power. It turned the everyday problem of asset specificity into an extraordinary problem of monopoly. Under modern distribution systems with dedicated assets, virtually *all* firms are "locked in" to some degree. The opportunism that results is not an antitrust problem unless it leads to a market-wide output reduction.

Similar factors apply to "commons," or horizontal collaboration in development or production.⁷⁶ The distinctive feature of a commons, which can include everything from fisheries to water rights to patent pools and standard-setting organizations, is that the costs of identifying and thus of enforcing individual boundaries is high, a fact that is often based on the fugitive nature of the thing for which a property right is claimed. A firm invests in the defense of individual boundaries up to the point that the net payoff from individual ownership equals that of joint ownership. The line between individual and shared ownership lies where the two are in equipoise. Because different assets have different boundary characteristics, it is not uncommon that firms have pooled rights over some resources but individual rights over others. For example, farmers may graze their cattle on a commons but grow their corn on individual plats of ground, or firms may pool the patents but produce and distribute goods in separate facilities and through separate channels.⁷⁷ Once again, the line between commons and exclusive ownership depends much more on the physical nature of the asset and the mechanisms available for controlling it, than on transaction costs. For example, while it is correct to say that high transaction costs in bargaining for individual rights explain patent pools, the transaction costs are high *because* patent boundaries are so difficult to identify.⁷⁸

2. *Double Marginalization*

Bilateral monopoly⁷⁹ is ubiquitous in modern distribution systems for the reasons outlined above. Specialized investment locks firms together when the

⁷⁵ *Eastman Kodak Co. v. Image Technical Servs.*, 504 U.S. 451 (1992); see Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257 (2001) (advocating overruling *Kodak*).

⁷⁶ *E.g.*, ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (1990).

⁷⁷ See BOHANNAN & HOVENKAMP, *supra* note 50, ch. 12.

⁷⁸ *Id.*

⁷⁹ Perhaps a better term would be "bilateral oligopoly," because the number of firms bound together often exceeds one on each side but is limited to a small number. For example, hospital Group Purchasing Organizations sometimes have "dual source" contracts, which means that the

net costs of reaching a bargain are less than the cost of abandoning those investments and moving on. The latter set of costs are not limited to transaction costs but also include the engineering or transportation costs of abandoning one set of technologies or physical positions in favor of another. The bargaining may involve one firm's taking advantage of another, and it may involve contracts with terms that antitrust law has historically regarded as suspicious, such as exclusivity provisions, tying, or price maintenance. But these are nothing more than the antitrust equivalent of family squabbles that naturally arise when people are in a relationship from which extraction is not cost free.

Double marginalization arises when two firms make complementary or vertically related products that are thus typically used together *and* each firm has some market power in its own product. If each maximizes individually, the aggregate price will be "too high," in the very strong sense that the buyer of the two products and the sellers of each of them would all be better off if they could coordinate output to the joint-maximizing level. Consumers are also injured to the extent that the buyer must pass on the higher prices it pays. Thus, antitrust's concern with welfare loss or consumer injury properly kicks in. When it occurs, double marginalization is harmful under both a general welfare and a consumer welfare theory.

While double marginalization is a problem in vertical integration of successive firms with market power, it applies equally well to complements.⁸⁰ Indeed, the problem is more serious with respect to complements because the makers of complementary products are often not in a good position to bargain with each other, while vertically related firms bargain all the time. Thus, for example, so-called "royalty stacking" of IP rights can lead to double marginalization problems, depending on the extent of substitutes for each individual right. If a widget maker requires licenses to both utility and process patents Alpha and Beta, neither of which has good substitutes, Alpha will set a royalty taking existing supply by others as given and Beta will do the same thing. The result will be a double markup under which both Alpha and Beta end up charging more than their profit-maximizing prices.⁸¹

One solution to double marginalization problems is for Alpha and Beta to coordinate their output. Two-part tariffs and pricing schemes can do this by

hospitals can purchase through the contract from two alternative suppliers. *See, e.g.*, *Southeast Mo. Hosp. v. C.R. Bard, Inc.*, 642 F.3d 608 (8th Cir. 2011) (describing dual source contracts).

⁸⁰ For a graphic illustration, see BOHANNAN & HOVENKAMP, *supra* note 50, ch. 2. For a more technical illustration, see Erik Hovenkamp & Herbert Hovenkamp, *The Law and Antitrust Economics of Tying* (2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1999063.

⁸¹ *See* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 *TEX. L. REV.* 1991 (2007).

reducing or eliminating per-unit markups. For example, a manufacturer with market power facing dealers with market power might charge a fixed franchise fee to capture its monopoly return but then sell the product to the dealers at the competitive price per unit rather than the monopoly price. The dealers will then optimize by setting a lower retail price. Indeed, their incentive to increase output will be increased to the extent that the franchise fee operates as a fixed cost that must be distributed across all sales. Maximum resale price maintenance can do the same thing by forcing a dealer or other intermediary to assess no more than the competitive markup.⁸²

Another way to combat double marginalization is for one of the firms “unilaterally” to offer both of the products (or services) that are subject to double marginalization when they are offered separately. Tying can do this by enabling a single firm to offer Alpha and Beta in a way that maximizes joint returns and benefits downstream purchasers, including consumers.⁸³ While the historical tying arrangement cases in antitrust law often involved commodities such as dry ice or salt, such ties appear only rarely today outside of the franchise context. Further, those cases almost never raise serious antitrust concerns because power is lacking. The ties that are of antitrust interest today are likely to involve two products that both enjoy significant price/cost margins, such as printers and unique ink cartridges, MP3 players and electronic music, or computer hardware and software. These situations sort out into at least two different possibilities. One is that the tie is an exclusionary practice that injures consumers by foreclosing rivals. The other is that it benefits consumers by addressing double marginalization issues. Aside from this, there may of course be production or distribution efficiency gains. Some bundles may reduce price by significantly reducing double marginalization but also foreclose rivals.

Much of the literature that finds harm in tying and bundled discounts begins with assumptions, such as a perfectly competitive secondary market or the complete absence of fixed costs, that have only occasional application to real-world situations.⁸⁴ Others ignore double marginalization issues that may be crucial when both products are sold in noncompetitive markets.⁸⁵ While the

⁸² See Hovenkamp, *Harvard, Chicago, and Transaction Cost Economics in Antitrust Analysis*, *supra* note 36, at 640–41.

⁸³ See Hovenkamp & Hovenkamp, *Tying Arrangements*, *supra* note 70 (on tying to solve double marginalization problems).

⁸⁴ E.g., Patrick Greenlee, David Reitman & David S. Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts*, 26 INT’L J. INDUS. ORG. 1132 (2008) (assuming secondary products are sold competitively).

⁸⁵ Einer Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARV. L. REV. 397, 413 (2009) [hereinafter *Tying, Bundled Discounts*] (discussing situations where tied market is not competitive but not addressing double marginalization problems); José Carbajo, David de Meza & Daniel J. Seidmann, *A Strategic Motivation for*

theory of double marginalization is robust, its existence, ubiquity, and effects are subject to testing themselves. It may be less likely as firms choose price rather than output as a decision variable, assuming that substitutes exist for the goods in question.⁸⁶ The problem itself requires prices above cost in each market, however,⁸⁷ and the empirical testing generally finds double marginalization effects when two markets are subject to monopoly pricing and later integrated.⁸⁸

Ultimately, double marginalization can be avoided if the firms locked into a bilateral relationship can either (1) negotiate to a joint maximizing output, which is mainly a transaction problem; or (2) exit from the relationship, which is mainly a cost of movement problem. Often double marginalization problems result from costs of movement that antitrust cannot remedy. For example, royalty stacking may be common in a market because it has an excess of patents and ordinary research requires too many licenses from too many sources.⁸⁹ Or perhaps an overly aggressive policy about patent acquisition or assignment has prevented patents from being aggregated in such a way that they could be distributed more efficiently. This problem is not merely one of transaction costs but also of absolute costs of movement, and one solution

Commodity Bundling, 38 J. INDUS. ECON. 283 (1990) (finding possible negative welfare effects when monopolist in one good offers fixed proportion bundled against duopolist in second good; no assumptions about double marginalization). On mixed bundling as a device to eliminate double marginalization, see Daniel A. Crane, *Mixed Bundling, Profit Sacrifice, and Consumer Welfare*, 55 EMORY L.J. 423 (2006); on tying and double marginalization, see Hovenkamp & Hovenkamp, *Tying Arrangements*, *supra* note 70.

⁸⁶ See Giuseppe Dari-Mattiacci & Francesco Parisi, *Substituting Complements*, 2 J. COMPETITION L. & ECON. 333, 340 (2006); J. Gregory Sidak, *Holdup, Royalty Stacking, and the Pre-emption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro*, 92 MINN. L. REV. 714, 746 (2008).

⁸⁷ Double marginalization of complements can occur under both Cournot and Bertrand competition, depending on the amount of competition each complementary good faces. Of course, the assumption is that each good is in fact priced above cost. See Dari-Mattiacci & Parisi, *supra* note 86; Arthur Lewbel, *Bundling of Substitutes or Complements*, 3 INT'L J. INDUS. ORG. 101 (1985); R. Venkatesh & Wagner Kamakura, *Optimal Bundling and Pricing Under a Monopoly: Contrasting Complements and Substitutes from Independently Valued Products*, 76 J. BUS. 211 (2003).

⁸⁸ See Yvonne Durham, *An Experimental Examination of Double Marginalization and Vertical Relationships*, 42 J. ECON. BEHAV. & ORG. 207 (2000); Charles F. Mason & Owen R. Phillips, *Vertical Integration and Collusive Incentives: An Experimental Analysis*, 18 INT'L J. INDUS. ORG. 471 (2000); Hans-Theo Normann, *Experimental Economics in Antitrust*, in 1 ABA, ISSUES IN COMPETITION LAW AND POLICY 773 (Wayne Dale Collins ed., 2008). By contrast, in markets where foreclosure is a possibility prices can go down or up, depending on the possibility of double marginalization. See Stephen Martin, Hans-Theo Normann & Christopher M. Snyder, *Vertical Foreclosure in Experimental Markets*, 32 RAND J. ECON. 466, 468 n.10 (2001) (summarizing their own experimental testing and that of others as indicating that vertical integration under tests such as those of Mason and Phillips, *supra*, where double marginalization is likely show increased output, while tests where double marginalization is impossible but foreclosure is likely show reduced output).

⁸⁹ See BOHANNAN & HOVENKAMP, *supra* note 50, ch. 1.

is to get the rights assigned properly in the first place—in this case by leaving more of them in the public domain. But that is fundamentally a flaw of a patent system that is overly generous to patentees, not of the antitrust laws.⁹⁰

C. PRICING, BUNDLING, AND VERTICAL CONTROL: CREATING ANTITRUST POLICY FROM NARROW AND UNTESTED MODELS

Pricing practices are antitrust's proverbial bad penny. They keep returning and re-returning in various guises to both the legal and the industrial economics literature. One critique with considerable force is that so much theory about pricing practices consists of "existence theorems," or models showing equilibria that can be derived from given assumptions. Often these models offer little help in locating situations that satisfy their conditions or, worse yet, suggest broad application without query into whether the necessary conditions obtain. Often they make particularly constraining assumptions about the alternatives available to rivals. A different but related critique is that the presence or absence of these conditions may be so difficult to test for that antitrust decisionmakers cannot reliably determine when they obtain and when they do not.⁹¹

The economics and law of predatory pricing went through a phase much like this one in the period from the 1950s through the 1970s and beyond—no shortage of models showing how above cost strategic pricing might be exclusionary and welfare reducing, but no reliable mechanisms for separating out true instances of such situations. One unfortunate generalization is that models finding a threat of competitive harm tend to treat rivals as if they were T.S. Eliot's "patient etherized upon a table."⁹² By contrast, those finding discounting to be competitive and fairly harmless assume that rivals are capable of a robust range of responses. The effectiveness of predatory pricing depends heavily on rivals' and potential rivals' costs of movement, as well as those faced by customers. The more readily they can redeploy, the less likely that strategic pricing will cause competitive harm. A significant feature of prices is that the absolute cost of moving them, in contrast to the costs of such activities as plant or product redesign, is very low and typically reversible. This means that both the predator and its rivals can respond over a wide range of alternatives.

Nevertheless, existence models serve a useful purpose. First, they show that certain kinds of anticompetitive equilibria can theoretically exist. Secondly, they identify the conditions for such equilibria. To that extent they serve to narrow our search. For example, while the Chicago School may have con-

⁹⁰ *Id.* chs. 4–5.

⁹¹ See HOVENKAMP, *THE ANTITRUST ENTERPRISE*, *supra* note 23.

⁹² T.S. Eliot, *The Love Song of J. Alfred Prufrock* (1915).

cluded that a certain quasi-exclusive dealing practice such as a loyalty discount is never anticompetitive, a countering existence theorem might identify conditions when it could be. At that point a wise antitrust policy would try to identify situations satisfying those conditions. A corollary is that a particular theorem cannot be assumed to speak to situations that fail to satisfy its specifications.

Transaction cost analysis has considerably aided our understanding of why firms adopt the discount policies that they do, or why they tie or enter exclusive agreements. These are all ways that they can maximize within the environment to which their productive assets have been dedicated. But competitive harm is likely to occur only where the *non*-transactional costs of moving resources are high and one or more of the relevant actors has monopoly power as a result. That makes market power screens critical to the assessment of all forms of discounting, tying, and exclusive contracting. By contrast, once we know that market power is lacking, from an enforcement perspective it is generally unnecessary to continue on with transaction cost analysis in order to discover the practice's rationales.

Today there is no shortage of economic models illustrating the exclusionary power, leveraging, or welfare effects of various price discounting practices. These models fall generally into two categories. One involves mainly single product "loyalty" discounts, or discounts that become progressively larger as the buyer purchases a higher percentage of its needs from the discounting seller. The other involves "bundled" discounts, which are discounts attached to an agreement to purchase two or more different things from the seller. Real-life practices include variations on both, and also instances where the two are employed together.⁹³

The literature includes many models showing that such discounting practices can be anticompetitive, but all depend on highly specific assumptions.⁹⁴ As one group of economists has observed, "The academic literature on loyalty discounts and exclusive dealing demonstrates that the welfare effects of these

⁹³ E.g., *Southeast Mo. Hosp. v. C.R. Bard, Inc.*, 642 F.3d 608 (8th Cir. 2011) (defendant's GPO contracts included both bundled and market share discounts); *Masimo Corp. v. Tyco Health Care Grp., L.P.*, 350 Fed. App'x 95 (9th Cir. 2009) (unpublished decision) (similar).

⁹⁴ For good surveys up to the time of their publication, see Timothy J. Brennan, *Is Competition the Entry Barrier? Consumer and Total Welfare Benefits of Bundling* (AEI/Brookings Joint Center for Regulatory Studies, Working Paper No. 05-08, 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=834704; David S. Evans & Michael Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 *YALE J. ON REG.* 37 (2005); Bruce Kobayashi, *Does Economics Provide a Reliable Guide to Regulating Commodity Bundling By Firms? A Survey of the Economic Literature*, 1 *J. COMPETITION L. & ECON.* 707 (2005); see also Dennis W. Carlton & Michael Waldman, *How Economics Can Improve Antitrust Doctrine Towards Tie-In Sales*, *COMPETITION POL'Y INT'L*, Spring 2005, at 27.

practices are ambiguous and that market details determine the direction of the effect.”⁹⁵ For example, welfare effects differ depending on whether one assumes Bertrand competition (sellers choose price) or Cournot competition (sellers choose output).⁹⁶ As to facts, one obtains different welfare results based on assumptions about whether the secondary market is perfectly competitive or subject to monopoly or oligopoly,⁹⁷ whether the products in question are complements in either production or use, whether the products are purchased in variable or fixed proportions, whether a bundle contains two goods or a larger number,⁹⁸ whether bundling is used against an existing firm or as an entry deterrence device,⁹⁹ and, if the latter, whether there is only one or more than one potential entrant,¹⁰⁰ whether the monopolist offers bundling exclusively or “mixes” bundling and standalone sales,¹⁰¹ whether the buyers all have identical demand (generally ruling out variable proportions) or diverse buyers have differing demands,¹⁰² whether costs are constant or subject to scale economies, whether the tying monopolist increases its price above the standalone profit-maximizing level at the time it bundles,¹⁰³ whether the discount requires a pre-commitment such as a most favored nation clause,¹⁰⁴

⁹⁵ Assaf Eilat, Jith Jayaratne, Janusz A. Ordover & Greg Shaffer, *How Loyalty Discounts Can Perversely Discourage Discounting: Comment*, CPI ANTITRUST CHRON., Vol. 4, No. 1, Spring 2010.

⁹⁶ See Carbajo, de Meza & Seidmann, *supra* note 85 (alternative proofs under Bertrand and Cournot assumptions).

⁹⁷ E.g., Greenlee, Reitman & Sibley, *supra* note 84, at 1132–33 (secondary market competitive); Brennan, *supra* note 94 (secondary market monopolized prior to bundling; becomes duopoly with bundler after bundling starts).

⁹⁸ See Erik Hovenkamp & Herbert Hovenkamp, *Complex Bundled Discounts and Antitrust Policy*, 57 BUFF. L. REV. 1227 (2009) [hereinafter *Complex Bundled Discounts*] (on bundles whose products are used in variable proportions or that contain more than two products and rivals produce differing subsets of the products).

⁹⁹ See, e.g., Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837 (1990) (bundling as entry deterrence device; monopolist would abandon bundling if entry occurred).

¹⁰⁰ See Eilat, Jayaratne, Ordover & Shaffer, *supra* note 95 (Elhauge result does not apply if there are two or more potential entrants competing with one another).

¹⁰¹ See Crane, *supra* note 85, at 447–62.

¹⁰² See Einer Elhauge, *How Loyalty Discounts can Perversely Discourage Discounting*, 5 J. COMPETITION L. & ECON. 189 (2009) [hereinafter *Loyalty Discounts*] (assuming all the buyers have the same demand function); Hovenkamp & Hovenkamp, *Complex Bundled Discounts*, *supra* note 98 (buyers purchase differing amounts of the secondary good).

¹⁰³ E.g., Greenlee, Reitman & Sibley, *supra* note 84; Elhauge, *Tying, Bundled Discounts*, *supra* note 85, at 468; see also AREEDA & HOVENKAMP, *supra* note 4, ¶ 749d7 (Supp. 2011) (analyzing such situations under “attribution” test for bundled discounts).

¹⁰⁴ E.g., Elhauge, *Loyalty Discounts*, *supra* note 102; Einer Elhauge & Abraham L. Wickelgren, *Robust Exclusion Through Loyalty Discounts* (Harvard Law School Public Law & Legal Theory Working Paper Series No. 10-15, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1544008. See Eilat, Jayaratne, Ordover & Shaffer, *supra* note 95, at 1 (exclusionary results in the Elhauge model a consequence of most favored nation style clause rather than from bundling as such).

whether the goods in a bundle are pure complements or are also partial substitutes,¹⁰⁵ and perhaps others.

Most of the models ignore production or distribution efficiencies. Many of them also ignore avoidance of double marginalization in situations where the secondary good is sold in a noncompetitive market. Those that find double marginalization to obtain generally conclude that bundling results in higher output and lower prices.¹⁰⁶ The models typically assume an absolute monopolist in the primary (tying product); by contrast, most of the litigation involves firms that have at least one rival. Many of the models are extraordinarily difficult to test in any manner that truly controls for all of the various assumptions, and this is particularly true in situations where markets change over time. Excessive generalization from any particular model can produce egregious false positives.

Problematically, outcomes can also vary drastically for exactly the same discount practice in the same market, but with different assumptions about how rivals will respond. This fact can be important because antitrust litigation involves an established market structure and proven bundling arrangements. Any conclusions about economic or general welfare are critically dependent on the range of rational rival responses, and these responses depend on our assumptions about the costs of movement.

Tim Brennan has published a very useful exercise illustrating the array of possible outcomes in a single monopolized market and involving a single discount practice.¹⁰⁷ Initially, firm A has a monopoly on product A and firm B a monopoly on B, which are partial complements.¹⁰⁸ Initially each firm has costs of zero and sells its own product at a price of \$0.50. Then A enters the B market and sells A+B only as a bundle, and at a price of \$1. In that case, if B mindlessly continues to charge \$0.50, the result is a welfare loss. Customers that were previously buying one unit of each good are indifferent because they can still obtain it at the price of \$1 from A, rather than one unit from each seller. Customers who value B by more than \$0.50 but were not purchasing A

¹⁰⁵ See Barry Nalebuff, *Competing Against Bundles*, in INCENTIVES, ORGANIZATION, AND PUBLIC ECONOMICS 323 (Peter J. Hammond & Gareth D. Myles eds., 2000) (finding lower prices and higher output when the goods are partial substitutes).

¹⁰⁶ See Randal Heeb, *Innovation and Vertical Integration in Complementary Markets*, 12 J. ECON. & MGMT. STRATEGY 387 (2003) (bundling complements gives bundler higher output and greater incentive to innovate, while reducing incentive of non-bundlers to innovate); Hovenkamp & Hovenkamp, *Tying Arrangements*, *supra* note 70 (tying that eliminates double marginalization generally results in higher output and lower prices); Nalebuff, *supra* note 105 (when two products are sold separately by two firms that each have market power in one of the markets, bundling by one firm leads to lower prices and higher output).

¹⁰⁷ Brennan, *supra* note 94; see also Timothy J. Brennan, *Bundled Rebates as Exclusion Rather than Predation*, 4 J. COMPETITION L. & ECON. 335 (2008).

¹⁰⁸ That is, some buyers purchase A and B together while others purchase each product alone.

are also indifferent; they will keep right on purchasing B at \$0.50. However, customers who value A by more than \$0.50 but were not purchasing B lose because now they must purchase an unwanted B at a price of \$0.50.

But this set of results depends critically on the twin facts that A neither increases nor decreases the price when it bundles and that B simply keeps right on charging the same price as it had before. This is hardly the most likely assumption, and Brennan illustrates a large number of alternatives that are at least as plausible. First of all, if A and B are complements and both pre-bundling prices reflected some monopoly markup, then the profit maximizing price of the bundle sold by a single firm will be lower than the pre-bundling price. This is a consequence of eliminating double marginalization. Second, B could be earning a significant markup and is likely to respond to any loss of its own output with a price cut. Third, if B enters the A market and offers a bundle itself, competition could drive both sellers' pricing down, perhaps even to the competitive level. In every scenario except the "mindless" one, consumer surplus goes up. This even includes a scenario in which B responds to A's bundling by exiting the market altogether.¹⁰⁹ Total surplus goes up in every realistic situation.¹¹⁰

Such models are much simpler than any reality a court is likely to encounter, but that is partly the point. This particular model has "strong" assumptions—monopolies in both the primary and secondary market to start out and a duopoly in one of the products after bundling commences. One objection to it is that there could be more welfare deterioration if one of the markets were more competitive to begin with. Perfect competition in the secondary market does away with any gains from eliminating double marginalization. As a practical matter, however, a requirement of perfect competition in the secondary market empties the set of anticompetitive outcomes as well. Further, *any* above cost pricing in the secondary market will lead to double marginalization under sales by separate firms. In addition to that, above cost prices in the secondary market typically mean that firms in that market have some ability to respond with their own price cuts.

Restricting the anticompetitive story to competitive secondary markets would largely leave only franchise ties as worthy of concern, because they are about the only ones that involve tied products priced close to marginal cost. For franchises there is largely universal agreement that the ties are used as

¹⁰⁹ By eliminating double marginalization A's profit maximizing price for the AB bundle is lower than A's and B's separate profit-maximizing prices prior to A's entry into the B market.

¹¹⁰ In one of Professor Brennan's alternative scenarios, if A sells the bundle at a price of \$1, which it is unlikely to do given double marginalization, and then if B cuts its price to the optimal response level of \$0.33, *and* if A continues to sell at \$1 without a responsive price cut, then consumers' surplus will rise but producer profits will fall by a larger amount, yielding a welfare loss. See Brennan, *supra* note 94.

royalty substitutes or quality control devices and, in any event, tying product market power is a rarity.¹¹¹

Some recent decisions have embraced an “attribution” test for bundled discounts, which was also recommended by the Antitrust Modernization Commission.¹¹² The test is designed to determine whether an A+B bundled discount is capable of excluding a rival with identical costs but who makes only product B. The test considers whether, when the entire discount is attributed to product B, the price of B falls below its costs. The test is arithmetically identical to asking whether the incremental price of B when included in the bundle is sufficient to cover B’s costs. For example, if I sell a standalone computer for \$400 but a computer + printer package for \$450, then the attribution test shows exclusion if the \$50 increment is less than the cost of the printer. In that case an equally efficient rival who made only the printer could not compete with the bundle.

The attribution test is a useful gatekeeper for excluding non-exclusionary bundles. However, it produces one very perverse false positive: if the secondary good is very close to the competitive price, then nearly any discount flunks the test. So, for example, if I own a monopoly salt injection machine and offer a bundled discount for those agreeing to take my salt, the bundle excludes all rivals who make only salt if the price of salt is currently at cost. So the more competitive the secondary market, the easier it is to show “exclusion” under the test.

¹¹¹ See, e.g., *Queen City Pizza, Inc. v. Domino’s Pizza, Inc.*, 124 F.3d 430, 433 (3d Cir. 1997) (tied product was pizza dough; dismissing complaint based on “contract lock-in” theory of power); *Siegel v. Chicken Delight, Inc.*, 448 F.2d 43 (9th Cir. 1971) (tying of cookers and supplies by non-dominant franchisor; franchise fee was zero but tied products were sold at above market prices; illegality found); *Burda v. Wendy’s Int’l, Inc.*, 659 F. Supp. 2d 928 (S.D. Ohio 2009) (non-monopoly franchisor; tied product was hamburger buns; sustaining complaint based on contract lock-in theory of market power); *Martrano v. Quizno’s Franchise Co., LLC*, 2009 WL 1704469 (W.D. Pa. June 15, 2009) (unpublished opinion) (non-dominant fast food franchisor; tied product was unspecified supplies and services; dismissing complaint for failing to allege appropriate relevant market); *William Cohen & Son, Inc. v. All American Hero, Inc.*, 693 F. Supp. 201 (D.N.J. 1988) (denying summary judgment; tied product was steak sandwich meat). Cf. *Sheridan v. Marathon Petroleum Co., LLC*, 530 F.3d 590 (9th Cir. 2008) (tied product was credit card processing services, which are presumably sold competitively; affirming dismissal of complaint for lack of allegations of monopoly power). Other cases are discussed in HOVENKAMP, FEDERAL ANTITRUST POLICY, *supra* note 22, § 10.6.

¹¹² See, e.g., *Cascade Health Solutions v. PeaceHealth*, 515 F.3d 883, 906–07 (9th Cir. 2008) (applying attribution test and dismissing complaint; health facility bundling primary, secondary, tertiary care); see ANTITRUST MODERNIZATION COMM’N, REPORT AND RECOMMENDATIONS 99 (2007), available at http://govinfo.library.unt.edu/amc/report_recommendation/toc.htm; see also 3A AREEDA & HOVENKAMP, *supra* note 4, ¶ 749d (3d ed. 2008 & Supp.) (discussing other decisions); Erik Hovenkamp & Herbert Hovenkamp, *Exclusionary Bundled Discounts and the Antitrust Modernization Commission*, 53 ANTITRUST BULL. 517 (2008).

The extent of the possibility of false positives is readily appreciated when one considers that the inclusion of an additional good at less than incremental cost is nothing more than a price cut. For example, an automobile seller might sweeten the deal for a hesitant buyer by throwing in rustproofing at no charge or at a price less than its cost. Under the attribution test, ordinary competition becomes a case of anticompetitive bundling.¹¹³

Antitrust policy should never reason from the idiosyncratic to the general except with extraordinary caution. A good example is bundled discount models showing anticompetitive harm when a monopolist in a primary product bundles and at about the same time increases the standalone price of the monopolized good.¹¹⁴ The monopolist then offers a bundled discount that brings the price back down to roughly the pre-bundle level. Such bundling is profitable to the monopolist if its losses from the standalone sales in the A product, which is now priced at higher than the profit-maximizing level, are less than the gains from the increased sales of the B product.

Assuming that such a strategy exists, and it very well may, it would still be a very serious error to presume that any bundle whose introduction is accompanied by a price increase in the A product is such a case.¹¹⁵ After all, the test does not simply require a price increase in the A product; it requires that this increase be part of a strategy of charging more than the standalone profit-maximizing price for A. Further, in a world where inflation is the norm nearly all prices increase from time to time. In addition, the exclusionary power of the strategy is crucially sensitive to whether the bundle is sold in fixed or variable proportions.

To illustrate, a monopolist in product A has costs of \$7 and a standalone profit-maximizing price of \$10. B is sold in a moderately competitive market by both the monopolist and an equally efficient rival whose costs are \$5, and at a standalone price of \$6. The monopolist raises the standalone price of A

¹¹³ See 3A AREEDA & HOVENKAMP, *supra* note 4, ¶ 749c.

¹¹⁴ See Greenlee, Reitman & Sibley, *supra* note 84, at 1138; *id.* at n.27.

¹¹⁵ For example, Professor Elhaug recommends a rule approaching per se illegality for tying accompanied by a price increase in the tying product, with no query into whether the price is above the standalone profit-maximizing level, nor into whether the tie is of fixed or variable proportions:

The Appropriate Test.—When the linking product's unbundled price exceeds its but-for price, bundled discounts have the same power effects as ties and thus should be treated like ties by applying a similar quasi-per se rule that bases liability on linking market power unless the defendant proves offsetting efficiencies. The same exception should also apply for products used or bundled in a fixed ratio that lack separate utility, with such cases instead governed by a traditional rule of reason that requires proof of a substantial foreclosure share or effect.

See Elhaug, *Tying, Bundled Discounts*, *supra* note 85, at 468. Elhaug concedes that “determining the but-for price can be difficult,” but suggests that internal documents might reveal it. *Id.*

from \$10 to \$13 but bundles B at a price of \$3, or a total of \$16 for the A+B bundle. So while the standalone price of A increases, the price of the bundle remains unchanged. In this particular case the rival is excluded because it would have to charge a below cost price of \$3 for B in order to match the bundle. The bundled price of \$16 is well above A's costs of $7 + 5$, or \$12. Consumer welfare is reduced. Those who buy standalone A are worse off and those who buy the bundle are indifferent. Whether the strategy is profitable to the monopolist depends on whether its losses from charging too high a price for A are offset by its gains from greater sales of B.

The whole story falls apart, however, if buyers purchase B in variable proportions.¹¹⁶ In the above example each sale of an additional B at the bundled price of \$3 reduces the seller's margin by \$2. For example, if the buyer wanted one A and four B the price would be $13 + 4 \times 3$, or \$25. Here the seller's costs would be \$7 for the single A and 20 for the four Bs, so the dominant firm would lose money. This observation is very important because the bundled discount cases of which I am aware, including the many cases in medical device purchase markets, specify the bundled price but permit the customer to choose the proportion.¹¹⁷

Finally, one must consider just how widespread bundling strategies that involve price increases in the primary product really are. The question is not often answered in tying decisions because the per se rule makes the answer irrelevant. However, the decisions that incidentally report on prices, going back more than a century, uniformly find that the defendant *reduced* rather than increased the tying product price as part of the tying arrangement.¹¹⁸ Some of these arrangements involved bundled discounts, which means that the defendant used a lower price rather than an absolute contractual requirement to tie the goods together.¹¹⁹ In some, the defendant reduced the tying product price to cost or less, and sometimes even to zero.¹²⁰ One recent decision involving computer printers observed from the record that printer manu-

¹¹⁶ See Hovenkamp & Hovenkamp, *Complex Bundled Discounts*, *supra* note 98, at 1247–50.

¹¹⁷ *E.g.*, *Southeast Mo. Hosp. v. C.R. Bard, Inc.*, 642 F.3d 608 (8th Cir. 2011).

¹¹⁸ The decisions are collected in Hovenkamp & Hovenkamp, *Tying Arrangements*, *supra* note 70, at n.76. One important example is the well-known *A.B. Dick* case, which went to the Supreme Court in 1912. *See A.B. Dick Co. v. Henry*, 149 F. 424, 425 (C.C.N.Y. 1907) (“The evidence establishes that the complainants sell the machines at a loss, less than the actual cost of making, relying on sales of supplies therefor for a profit. The complainants have sold about 11,000 of these machines under this license restriction.”).

¹¹⁹ *See, e.g.*, *Static Control Components, Inc. v. Lexmark Int'l, Inc.*, 487 F. Supp. 2d 830 (E.D. Ky. 2007) (printer manufacturer received lower price for cartridges subject to a restriction requiring a single use and replacement with another Lexmark cartridge than if sold without the restriction).

¹²⁰ *E.g.*, *Siegel v. Chicken Delight, Inc.*, 448 F.2d 43 (9th Cir. 1971) (tying product price of zero).

facturers who bundle cartridges generally pursue a strategy of charging low printer prices, sometimes less than cost, and higher prices for the cartridges.¹²¹

In sum, the case law suggests that bundling strategies that involve very high prices for monopoly goods (higher than the standalone monopoly price) are quite exceptional. The traditional price discrimination model based on a price reduction in the primary good and increase in the second good is far more robust. However, that model generally suggests higher output and probably higher consumer welfare as well.¹²²

Another situation where broad conclusions have been drawn from highly specified models is loyalty, or market share, discounts. These discounts are heavily used in GPO purchasing contracts for hospitals and were also one subject of the FTC's case against Intel.¹²³ Several of the models referred to previously have illustrated situations in which loyalty discounts might result in higher prices by decreasing the range of options available to rivals and thus making them less competitive. But the assumptions in these models are restrictive and they cannot be applied without significant risk of a false signal in situations that deviate from their assumptions.

In many of the markets where loyalty discounts are most typically found, they have a sensible explanation rooted in cost analysis that cannot be set aside: they enable firms with significant fixed costs to bid lower prices in exchange for higher anticipated output. For example, if fixed development costs for a computer chip are \$1 million and variable production costs are \$100 per chip, the seller's breakeven price is \$1100 per chip if it can predict sales of 1000 chips, \$300 per chip if it can predict sales of 5000 chips, \$200 per chip if it can predict sales of 10,000, and so on. A firm's ability to bid a lower price depends critically on its estimate of sales. While the seller is not in a position to control overall market demand, loyalty discounts may be a way of guaranteeing a higher output from individual buyers. This rationale for loyalty discounts is intuitively robust; that is, it tracks the fact that goods subject to such discounts are frequently subject to substantial fixed development costs in relation to a relatively short product life (e.g., microprocessors, medical devices). This is a problem of the nontransactional costs produced by asset specificity and economies of scale. Further, it is robust in the sense that

¹²¹ Xerox Corp. v. Media Sci., Inc., 660 F. Supp. 2d 535, 539 (S.D.N.Y. 2009) ("As is true of other printer manufacturers, Xerox generally sells its printers at a low margin or a loss, hoping to earn a profit through later sales of high margin ink.")

¹²² See Hovenkamp & Hovenkamp, *Tying Arrangements*, *supra* note 70.

¹²³ On the *Intel* settlement, see Press Release, Fed. Trade Comm'n, FTC Settles Charges of Anticompetitive Conduct Against Intel (Aug. 4, 2010), available at <http://www.ftc.gov/opa/2010/08/intel.shtm>; see also Herbert Hovenkamp, *The FTC's Anticompetitive Pricing Case Against Intel*, CPI ANTITRUST CHRON., Vol. 2, No. 2, Winter 2010; Herbert Hovenkamp, *The Federal Trade Commission and the Sherman Act*, 62 FLA. L. REV. 871 (2010).

it does not depend on a great many additional assumptions about market structure, customer homogeneity, customer size distribution, and the like. As a result, such discounts are used by both dominant and nondominant firms. The result is higher output and lower prices and does not depend on exclusion of anyone, although exclusion of firms that cannot attain the same cost level may be a consequence.

As these various examples indicate, any antitrust evaluation of discount strategies must take into account the full range of responses available to both rivals and consumers. This requires consideration of the full range of costs, both transactional and otherwise. Rivals who lack any ability to enter complementary markets or reconfigure their products may exist, but those facts should never be presumed. The same thing generally applies to consumers. The bundled discount models tend to show larger welfare losses as the second market is more competitive, but it is precisely in competitive markets where both rivals and customers have the larger array of alternative options.

VI. CONCLUSION

All important economic decisions have costs. Even doing nothing is costly when other options would have produced a different result. Historically, antitrust structuralism tended to exaggerate these costs and as a result tended to understate the ability of markets to correct for actions with potentially harmful results. On the other side, Chicago School analysis tended to understate the cost of moving resources and thus underappreciate the costs of collusive and particularly exclusionary practices. Since the 1970s transaction cost economics has served to close this gap, greatly enriching our understanding of why firms in differentiated markets behave as they do. The result has put to rest many of our worst fears about threats to competition, but has left an important residual where harm is possible. Transaction costs are not the only ones relevant to this analysis, however. The movement of resources is costly for reasons that have little or nothing to do with transacting, and these costs continue to be equally relevant to policy analysis.