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A Neo-Chicago Approach to Concerted Action

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A NEO-CHICAGO APPROACH TO CONCERTED ACTION

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To state a claim under Section 1 of the Sherman Act[1] for concerted action[2] like price fixing or market allocation, plaintiffs must now plead "enough factual matter (taken as true) to suggest that an agreement was made."[3] It is not enough for the complaint to allege, for example, that the defendants charged identical prices and that they "conspired" to do so.[4] Even if they meet the pleading standard, plaintiffs will suffer summary judgment if they fail to produce evidence that "tend[s] to exclude the possibility that the defendants merely were engaged in lawful conscious parallelism."[5] Meeting these burdens of pleading and production is challenging because it is not clear what distinguishes concerted from consciously parallel action as a matter of law or fact:[6] the legal definition of concerted action is vague; and economics, which

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[1] 15 U.S.C. § 1 ("Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal.").

[2] *In re* Baby Food Antitrust Litig., 166 F.3d 112, 117 n.3 (3d Cir. 1999) ("The phrase 'concerted action' is often used as shorthand for any form of activity meeting the Section 1 'contract . . . combination or conspiracy' requirement.").

[3] Bell Atl. Corp. v. Twombly, 550 U.S. 544, 556–57 (2007). *See also* Ashcroft v. Iqbal, 556 U.S. 662, 678–80 (2009).

[4] *See, e.g.*, Kendall v. Visa U.S.A., Inc., 518 F.3d 1042, 1048 (9th Cir. 2008) (finding insufficient allegations that banks conspired to follow interchange fees set by a credit card company).

[5] City of Tuscaloosa v. Harcros Chems., Inc., 158 F.3d 548, 571–72 (11th Cir. 1998). *See also* Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 588 (1986) (holding that "[t]o survive a motion for summary judgment or for a directed verdict, a plaintiff seeking damages for a violation of § 1 must present evidence 'that tends to exclude the possibility' that the alleged conspirators acted independently").

[6] William H. Page, *The Gary Dinners and the Meaning of Concerted Action*, 62 SMU L. Rev. 597 (2009) [hereinafter *Gary Dinners*]; William H. Page, *Facilitating Practices and Concerted Action Under Section 1 of the Sherman Act*, *in* Antitrust Law and Economics 23 (Keith Hylton ed., 2010) [hereinafter *Facilitating Practices*]; William H. Page, Twombly *and Communication: The Emerging Definition of Concerted Action Under the New Pleading Standards*, 5 J. Competition L. & Econ. 439, 468 (2009) [hereinafter *Twombly*]; William H. Page,

guides antitrust decision making in other contexts, has not resolved some of the most basic issues that the law poses. To make matters worse, the most persuasive evidence of collusion is typically hidden.[7]

In this article, I offer an approach to concerted action that builds on traditional Chicago School analyses of the issue[8] but adds a requirement that rivals communicate in specified ways. Chicago scholars uniformly identify cartels as the primary target of antitrust enforcement. They have also established much of the framework within which courts and economists analyze concerted action. George Stigler's seminal theory of oligopoly,[9] which sought to identify the determinants of effective collusion, has spawned an enormous literature in game theory that models the pricing behavior of oligopolists.[10] Richard Posner extended Stigler's analysis to the domain of law and policy.[11] His approach to oligopoly drew on both economic theory and evidence to identify structural and behavioral characteristics of markets that suggested the presence of noncompetitive pricing. He also argued that tacit collusion—rivals' coordination of noncompetitive pricing without express communication—could satisfy the Sherman Act's requirement of agreement. But Posner's legal treatment of tacit collusion has not persuaded the courts.[12]

I argue that Posner's approach to the problem of oligopoly, refocused on the role of communication, provides the most promising way forward in the analysis of concerted action. After recounting the history of the Chicago

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Communication and Concerted Action, 37 LOY. U. CHI. L.J. 405, 411–12 (2007) [hereinafter *Communication*].

[7] ABA SECTION OF ANTITRUST LAW, PROOF OF CONSPIRACY UNDER THE FEDERAL ANTITRUST LAWS 53 n.9 (2010) (collecting cases noting the difficulty of discovering direct proof of conspiracy).

[8] For discussion of the nature and influence of the Chicago School, see William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 VA. L. REV. 1221, 1233–37 (1989).

[9] GEORGE J. STIGLER, *A Theory of Oligopoly*, *in* THE ORGANIZATION OF INDUSTRY 39 (1968).

[10] Guy Sagi, *The Oligopolistic Pricing Problem: A Suggested Price Freeze Remedy*, 2008 COLUM. BUS. L. REV. 269, 272–73 (observing that "Stigler's influential cooperative model . . . in many ways changed the way we look at oligopoly pricing and laid the groundwork for some of the modern dynamic game theoretic models."). For introductions, see W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 106–28 (4th ed. 2005); DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION ch. 6 (4th ed. 2005).

[11] Richard A Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 STAN. L. REV. 1562, 1598–1605 (1968) [hereinafter *Oligopoly*].

[12] *Id.* at 1575–93; *see also In re* High Fructose Corn Syrup Antitrust Litig., 295 F.3d 651, 654 (7th Cir. 2002) (Posner, J.) (suggesting, consistent with his theory of oligopoly, that if "a firm raises price in the expectation that its competitors will do likewise, and they do, the firm's behavior can be conceptualized as the offer of a unilateral contract that the offerees accept by raising their prices," but recognizing that "it is generally believed . . . that an express, manifested agreement, and thus an agreement involving actual, verbalized communication, must be proved in order for a price-fixing conspiracy to be actionable under the Sherman Act").

School's analysis of collusion, focusing on the pioneering efforts of Stigler and Posner, in the remainder of the article, I redefine concerted action and suggest how enforcers might find it. My proposal is both normative and positive: it develops a policy position drawing on the economic literature but also reconciles the position with the federal courts' emerging approach to the issue of agreement in various contexts.

In Part II, I argue that Section 1 does not reach tacit collusion, but neither does it require an explicit verbal agreement; instead, interdependent actions are concerted if rivals coordinate them, in part, by private communication. I argue that this focus on communicative concerted action is consistent with the Chicago tradition, particularly error cost analysis. The Neo-Chicago character of my approach lies in its reliance on recent economic literature on the role of communication in collusion. In Part III, I examine a small but important subset of that literature: studies of how real-world cartels use both communication and facilitating practices to achieve their aims. Based on these studies, I suggest how plaintiffs and enforcement agencies might discover concerted action by examining changing patterns in the use of facilitating practices, which could likely be achieved only through private communication.

I. CHICAGO, OLIGOPOLY, AND TACIT COLLUSION

The Chicago School is most often associated with its critique of antitrust law's traditional treatment of resale price maintenance[13] and exclusionary practices like tying[14] and predatory pricing.[15] But the Chicago School has also produced a characteristic analysis of cartels. Its fundamental criterion of antitrust policy is consumer welfare. For most Chicagoans, cartels offer the paradigmatic demonstration of how a collusive practice can reduce consumer welfare by restricting output and destroying the surplus value consumers place on lost production.[16] In their seminal statement of the Chicago School's approach,[17] Aaron Director and Edward Levi observe that "[t]he problem of collusion has always been central to the antitrust laws,"[18] because if "a price-fixing agreement occurs between members of an industry controlling a substantial share of the market . . . the consequences of this behavior may be

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[13] Lester G. Telser, *Why Should Manufacturers Want Fair Trade?*, 3 J.L. & ECON. 86 (1960).

[14] Ward S. Bowman, Jr., *Tying Arrangements and the Leverage Problem*, 67 YALE L.J. 19 (1957).

[15] John S. McGee, *Predatory Price Cutting: The* Standard Oil (N.J.) *Case*, 1 J.L. & ECON. 137 (1958).

[16] ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 263 (1978) ("The subject of cartels lies at the center of antitrust policy.").

[17] Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 NW. U. L. REV. 281 (1956).

[18] *Id.* at 294.

predicted with some certainty."[19] Cartels raise prices to consumers and transfer wealth from them to producers, but the traditional economic concern has been that they generate deadweight social welfare losses, measured by the reduction in consumer surplus.[20] More controversially, Posner has argued that the social cost of cartels may be higher than the deadweight welfare loss, if firms engage in socially wasteful non-price competition or costly exclusionary activities that dissipate their monopoly profit.[21]

Chicagoans have generally agreed that explicit cartels should be per se unlawful. Robert Bork showed that Congress was concerned with the problem of cartels, particularly those formed by railroads, in enacting Section 1 of the Sherman Act.[22] Director and Levi argue that "there is an economic foundation for the illegality of price fixing in itself when market price is affected," both because of the clear harm to consumers and the ease of administering the rule.[23] Posner made "horizontal combinations" the centerpiece of his "program for the Antitrust Division," arguing that it was the only target endorsed by a consensus of economists.[24] Frank Easterbrook suggests that the Chicago School "favor[s] little other than prosecuting plain vanilla cartels and mergers to monopoly" because its members are "reasonably sure that these two things are harmful to consumers (though there are scattered doubters)."[25]

Chicago scholars have recognized, however, that despite the attractions of cartel profits, we do not observe cartels everywhere because forming and operating a cartel is hard, even apart from legal sanctions. As Director and Levi

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[19] *Id.* at 294–95.

[20] BORK, *supra* note 16, at 108. *But cf.* Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65 (1982).

[21] Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807, 820 (1975) (estimating the social costs of private cartels under various assumptions).

[22] Robert H. Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J.L. & ECON. 7, 21 (1966) (arguing that "Congress intended to outlaw 'loose combinations' of the sort typified by price-fixing and market division agreements between competitors."). *See also* HANS B. THORELLI, THE FEDERAL ANTITRUST POLICY: ORIGINATION OF AN AMERICAN TRADITION 72–85 (1954) (documenting congressional concern with both close-knit and loose-knit combinations).

[23] Director & Levi, *supra* note 17, at 294–95.

[24] Richard A. Posner, *A Program for the Antitrust Division*, 38 U. CHI. L. REV. 500, 508 (1971) [hereinafter *A Program*].

[25] Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696, 1701 (1986). The principal doubter is Lester Telser, who has argued that agreements among rivals to coordinate production may sometimes be necessary to respond efficiently to shifts in demand. LESTER G. TELSER, A THEORY OF EFFICIENT COOPERATION AND COMPETITION (1987); Lester G. Telser, *Cooperation, Competition, and Efficiency*, 28 J.L. & ECON. 271, 290 (1985) [hereinafter *Cooperation*]. For criticism of Telser's argument, see John S. Wiley, Jr., *Antitrust and Core Theory*, 54 U. CHI. L. REV. 556 (1987); *see also* Fred S. McChesney, *Be True to Your School: Chicago's Contradictory Views of Antitrust and Regulation*, *in* THE CAUSES AND CONSEQUENCES OF ANTITRUST: THE PUBLIC-CHOICE PERSPECTIVE 323 (Fred S. McChesney & William F. Shughart II eds., 1995) (arguing that, despite its stated rationale, antitrust is driven by private interests).

put it, "[P]rice-fixing agreements, when adherence to them cannot be compelled through coercion or penalties, might be self-correcting either through the defection of members, which would be rewarding to the individual firm, or through the advent of new firms."[26] Similarly, Lester Telser notes that cartels must not only set a profit-maximizing price, but also control the temptation to cheat; since they evidently do not always succeed in these functions "we need a theory to find [the] conditions" in which they can.[27]

Stigler was the first Chicago economist to examine this issue systematically.[28] His famous theory of oligopoly is actually a theory of "the feasibility of collusion,"[29] defined in purely economic terms as the "joint determination of outputs and prices by ostensibly independent firms."[30] In order to account for heterogeneity of both products and buyers, he observes, collusive oligopolists usually must achieve "a price structure of some complexity" that takes account of differences in the costs of transactions, entry barriers, and demand elasticity.[31] Moreover, the cartel must account for the incentive of members of the cartel to increase their individual profits by secret price cuts. Consequently, "collusion is impossible for many firms," but can be "much more effective" when market conditions, like high concentration on the selling side, low concentration on the buying side, and homogeneous products, allow firms to detect and penalize secret price cutting[32] by, for example, monitoring rivals' shifts in sales.[33] In examining the empirical literature, Stigler finds that "the less perfect the market knowledge, the more extensive the price cutting"[34] that undermines the collusive understanding.

Stigler's theory does not address the legal problems of definition, characterization, and proof that attend the decision to ban cartels. Director and Levi note, however, that the "serious problem of collusion is to determine what conduct is to be characterized as the equivalent of an agreement to control output."[35] Condemning trade associations' dissemination of information, for example, would be problematic because "relative merits of knowledge and ignorance are not well defined in legal or economic doctrine."[36] Just as increasing firm size may bring both scale economies and market power, dissem-

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[26] Director & Levi, *supra* note 17, at 294. *See also* Posner, *A Program*, *supra* note 24, at 529 ("The cartel . . . carries within it the seeds of its own destruction.").
[27] LESTER G. TELSER, COMPETITION, COLLUSION, AND GAME THEORY 178 (1972).
[28] STIGLER, *supra* note 9, at 39.
[29] *Id.* at 40.
[30] *Id.* at 41.
[31] *Id.* at 41–42.
[32] *Id.* at 39, 42.
[33] *Id.* at 44–45.
[34] *Id.* at 59.
[35] Director & Levi, *supra* note 17, at 295.
[36] *Id.*

ination of information may bring either an "improvement of the market" or "a restriction in output in the industry," depending upon each firm's "prediction . . . of the behavior of other firms in the industry."[37] Stating the legal problem of conscious parallelism with prescience, Director and Levi caution that courts should not "assume that action taken on general knowledge implies a concert of action equivalent to collusion, conspiracy or agreement, and yet the result may be the same as that which follows from an agreement."[38]

Bork similarly would limit the prohibition of collusion to cases of "explicit and detectable agreement."[39] He does not insist on direct evidence of the agreement because "[t]here may be evidence of market behavior that is consistent only with collusion, and that may of course be used to show agreement."[40]

Despite the reservations of other Chicagoans, Posner, beginning in 1968, has built on Stigler's theory of collusive oligopoly to argue that, where rivals are able to overcome the costs of coordination and enforcement by "tacit collusion," their actions should violate Section 1 of the Sherman Act.[41] He distinguishes his idea of tacit collusion from the theory of "oligopolistic interdependence," in which firms make individual choices to price at noncompetitive levels by independently recognizing their joint self-interest.[42] Oligopoly, Posner argues, is a necessary but not a sufficient condition for noncompetitive pricing.[43] Oligopolists must choose not to price at marginal cost and instead to restrict output and raise prices along with their rivals, and to undertake the costly business of determining, coordinating, and enforcing

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[37] *Id.* at 295–96.

[38] *Id.* at 296.

[39] BORK, *supra* note 16, at 175. *See also id*. at 103–04 (describing the theory of oligopolistic interdependence as "speculation about how firms may or may not be able to behave").

[40] *Id*.

[41] Posner, *Oligopoly*, *supra* note 11. Posner has refined his policy analysis over several decades. *See* RICHARD A. POSNER, ANTITRUST LAW 51–100 (2d ed. 2001). In his judicial capacity, he recognizes that the law is not consistent with his normative analysis. *In re* High Fructose Corn Syrup Antitrust Litig., 295 F.3d 651, 654 (7th Cir. 2002). Louis Kaplow has recently argued along the same lines that the core of the agreement requirement is interdependence or "behavior that involves coordination with others," not various mechanisms for achieving it, like communication. *See* Louis Kaplow, *On the Meaning of Horizontal Agreements in Competition Law*, 99 CALIF. L. REV. 683, 697 (2011) [hereinafter *Horizontal Agreements*]. Kaplow, however, stops short of advocating as a legal rule that courts should equate interdependence and agreement. *Id*. at 689, 814. *See also* Louis Kaplow, *An Economic Approach to Price Fixing*, 77 ANTITRUST L.J. 343, 348–49 (2011) (also criticizing the focus on communication, but declining to propose a legal standard) [hereinafter *Economic Approach*].

[42] POSNER, *supra* note 41, at 55–60. For expressions of the interdependence theory, see Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 HARV. L. REV. 655, 665–66 (1962); JOE S. BAIN, INDUSTRIAL ORGANIZATION 114 (2d ed. 1968).

[43] Posner, *Oligopoly*, *supra* note 11, at 1571.

the higher prices.[44] In raising prices above the competitive level, a firm makes a kind of offer that its rivals accept by following suit, in the process reaching a "meeting of the minds" that satisfies the literal language of the statute.[45] Posner evidently views this choice as a culpable act worthy of antitrust sanctions.

Because tacit collusion is always anticompetitive, Posner suggests, it is a more appropriate target than a pure price-fixing conspiracy, which may reflect only "the attempt to fix prices."[46] Attempts may have "negligible consequences, while much serious price fixing may escape detection altogether because detectable overt communication is necessary for proof of an attempt but is not always necessary to bring about a concerted increase of price."[47] Posner concedes that "it seems improbable that prices could long be maintained above cost in a market, even a highly oligopolistic one, without *some* explicit acts of communication and implementation."[48] He also concedes that he harbors doubt that identifying industries in which tacit collusion is likely and actually occurring "is fully practicable in the present state of economic knowledge."[49] Moreover, he recognizes that the courts' track record in finding collusion in the absence of evidence of communication has not inspired confidence. Nevertheless, he suggests that "[e]conomically significant collusion should leave some visible traces in the pricing behavior of the market, even granting fully the interpretive difficulties that such behavior presents."[50]

In his first article on this subject, Posner points to systematic price discrimination (measured by the ratio of price to marginal cost), excess capacity, infrequent changes in transaction prices, stable market shares over time, identical sealed bidding, refusal to discount prices despite excess capacity, and price preannouncements[51] as suspicious behavior. In later writings, he proposes that public enforcement agencies identify industries that are structurally predisposed to price fixing (for example, oligopolies selling homogeneous products to numerous buyers), and then look for telltale economic evidence that price fixing, tacit or express, was actually occurring,[52] including the presence of "facilitating practices" that make it easier for firms to coordi-

[44] *Id.* at 1572.

[45] *Id.* at 1576. POSNER, *supra* note 41, at 94–95.

[46] Posner, *A Program*, *supra* note 24, at 514.

[47] POSNER, *supra* note 41, at 53. He adds that "[f]rom an economic standpoint it is a detail whether the collusive pricing scheme was organized and implemented in such a way as to generate evidence of actual communications." *Id.* at 94.

[48] Posner, *Oligopoly*, *supra* note 11, at 1574.

[49] Posner, *A Program*, *supra* note 24, at 515.

[50] Posner, *Oligopoly*, *supra* note 11, at 1587.

[51] *Id.* at 1579–83. Posner suggests that price leadership may be legitimate if based on deference to one firm's judgment of market conditions, but not if it is "so uniform and long-continued as to warrant an inference of tacit collusion." *Id.* at 1582.

[52] Posner, *A Program*, *supra* note 24, at 515.

nate and enforce price and output decisions.[53] The category of facilitating practices now includes systems for reporting transaction prices,[54] most favored customer clauses,[55] meeting competition clauses,[56] delivered or basing point pricing,[57] industry-wide resale price maintenance,[58] and public price announcements.[59] Posner suggests that, where practices like these do facilitate price coordination, courts should in some cases hold firms liable for tacit collusion.[60] Where the firms in the market have adopted a facilitating practice that makes price coordination possible, the courts can remedy the noncompetitive behavior by enjoining the use of the practice.[61]

II. COMMUNICATIVE CONCERTED ACTION: THE COURTS AND ERROR COSTS

Despite his frequent iconoclasm, Judge Posner is the most influential member of the Chicago School, and his analysis of tacit collusion is one of his most famous policy positions. It is part of the Chicago tradition because it builds on Stigler's classic analysis of collusive oligopoly to formulate both a

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[53] POSNER, *supra* note 41, at 97–98.

[54] Christopher R. Leslie, *Trust, Distrust, and Antitrust*, 82 TEX. L. REV. 515, 575–76 (2004).

[55] William S. Neilson & Harold Winter, *Bilateral Most-Favored-Customer Pricing and Collusion*, 24 RAND J. ECON. 147 (1993); Jonathan B. Baker, *Vertical Restraints with Horizontal Consequences: Competitive Effects of Most-Favored-Customer Clauses*, 64 ANTITRUST L.J. 597 (1996).

[56] Steven C. Salop, *Practices that (Credibly) Facilitate Oligopoly Co-ordination*, *in* NEW DEVELOPMENTS IN THE ANALYSIS OF MARKET STRUCTURE 265, 279–82 (Joseph E. Stiglitz & G. Frank Mathewson eds., 1986).

[57] Maria Paz Espinosa, *Delivered Pricing, FOB Pricing, and Collusion in Spatial Markets*, 23 RAND J. ECON. 64 (1992); Toshihiro Matsumura & Noriaki Matsushima, *Cartel Stability in a Delivered Pricing Oligopoly*, 86 J. ECON. 259 (2005); Fred S. McChesney & William F. Shughart II, *Delivered Pricing in Theory and Policy Practice*, 52 ANTITRUST BULL. 205 (2007); GEORGE J. STIGLER, *A Theory of Delivered Price Systems*, *in* THE ORGANIZATION OF INDUSTRY 147 (1968).

[58] POSNER, *supra* note 41, at 88–89; Telser, *supra* note 13, at 99–104.

[59] Michael D. Blechman, *Conscious Parallelism, Signaling and Facilitating Devices: The Problem of Tacit Collusion Under the Antitrust Laws*, 24 N.Y.L. SCH. L. REV. 881 (1979); Charles A. Holt & David T. Scheffman, *Facilitating Practices: The Effects of Advance Notice and Best-Price Policies*, 18 RAND J. ECON. 187 (1987); Joseph Kattan, *Beyond Facilitating Practices: Price Signaling and Price Protection Clauses in the New Antitrust Environment*, 63 ANTITRUST L.J. 133 (1994); Julio J. Rotemberg & Garth Saloner, *Collusive Price Leadership*, 39 J. INDUS. ECON. 93 (1990); W. Bentley MacLeod, *A Theory of Conscious Parallelism*, 27 EUR. ECON. REV. 25 (1985).

[60] *See also* Paolo Buccirossi, *Facilitating Practices*, *in* HANDBOOK OF ANTITRUST ECONOMICS 305, 341–43 (Paolo Buccirossi ed., 2008). Buccirossi argues that facilitating practices may violate Section 1 if they are accompanied by "two-way, pre-play communication" that coordinates behavior and may violate Section 5 of the Federal Trade Commission Act if the facilitating practice is only unilaterally adopted by one firm and matched by rivals.

[61] POSNER, *supra* note 41, at 98–99. Donald Turner, who otherwise believed tacit collusion to be beyond the reach of Section 1, agreed with Posner on this point. *See* Turner, *supra* note 42, at 675–76.

legal standard and practical enforcement recommendations. His application of the analysis to mergers provided the groundwork for the enforcement agencies' Horizontal Merger Guidelines, which have transformed the law of Section 7 of the Clayton Act.[62] As a proposal for interpretation and enforcement of Section 1 of the Sherman Act, however, Posner's recommendation has not succeeded. In this Part, I argue that concerted action requires communication, and that this interpretation of concerted action is an appropriate extension of the Chicago tradition given our present state of knowledge.

A. CONCERTED ACTION IN THE COURTS

Posner's approach to tacit collusion and his focus on facilitating practices initially won over the enforcement agencies. Both the Antitrust Division of the U.S. Department of Justice[63] and the Federal Trade Commission[64] undertook campaigns against tacit collusion (or shared monopoly) in the late 1970s and early 1980s, but both ended without a victory in court. In the *Ethyl* case, for example, the FTC presented the court with a market almost perfectly structured for noncompetitive pricing.[65] The court nevertheless declined to find liability based on the presence of three facilitating practices because each of them served benign purposes that purchasers wanted; all had, in fact, been adopted when there was a single firm in the market, so they must have served

[62] *See, e.g.*, U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines 24–25 (2010) (stating that "[p]arallel accommodating conduct includes situations in which each rival's response to competitive moves made by others is individually rational, and not motivated by retaliation or deterrence nor intended to sustain an agreed-upon market outcome, but nevertheless emboldens price increases and weakens competitive incentives to reduce prices or offer customers better terms"), *available at* http://ftc.gov/os/2010/08/100819hmg.pdf.

[63] U.S. Dep't of Justice, *Antitrust Division Memorandum on Identification and Challenge of Parallel Pricing Practices in Concentrated Industries*, [July–Dec.] Antitrust & Trade Reg. Rep. (BNA) No. 874, at F-1 (May 26, 1978). For discussion, see George A. Hay, *Oligopoly, Shared Monopoly, and Antitrust Law*, 67 CORNELL L. REV. 439 (1982); Gregory J. Werden, *Price Fixing and Civil Damages: Setting the Record Straight*, 34 ANTITRUST BULL. 307, 334 n.84 (1989).

[64] E.I. du Pont de Nemours & Co. v. FTC, 729 F.2d 128 (2d Cir. 1984) (*Ethyl*), *vacating* Ethyl Corp. v. E.I. du Pont de Nemours & Co., 101 F.T.C. 425 (1983). For discussion of the FTC's decision in the case, see Donald S. Clark, *Price-Fixing Without Collusion: An Analysis of Facilitating Practices After* Ethyl Corp., 1983 WIS. L. REV. 887; *see also* Lee Goldman, *Oligopoly Policy and the* Ethyl Corp. *Case*, 65 OR. L. REV. 73 (1986); David M. Grether & Charles R. Plott, *The Effects of Market Practices in Oligopolistic Markets: An Experimental Examination of the* Ethyl *Case*, 22 ECON. INQUIRY 479 (1984); George A. Hay, *Facilitating Practices: The* Ethyl *Case*, *in* THE ANTITRUST REVOLUTION 182 (John E. Kwoka Jr. & Lawrence J. White eds., 3d ed. 1999); Michael G. Vita, *Fifteen Years After* Ethyl*: The Past and Future of Facilitating Practices*, 68 ANTITRUST L.J. 991 (2001).

[65] *Ethyl*, 729 F.2d at 132 ("These characteristics of the industry—high concentration, small likelihood of new entries because of a sharply declining market, inelastic demand, and homogeneity of product—led to a natural oligopoly with a high degree of pricing interdependence in which there was far less incentive to engage in price competition than if there had been many sellers in an expanding market.").

functions other than (or in addition to) price coordination.[66] Thus, uniform adoption of a facilitating practice does not, by itself, permit an inference of concerted action.[67] As a later court observed, "'facilitating devices' are not necessarily sufficient under the law to constitute a 'plus factor'"[68] that would raise a jury issue of agreement, because they typically serve benign functions. Nor are allegations of facilitating practices necessarily sufficient to raise a plausible inference of concerted action to avoid dismissal under *Twombly*, which requires that "when allegations of parallel conduct are set out in order to make a § 1 claim, they must be placed in a context that raises a suggestion of a preceding agreement, not merely parallel conduct that could just as well be independent action."[69]

The Supreme Court's recent decision in *Leegin*,[70] applying the rule of reason to resale price maintenance, illustrates the point.[71] Industry-wide resale price maintenance is a facilitating practice because it makes it harder for members of a manufacturers' cartel to cheat by offering secret discounts to retailers.[72] Some have therefore suggested that manufacturers' parallel adoption of resale price maintenance is a sufficient basis for inference of a horizontal agreement among the manufacturers.[73] In *Leegin,* however, the Court suggested only that resale price maintenance "should be subject to more careful scrutiny . . . if many competing manufacturers adopt the practice"[74] and that it is sometimes "useful evidence for a plaintiff attempting to prove the existence of a horizontal cartel."[75] Rivals might use resale price maintenance to police a cartel by "identifying price-cutting manufacturers."[76] In that case, it would "facilitate" a per se illegal cartel and thus itself be "unlawful under the rule of reason."[77] But manufacturers might also maintain resale prices to prevent no-frills retailers from free riding on the promotional activities of full-

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[66] *See, e.g.*, *id*. at 133 ("There is no evidence that the practice was adopted by any of the respondents for other than legitimate business reasons, the principal of which were tradition and customer demand.").

[67] Posner has criticized the decision, without addressing the issue of the benefits of the practices. POSNER, *supra* note 41, at 98.

[68] Williamson Oil Co. v. Philip Morris Cos., 231 F. Supp. 2d 1253, 1274–75 (N.D. Ga. 2002), *aff'd*, 346 F.3d 1287 (11th Cir. 2003).

[69] Bell Atl. Corp. v. Twombly, 550 U.S. 544, 557 (2007). *See, e.g.*, *In re* Ins. Brokerage Antitrust Litig., 618 F. 3d 300, 334–35 (3d Cir. 2010).

[70] Leegin Creative Leather Prods., Inc. v. PSKS, Inc., 551 U.S. 877 (2007).

[71] Page, *Facilitating Practices*, *supra* note 6, at 33–34.

[72] POSNER, *supra* note 41, at 88–89.

[73] *See, e.g.*, Turner, *supra* note 42, at 678–81 (arguing that it is "an unlawful agreement for oligopolists to make interdependent decisions to adopt fair trade, regardless of the means employed").

[74] *Leegin*, 551 U.S. at 897.

[75] *Id.* at 893.

[76] *Id.* at 892.

[77] *Id.* at 893.

service retailers.[78] Thus, as Posner has observed, "the fact that competing sellers engage in resale price maintenance is an ambiguous sign of cartelization; it may mean only that each of the sellers in the industry has decided that his own ends would be furthered by controlling the resale price of the product."[79]

Consequently, parallel adoption of a facilitating practice, by itself, cannot justify an inference of a price-fixing agreement. Because the practice will invariably involve some consumer benefit, parallel adoption of it does not tend to exclude the possibility that each firm is acting independently. I am speaking here only of parallel use of facilitating practices—an express agreement to standardize pricing in a way that facilitates price coordination is illegal per se.[80]

We now know that tacit collusion alone is not an illegal agreement,[81] but we still do not know what kind of coordination is an agreement.[82] The Supreme Court has offered, unhelpfully, that no "formal,[83] "explicit,"[84] or "express"[85] agreement is needed so long as the defendants have "a unity of purpose or a common design and understanding, or a meeting of the minds"[86]

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[78] *Id.* at 890.

[79] POSNER, *supra* note 41, at 88–89.

[80] *See, e.g.*, Catalano, Inc. v. Target Sales, Inc., 446 U.S. 643, 649–50 (1980); Sugar Inst., Inc. v. United States, 297 U.S. 553 (1936). For discussion, see Robert H. Lande & Howard P. Marvel, *The Three Types of Collusion: Fixing Prices, Rivals, and Rules*, 2000 WIS. L. REV. 941, 945–46 (2000); *see also* Page, *Facilitating Practices*, *supra* note 6, at 30–32. I have argued elsewhere that a state statute that mandates the adoption of a facilitating practice should be preempted by the Sherman Act. John E. Lopatka & William H. Page, *State Action and the Meaning of Agreement Under the Sherman Act: An Approach to Hybrid Restraints*, 20 YALE J. ON REG. 269, 294–97 (2003). *See also* Costco Wholesale Corp. v. Maleng, 522 F.3d 874, 901–04 (9th Cir. 2008); TFWS, Inc. v. Schaefer, 242 F.3d 198 (4th Cir. 2001); Miller v. Hedlund, 813 F.2d 1344, 1350 (9th Cir. 1986).

[81] Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 227 (1993) ("Tacit collusion, sometimes called oligopolistic price coordination or conscious parallelism, describes the process, not in itself unlawful, by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests and their interdependence with respect to price and output decisions.") This language would appear to supersede any contrary inference from the Court's reference in *Theatre Enterprises* to "an agreement, tacit or express." Theatre Enters., Inc. v. Paramount Film Distrib. Corp., 346 U.S. 537, 540 (1954). Courts, however, continue to use similar terms in a confusing way. *See, e.g.*, White v. R.M. Packer Co., 635 F.3d 571, 576 n.3 (1st Cir. 2011) (distinguishing lawful tacit collusion from unlawful tacit agreement). *Cf.* Kaplow, *Horizontal Agreements*, *supra* note 41, at 726 (criticizing courts and commentators for imprecision in language describing various forms of interdependence).

[82] *Cf.* United States v. Ashland-Warren, Inc., 537 F. Supp. 433, 442 (M.D. Tenn. 1982) ("The concept of 'agreement' is elusive.").

[83] Am. Tobacco Co. v. United States, 328 U.S. 781, 809 (1946)

[84] United States v. Gen. Motors Corp., 384 U.S. 127, 142–43 (1966).

[85] United States v. Paramount Pictures, Inc., 334 U.S. 131, 142 (1948) (noting that "[i]t is enough that a concert of action is contemplated and that the defendants conformed to the arrangement").

[86] *American Tobacco*, 328 U.S. at 810.

or "conscious commitment to a common scheme."[87] All of these terms are consistent with lawful tacit collusion.[88] William Kovacic reads the Court's opinions to hold that firms may form an agreement by "means other than a direct exchange of assurances,"[89] but it is unclear what those means might be.

B. Communicative Concerted Action

I argue in this section that consciously parallel conduct becomes concerted if rivals achieve it, at least in part, by communicating their intended actions and their reliance on others' actions.[90] To distinguish concerted conduct from facilitating practices with ambiguous purposes, I limit communications to private oral or written communications as opposed to public price announcements.[91] For the same reason, I also limit communications to those involving competitive intention and reliance rather than communication of facts like prices.[92] Concerted action in this sense—what might be called communicative concerted action—requires more than purely tacit collusion, but does not require a "direct exchange of assurances." It thus does not require a completed verbal agreement on prices. Nor does it require direct proof of communica-

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[87] Monsanto Co. v. Spray-Rite Serv. Corp., 465 U.S. 752, 768 (1984).

[88] Kaplow, *Horizontal Agreements*, *supra* note 41, at 699–700.

[89] William E. Kovacic, *Antitrust Policy and Horizontal Collusion in the 21st Century*, 9 Loy. Consumer L. Rev. 97, 100 (1997).

[90] This argument builds on Oliver Black, Conceptual Foundations of Antitrust 185–87 (2005). *See* Page, *Gary Dinners*, *supra* note 6; Page, *Communication*, *supra* note 6; Page, *Twombly*, *supra* note 6; *see also* Kaplow, *Horizontal Agreements*, *supra* note 41, at 701 n.24 (collecting legal and economic commentators who advocate a focus on communication in defining illegal concerted action).

[91] Dennis W. Carlton, Robert H. Gertner & Andrew M. Rosenfield, *Communication Among Competitors: Game Theory and Antitrust*, 5 Geo. Mason L. Rev. 423, 426–28 (1997) (distinguishing direct exchange of information through communications among competitors with the more likely procompetitive indirect communication through price announcements). *But see* Kaplow, *Horizontal Agreements*, *supra* note 41, at 712–14 (arguing that any attempt to distinguish a subset of communications as decisive in the formation of an agreement is doomed because of the ease with which firms can substitute other methods of coordination); *id.* at 797–803 (arguing that oligopoly theory suggests that communication may have various roles in achieving agreement, but is not its distinguishing characteristic); Joseph E. Harrington, *Posted Pricing as a Plus Factor*, 7 J. Competition L. & Econ. 1, 19 (2011) (arguing that public posted pricing may function as communication sufficient to establish concerted action if "the signal's content is clear").

[92] Joseph E. Harrington, Jr. & Wei Zhao, Signaling and Tacit Collusion in an Infinitely Repeated Prisoners' Dilemma 20–21 (Aug. 2010) (unpublished manuscript) (distinguishing exchanges of information and intentions), *available at* http://www.econ.jhu.edu/People/Harrington/tacit%20collusion%20PD_5.11.pdf. Exchanges of current prices may justify an inference of an agreement to exchange prices, which might itself be unlawful under the rule of reason if it is proven to have an anticompetitive effect. United States v. Container Corp. of Am., 393 U.S. 333, 334–35 (1969). I am concerned here with inference of concerted action with respect to future prices, which triggers per se illegality. In some factual contexts, an exchange of current prices might be interpreted as expression of intent concerning future prices.

tion, if circumstantial evidence allows the inference that the requisite communications occurred.

This focus on expressions of intention in a pattern of interdependent behavior is not new to American antitrust law. In at least two instances, fifty years apart, federal courts have explicitly distinguished communicative concerted action from tacit collusion on the one hand and from completed verbal agreements on the other. The distinctions appear first in the district court's analysis of the famous Gary Dinners in the *United States Steel* case in 1915, which the Supreme Court affirmed[93] five years later.[94] The district court panel first held that the steel manufacturers' parallel identical pricing of standard steel rails for over a decade was lawful, because the rivals "simply followed that basic price to prevent the ruinous rail wars of the past."[95] As the former president of U.S. Steel explained:

> [I]f I were to vary that price of $28 for rails, which seems to have been recognized by all rail manufacturers as a fair price and giving a fair profit, if I were to vary that 10 cents a ton, I would precipitate a steel war . . . that would result in ruining my works without any profit. *Everybody by tacit and mutual understanding felt the same about that*.[96]

The court concluded that this sort of tacit collusion was lawful.

In contrast, the Gary Dinners and the associated subcommittee meetings of producers of various steel products were illegal, because they involved statements of intention by rivals that had a demonstrable effect on prices:

> *At neither* [the dinners nor the meetings] *were agreements made concerning prices at which the participants would sell their products.* In fact, it was asserted and reasserted that such agreements were impossible, because illegal; but in lieu of agreements, the parties, both at the dinners and at the committee meetings, severally made what they chose to call "declarations of purpose"—that is, declarations of the prices at which they respectively proposed to sell their products, to which prices it is testified all adhered until some one chose to deviate therefrom, in which event he was "in decency" bound to notify his dinner associates or the members of his committee.[97]

The dinners and committee meetings of 1907–1911 produced an "understanding or moral obligation"[98] rather than a "positive and expressed obligation,"[99]

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[93] United States v. U.S. Steel Corp., 223 F. 55 (D.N.J. 1915), *aff'd*, 251 U.S. 417 (1920). *See* Page, *The Gary Dinners*, *supra* note 6 (extended discussion of the Gary Dinners).

[94] The decision was delayed because the Attorney General and the Chief Justice agreed to suspend proceedings during World War I over U.S. Steel's objection. Thomas K. Fisher, *Antitrust During National Emergencies I*, 40 MICH. L. REV. 969, 996–98 (1942).

[95] *U.S. Steel*, 223 F. at 154.

[96] *Id.* at 154 (quoting Charles M. Schwab) (emphasis added).

[97] *Id.* at 174 (Woolley, J., concurring) (emphasis added).

[98] *Id.* at 160 (Buffington, J.)

[99] *Id.*

yet stabilized prices as effectively as the "pools" of 1901–1904 and the "statistical associations" of 1904–1906 in the same industry. The Gary Dinners suggest that rivals would be more likely to follow their statements of intention when they are reinforced by behavioral factors like the sense of business ethics Judge Gary promoted in his many speeches.[100]

The communications in the Gary Dinners episode resemble the communications in a hypothetical meeting of rivals that the Ninth Circuit imagined fifty years later.[101] In this scenario, five competitors meet; all but one announces its intention to set its price at $X; all or most subsequently set their prices at $X.[102] The court suggested that these statements of intention would not establish a verbal agreement but might justify a finding of agreement if combined with "evidence as to what these competitors had done before such meeting, and what actions they took thereafter, or what actions they did not take."[103] An agreement required only "mutual consent," which could arise if a rival proposed an action "in the presence of other competitors" and they followed it "generally and customarily and continuously for all practical purposes, even though there be slight variations."[104] Thus, mutual consent would occur without "an exchange of assurances to take or refrain from a given course of conduct."[105] This focus on communications also explains the courts' dispositions of cases alleging price fixing in much more recent cases. Left without adequate guidance by the Supreme Court, the lower courts have used communication (or the inference of communication) as a crucial basis for dis-

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[100] Gary urged, for example, that

> [i]f competitors are in frequent communication and make full disclosures to each other in regard to their business, notifying one another of what they are doing, it will follow as a natural result that no one will take advantage of the information he thus receives to act unjustly or dishonorably towards his neighbor.

Def. Exhibit No. 61, Address of Mr. E.H. Gary at a meeting of the American Iron and Steel Institute at Waldorf-Astoria, New York, Oct. 14, 1910, Transcript of Record on Appeal from the District of New Jersey, vol. 2, at 252–53, United States v. United States Steel Corp., 251 U.S. 417 (1920).

[101] Esco Corp. v. United States, 340 F.2d 1000 (9th Cir. 1965).

[102] *Id.* at 1007. *Cf.* MICHAEL D. WHINSTON, LECTURES ON ANTITRUST ECONOMICS 20 (2006) (observing that the law distinguishes cases in which the parties merely state their intentions from cases in which they communicate assent, but "economists have essentially nothing to say about this").

[103] *Esco*, 340 F.2d at 1007.

[104] *Id.* at 1008.

[105] *Id.* at 1007–08. *See also* United States v. Beaver, 515 F.3d 730, 738 (7th Cir. 2008) (affirming convictions for criminal price fixing where defendants met at least three times, discussed ways of stabilizing the market, and heard a proposal to limit discounts, which received tacit assent).

tinguishing concerted action from lawful tacit collusion, both at the pleading stage[106] and on motions for summary judgment.[107]

C. COMMUNICATIVE CONCERTED ACTION AND ERROR COSTS

As the previous discussion shows, the federal courts have rejected tacit collusion as a species of agreement, yet do not insist on a completed verbal agreement to satisfy Section 1; parallel action coordinated by communication may be sufficient. This conclusion is consistent with the Chicago School's approach to antitrust rulemaking. A characteristic of the Chicago School approach is to evaluate rules in terms of their error costs: rules should be designed to minimize the sum of the costs of false positives and false negatives courts would likely create in the course of applying the rules.[108] The definition of concerted action I propose here would entail lower error costs than either a narrower rule requiring a completed verbal agreement or a broader rule requiring only tacit collusion.

Dennis Carlton, Robert Gertner, and Andrew Rosenfield usefully identify and analyze the relevant considerations in an error cost analysis. They argue that the per se prohibition of horizontal price fixing should be limited to practices that are "extremely" likely to have a purely anticompetitive effect and that are sufficiently well defined that firms will know what they can and cannot do.[109] Those conditions are met, the authors argue, only by a "'naked cartel,'" in which "competitors meet to set price and to restrict aggregate output and the meeting ends with an understanding of what each party is to do,

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[106] *See, e.g.*, *In re* Text Messaging Antitrust Litig., 630 F.3d 622, 628 (7th Cir. 2010) (upholding a complaint alleging that defendants "exchanged price information directly at association meetings" and "met with each other in an elite 'leadership council' within the association—and the leadership council's stated mission was to urge its members to substitute 'co-opetition' for 'competition'") (Posner, J.), *cert. denied*, 131 S. Ct. 2165 (2011); *In re* Plasma-Derivative Protein Therapies Antitrust Litig., 764 F. Supp. 2d 991, 1002 (N.D. Ill. 2011) (upholding a complaint in which plaintiffs alleged that the market was structured in a way that was conducive to collusion and "that defendants met furtively during and after industry meetings to discuss price and supply, and PPTA worked with defendants to create a system for monitoring production in the industry"); *In re* Flash Memory Antitrust Litig., 643 F. Supp. 2d 1133, 1146–47 (N.D. Cal. 2009) (upholding a complaint based upon allegations that the defendants "exchanged highly sensitive competitive information . . . and openly communicated with one another to 'coordinate' pricing," where the complaint identified "when, where and who engaged in at least some of the meetings").

[107] *See, e.g.*, *In re* Ethylene Propylene Diene Monomer (EPDM) Antitrust Litig., 681 F. Supp. 2d 141, 176 (D. Conn. 2009) (observing that "by showing that the defendants shared pricing and market information and indicated to each other whether they would lead or support price increases, the plaintiffs have created an issue of fact that the defendants participated in a traditional conspiracy to fix prices and allocate the American EPDM market").

[108] Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 15 (1984).

[109] Carlton et al., *supra* note 90, at 427. The authors add that the per se rule should be limited to instances in which "it is very difficult and costly to investigate claims of procompetitive versus anticompetitive effect." *Id.*

and then each does what it promised."[110] In more ambiguous cases in which "there is only evidence of mutual interdependence in pricing along with communication such as public statements of industry-wide events," the authors argue, the per se rule is inappropriate. The concept of agreement should not be the critical issue, they submit, because " 'agreement' does not have a sufficiently clear economic (or, in our view, even legal) meaning which allows one to decide independent of the industry facts whether a particular form of communication should be banned."[111] In these circumstances, the correct standard is the rule of reason: "Using the per se sledgehammer to attack such communication without analysis of context or effect, by trying to label it an 'illegal agreement' " is unwise.[112]

The authors provide useful game theoretic analyses of the likely procompetitive and anticompetitive effects of different forms of communication. But their proposed legal rule—assigning explicit cartels to the per se category and other communicative practices to rule of reason—is problematic. First, the per se category is underinclusive. It is also appropriate to infer per se unlawful concerted action where rivals achieve consciously parallel, noncompetitive price levels by communicating their intentions and mutual reliance about future price. The rivals in the Gary Dinner system, for example, violated Section 1 by coordinating prices through statements of intention at committee meetings, even though, on Judge Gary's stern instructions, they studiously avoided agreeing on anything. Firms that privately communicate their intentions about future competitive choices, like pricing, are almost certainly not doing so for reasons of efficiency; at least it seems no more likely than their forming a cartel for reasons of efficiency, which is at least theoretically possible.[113] Moreover, my proposed standard for communicative concerted action requires that the defendants act consistently with their statements of intention, a constraint that serves a function similar to the rule of reason and thus reduces the chance of false positives.

Moreover, Carlton, Gertner, and Rosenfield's rule of reason category is overinclusive and thus risks false positives. Eliding the threshold issue of agreement to reach the ultimate issue of anticompetitive effect[114] implicitly expands the category of agreement. Rivals would apparently satisfy the agree-

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[110] *Id.* at 424.

[111] *Id.*

[112] *Id.* at 424–25.

[113] Telser has shown that explicit price fixing may be efficient where firms with high fixed costs face uncertain demand. *See* Telser, *Cooperation*, *supra* note 25, at 290.

[114] The authors suggest that there is "no economic theory of the meaning of 'agreement' wherein one may determine easily when communication leads to anticompetitive results irrespective of the context of the events. Nor do we think this is the right problem to solve." Carlton et al., *supra* note 90, at 424.

ment requirement of Section 1 whenever they acted interdependently and communicated; the legality of the communication would then hinge on whether the incremental effect of the communication was judged to be anticompetitive in the circumstances. But, as Carlton et al. recognize, communication of one kind or another is ubiquitous in the modern economy. Oligopolists would be exposed to antitrust challenges, albeit under the rule of reason, whenever they communicated in a way that might affect their prices. As *Twombly* recognized, the agreement requirement should have enough content to exclude from the Sherman Act certain categories of parallel behavior, including some involving benign forms of communication.[115] Rule of reason treatment would be appropriate, for example, in cases like *Container*,[116] in which the Court inferred from the defendants' practice of providing each other with current price quotes upon request that the defendants had agreed to follow that practice.

Under the same error cost criteria, as the courts have recognized, purely tacit collusion should not be a Sherman Act agreement because such a rule would yield too many false positives. Even if rivals can achieve noncompetitive outcomes by purely tacit collusion, it does not follow that the law should condemn this conduct. Antitrust law cannot proscribe all theoretically inefficient practices and should not attempt to do so. Its rules "must be administratively workable and therefore cannot always take account of every complex economic circumstance or qualification."[117]

The experience of courts in examining the evidence offered for and against hundreds of alleged conspiracies is relevant to the task of framing an administrable rule that is consistent with the policy of the Sherman Act.[118] By their

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[115] Bell Atl. Corp. v. Twombly, 550 U.S. 544, 567 n.12 (2007):

> From the allegation that the ILECs belong to various trade associations . . . the dissent playfully suggests that they conspired to restrain trade, an inference said to be "buttressed by the common sense of Adam Smith." . . . If Adam Smith is peering down today, he may be surprised to learn that his tongue-in-cheek remark would be authority to force his famous pinmaker to devote financial and human capital to hire lawyers, prepare for depositions, and otherwise fend off allegations of conspiracy; all this just because he belonged to the same trade guild as one of his competitors when their pins carried the same price tag.

[116] United States v. Container Corp. of Am., 393 U.S. 333, 334–35 (1969).

[117] Town of Concord v. Boston Edison Co., 915 F.2d 17, 22 (1st Cir. 1990) (Breyer, J.).

[118] *See also* Randall David Marks, *Can Conspiracy Theory Solve the "Oligopoly Problem*," 45 MD. L. REV. 387 (1986):

> Courts have never explicitly required evidence of direct communication among the defendant firms as part of plus factor analysis. Nevertheless, this author is aware of no instance in which a price fixing agreement has been found without at least some direct evidence of actual communication. Moreover, in only a few cases has an agreement been inferred or implied with just minimal evidence of direct communication. Proof of such communication may be a de facto requirement; at the very least, it strengthens the case for liability considerably.

dispositions of price-fixing cases, courts have implicitly found that a definition that includes tacit collusion would pose an unacceptable risk of false positives. *Ethyl*, for example, refused to prohibit tacit collusion because many of the facilitating devices that allowed firms to coordinate prices also created efficiencies.[119] If nothing else, the experience shows that, as a practical matter, courts will only impose potentially enormous liabilities on firms that have done something identifiably culpable, like communicating with rivals about future prices and acting consistently with those communications.

My proposed communicative concerted action approach is also consistent with economic analysis, which suggests that a focus on communication will reach most stable anticompetitive arrangements and thus avoid most false negatives. Although the game theoretic literature is inconclusive on the role of communication in oligopoly behavior, it is helpful in framing the inquiry.[120] Studies suggest that rivals can, under specified conditions, achieve multiple collusive equilibria without communicating.[121] Even so, they need some mechanism to coordinate the selection of a single equilibrium—a process that the equilibrium analysis alone cannot resolve.[122] One survey of the literature, for example, finds that collusion without communication is especially difficult where firms are asymmetric in size and, therefore, no single joint profit-maximizing equilibrium exists; in that case "firms at least need to communicate in order to make some agreement about which of the infinitely many equilibria they are going to play,"[123] particularly when they need to coordinate punishments for noncooperative firms.

Id. at 409.

[119] E.I. du Pont de Nemours & Co. v. FTC, 729 F.2d 128 (2d Cir. 1984) (*Ethyl*), *vacating* Ethyl Corp. v. E.I. du Pont de Nemours & Co., 101 F.T.C. 425 (1983).

[120] Game theory has been criticized as a basis for antitrust policy because it does not yield the sort of strong generalizations that can form the basis for a rule of liability. Franklin M. Fisher, *Games Economists Play: A Noncooperative View*, 20 RAND J. ECON. 113, 120–23 (1989). In the study of collusive oligopoly, however, use of game theory is squarely in the Chicago tradition. Indeed, economists studying coordination strategies uniformly pay homage to Stigler's pathbreaking study as the template for their work. Telser also formalized the issues of competition and collusion in terms of game theory. TELSER, *supra* note 27.

[121] WHINSTON, *supra* note 102, at 46; Alexis Jaquemin & Margaret E. Slade, *Cartels, Collusion, and Horizontal Merger*, *in* 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 415, 447–48 (Richard Schmalensee & Robert Willig eds., 1989); Marco A. Haan, Lambert Schoonbeek & Barbara M. Winkel, *Experimental Results on Collusion*, *in* EXPERIMENTS AND COMPETITION POLICY 9, 13 (Jeroen Hinloopen & Hans-Theo Normann eds., 2009) (stating that oligopolists may achieve "collusive outcome[s]" by garnering profits "higher than the Nash equilibrium profits of the stage game"). The authors define "*perfect collusion* as a situation in which firms manage to maximize their joint profits." *Id. See also* Charles A. Holt, *Industrial Organization: A Survey of Laboratory Research*, *in* HANDBOOK OF EXPERIMENTAL ECONOMICS (John H. Kagel & Alvin E. Roth eds., 1997).

[122] I am grateful to Joseph Harrington for this insight. *See also* Kaplow, *Horizontal Agreements*, *supra* note 41, at 796.

[123] Haan et al., *supra* note 121, at 14. The authors summarize that collusion is possible when firms meet repeatedly but "becomes more difficult as the number of firms increases, as firms

Experimental economics suggests that collusion without communication is rare and dependent upon highly specific conditions.[124] In both Cournot (output-setting) and Bertrand (price-setting) experiments, imperfect collusion without communication seems to be possible in duopolies but far less likely in markets with three or more firms, in part, because punishment of defection becomes more problematic.[125] Direct communication increases the likelihood of collusive outcomes in a variety of competitive contexts.[126]

While this literature suggests that failing to condemn tacit collusion will not result in many false negatives, it does not identify what sorts of communications are sufficient for coordination. Experiments differ widely in the content, frequency, and competitive contexts of the communications that the subjects may make. The experiments suggest that the timing and content of communication matters. For example, pre-play threats, appeals to mutual self-interest, and verbal punishments of cheating during renegotiation seem to be effective.[127] Some experiments suggest that communication of intentions in a common language increases coordination, even if the communications take the

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meet less often, or as firms observe each other's behavior less often." *Id.* at 15. *Cf.* Iwan Bos & Joseph E. Harrington, Jr., *Endogenous Cartel Formation with Heterogeneous Firms*, 41 RAND J. ECON. 92 (2010) (showing that large firms may form a stable cartel while smaller firms remain outside of the cartel as a competitive fringe).

[124] Haan et al., *supra* note 121; Robin M. Dawes & Richard H. Thaler, *Cooperation*, 2 J. ECON. PERSP., Summer 1988, at 187, 193–95.

[125] *See, e.g.*, Holt, *supra* note 121, at 409 (summarizing the literature as finding that duopolies are able to coordinate price, in part, because rivals can punish noncooperative behavior without hurting cooperative rivals; above three participants, however, there is little evidence of a "pure-numbers effect" in price coordination). *But cf.* Haan et al., *supra* note 121, at 21 (questioning whether this result reflects real-world practices).

[126] Holt, *supra* note 121, at 409 (describing prisoner's dilemma and sealed-bid auction experiments); *id.* at 411 (describing differentiated products experiments). *See also* Haan et al., *supra* note 121, at 26 (summarizing the literature as suggesting that "in a repeated game the voluntary sharing of information has a collusive effect, even though collusion is not the main reason that firms choose to share information"); Miguel A. Fonseca & Hans-Theo Normann, Explicit vs. Tacit Collusion—The Impact of Communication in Oligopoly Experiments 27 (July 3, 2011) (unpublished manuscript) (finding that "medium-sized industries benefit the most from talking as they are rather competitive without communication but are still able to maintain some collusion by explicitly talking [while] duopolies have little to gain from talking as they already earn decent profits without talking, and the large oligopolies gain less because they find it difficult to collude successfully even with communication"), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1937803; Leslie, *supra* note 54, at 538 (summarizing the experimental literature as suggesting "that allowing the players to communicate increases cooperation" by enhancing trust). Leslie cites James P. Gahagan & James T. Tedeschi, *Strategy and the Credibility of Promises in the Prisoner's Dilemma Game*, 12 J. CONFLICT RESOL. 224, 226 (1968); Robin M. Dawes et al., *Behavior, Communication and Assumptions About Other People's Behavior in a Commons Dilemma Situation*, 35 J. PERSONALITY & SOC. PSYCHOL. 1, 3 (1977).

[127] David J. Cooper & Kai-Uwe Kuhn, Communication, Renegotiation, and the Scope for Collusion (Jan. 2, 2010) (unpublished manuscript), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1553429.

form of cheap talk that does not affect the potential payoffs.[128] The experiments also indicate that behavioral factors that go beyond strict rationality may play a role in the success and failure of collusion.[129] Of course, the experiments are highly stylized, and the participants are not businesses, so their behavioral characteristics may be different from those of market actors.[130]

The economic literature on real-world cartels reveals that extensive communications are necessary in successful cartels to prevent misunderstandings and to resolve claims of cheating without triggering price wars.[131] Of course, it is evidence of communications that typically reveals the cartel; thus it may be that durable tacit cartels exist unseen or unchallenged. But the fact that cartelists choose to communicate and thus increase their risks of prosecution suggests that communication is necessary or at least worth the risk in most instances.[132] In addition, Posner and most antitrust economists recognize (even

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[128] Harrington & Zhao, *supra* note 92, 20–21 (observing that experiments and real-world experience show that "[i]n practice, communication is essential to collusion" and that where communication is "used to resolve strategic uncertainty" and thus "to coordinate a move from a non-collusive to a collusive equilibrium," the rivals communicate "intentions rather than hard information"). *See also* Vincent Crawford, *A Survey of Experiments on Communication via Cheap Talk*, 78 J. ECON. THEORY 286, 287 (1998) ("Despite the intuition suggested by the saying 'talk is cheap,' messages with no direct payoff implications can be informative when players' preferences are not too far apart."). When players communicate intentions, the effectiveness of communication depends on the nature of the coordination problem, whether communications are one-sided or two-sided and whether there are multiple rounds in which communication occurs. *Id.* at 294. Crawford surveys studies of experiments in a variety of settings posing coordination problems. A recent study of price fixing finds that two players' communication of their minimum acceptable prices "appears critical to sustaining high prices" regardless of whether antitrust laws apply and whether enforcers have adopted a leniency program. Maria Bigoni et al., Trust, Salience and Deterrence 17 (July 14, 2010) (unpublished manuscript), *available at* http://www.gianca.org/PapersHomepage/TrustSalience&DeterrenceFinal(2010_07_14).pdf.

[129] Cooper & Kuhn, *supra* note 127, at 37–38. In one experiment reported by Cooper and Kuhn, player 2 cheated on verbal commitment in the first period; the following exchange ensued:

1: YOU MEANIE!!!!!!!!!!!

2: its in both our interests to choose [Period 2 High]

1: no

1: i wont help you

2: but you hurt yourself in the process

1: you already hurt me :(

In Period 2, Player 2 played High and Player 1 played Low.

[130] One suspects that real-world efforts to collude would not be conducted in the language reported in the preceding footnote, but similar emotions might come into play.

[131] Leslie, *supra* note 54, at 579–81. *See also* David Genesove & Wallace P. Mullin, *Rules, Communication, and Collusion: Narrative Evidence from the* Sugar Institute *Case*, 91 AM. ECON. REV. 379, 386–89, 395–96 (2001) (showing the role of regular meetings through a trade association in reinforcing the cartel).

[132] Mariagiovanna Baccara & Heski Bar-Isaac, *How to Organize Crime*, 75 REV. ECON. STUD. 1039 (2008) (examining the trade-off that illegal organizations must make between the costs and benefits of sharing information).

if they cannot prove) that communications are usually necessary to maintain noncompetitive pricing.[133]

III. APPLYING THE STANDARD: FACILITATING PRACTICES AND COMMUNICATIVE CONCERTED ACTION

In this Part, I consider how public and private antitrust enforcers might better discover when rivals have used communication as a means of concerted action. The enforcement approach I recommend builds on Stigler's theory of the feasibility of collusion[134] and Posner's implementation and refinement of that theory to formulate an approach consisting of both a legal definition of collusion and practical means of discovering it. A focus on communication should redirect enforcement measures aimed at cartels. The most relevant communications are private and, therefore, difficult to prove without direct evidence. Yet there are circumstances in which it should be possible to infer communications from market structure and behavior, at least as a starting point for investigation. Such a project will have implications for scholarship, for public investigations, and for pleading and proof in private litigation.[135] In the remainder of this article, I will consider this issue in the context of facilitating practices.

If unlawful concerted action requires communication, investigators should look for markets in which facilitating practices are effective only if combined with separate, private communication. This undertaking involves a paradox. Paolo Buccirossi observes that, in theory, there is "no reason to believe that the probability of a facilitating practice conditioned to the existence of a conspiracy is higher or lower," because firms may adopt the practice by agreement in order to implement an explicit conspiracy or they may adopt the practice by consciously parallel action in order to avoid the need for an explicit conspiracy.[136] Thus, Buccirossi suggests, "the issue is whether," in a

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[133] Jonathan B. Baker, *Identifying Horizontal Price Fixing in the Electronic Marketplace*, 65 ANTITRUST L.J. 41, 47–48 (1996); Kenneth G. Elzinga, *New Developments on the Cartel Front*, 29 ANTITRUST BULL. 3, 25 (1984); XAVIER VIVES, OLIGOPOLY PRICING: OLD IDEAS AND NEW TOOLS 320–21 (1999); Gregory J. Werden, *Economic Evidence on the Existence of Collusion: Reconciling Antitrust Law with Oligopoly Theory*, 71 ANTITRUST L.J. 719, 763 (2004); WHINSTON, *supra* note 101, at 46.

[134] As others have observed, "Stigler's paper has been an inspiration and a building block for the ensuing literature on cartels and collusion." Robert H. Porter, *Detecting Collusion*, 26 REV. INDUS. ORG. 147, 147 (2005).

[135] Joseph Harrington notes that, "because of inadequacies in the underlying theory," most current econometric methods of detecting collusion cannot identify when rivals are "coordinating their behavior through illegal means of communication" rather than by lawful tacit means. Joseph E. Harrington, *Detecting Cartels*, *in* HANDBOOK OF ANTITRUST ECONOMICS 213, 216 (Paolo Buccirossi ed., 2008). He suggests that future research should focus on the "identifying markers of explicit collusion." *Id.* 247.

[136] Buccirossi, *supra* note 60, at 343.

given case, "firms see facilitating practices and overt collusion as complements or substitutes,"[137] an issue that can only be resolved empirically. As a first approximation, however, I suggest that the more complex the practice itself, the less likely the practice will be sufficient for coordination of prices without additional communications. As the Supreme Court suggested in *Twombly*, it may be proper to infer an agreement from "'complex and historically unprecedented changes in pricing structure made at the very same time by multiple competitors, and made for no other discernible reason.'"[138] Thus, investigators should be looking not at the markets most conducive to price coordination, but at more complex and more competitively structured markets in which firms have nevertheless managed to solve coordination problems with facilitating practices.[139]

As a historical starting point, consider the *Cement Institute* case,[140] in which the Supreme Court affirmed the FTC's determination that the cement industry's use of basing point pricing violated Section 5 of the Federal Trade Commission Act.[141] The court of appeals in that case had reversed the FTC, refusing, as the court put it, "to hold that the [multiple basing-point pricing] system is illegal *per se,* and to require that cement be sold on an f.o.b. plant

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[137] *Id.*

[138] Bell Atl. Corp. v. Twombly, 550 U.S. 544, 557 n.4 (2007). *See, e.g.*, *In re* Blood Reagents Antitrust Litig., 756 F. Supp. 2d 623, 632 (E.D. Pa. 2010) (holding that "the triple-digit percentage increases in prices, closely aligned cancellations of contracts with group purchaser organizations, and substantially improved profit margins after 2000, constitute the sort of 'complex and historically unprecedented changes in pricing structure made at the very same time by multiple competitors, and made for no other discernible reasons,' that render an allegation of conspiracy plausible"); Standard Iron Works v. ArcelorMittal, 639 F. Supp. 2d 877, 900 (N.D. Ill. 2009) ("It is possible that the industry turnaround from fierce competition to striking coordination was the inevitable result of industry consolidation, but the context, as a whole, provides enough to support the plausible conclusion that the cause of the turnaround was something other than consolidation."); *In re* OSB Antitrust Litig., No. 06-826, 2007 WL 2253419 (E.D. Pa. Aug. 3, 2007) (holding that allegations of a pattern of announcements of output restrictions and price increases created an inference of a conspiracy to coordinate prices through an industry publication and trade meetings). *But cf. In re* LTL Shipping Serv. Antitrust Litig., No. 1:08-MD-01895, 2009 WL 323219, at *18 (N.D. Ga. Jan. 28, 2009) (dismissing a complaint that alleged only that "all LTL service providers had the same incentives to charge the same shipping rates, and that over time they eventually each did so"); *In re* Graphics Processing Units Antitrust Litig., 527 F. Supp. 2d 1011, 1022 (N.D. Cal. 2007) (holding that defendants' price changes and product development decisions were not "lockstep" or "historically unprecedented"). *See also* Kaplow, *Horizontal Agreements*, *supra* note 41, at 740 n.143 ("[I]t would seem sufficient under *Twombly*, even assuming a narrow agreement requirement, for a plaintiff to allege interdependent behavior plus that the degree of conduciveness to collusion placed the case in the liability region rather than the paradox region—that is, that the observed coordination would be unlikely or implausible given the conditions of the industry unless the defendants had engaged in prohibited communications.").

[139] *Cf.* Harrington, *Detecting Cartels*, *supra* note 133, at 235 ("Explicit collusion may only occur where collusion is difficult and thus collusive outcomes might be more competitive.").

[140] FTC v. Cement Inst., 333 U.S. 683 (1948).

[141] 15 U.S.C. § 45(a).

basis."[142] The FTC argued in the Supreme Court, however, that it had condemned not basing-point pricing "as such," but the "agreement to maintain and implement the system and to eliminate price competition."[143] The FTC's record "disclosed in specific detail the collective action which had been taken to implement and continue the system. And from all these facts, as well as the existence of the system itself, the Commission found combination among respondents to suppress price competition."[144] The Supreme Court agreed that the FTC could reasonably have inferred an underlying agreement from various efforts to police the system, even though there was little direct evidence of communication among rivals.[145] As one contemporary commentator observed:

> As a practical matter, the maintenance of a rigid delivered price system over any length of time requires some form of agreement among the producers. Persistent standardization of the intricacies of freight charges, delivery methods, service extras and discounts is no easy task. Deliberately or unknowingly, individual sellers will shade prices and prejudice the whole price structure. If discipline or strong persuasion is necessary to keep errant producers to a common price formula, the same discipline and a similar formula would be necessary to make other forms of "price leadership" effective.[146]

Future enforcement efforts might focus on complex practices, like the one at issue in *Cement Institute*, in which the use of facilitating practices to achieve coordinated outcomes raises an inference that the rivals have also communicated by means other than the facilitating practice itself. In markets that meet this criterion, allegations of facts raising the inference of collusion should be sufficient to satisfy *Twombly*'s pleading requirements,[147] and evidence of those facts should be sufficient to avoid summary judgment under *Matsushita*.[148] Discovery might reveal direct evidence of communications, but that may not be necessary to create a jury issue.

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[142] Aetna Portland Cement Co. v. FTC, 157 F.2d 533, 573 (7th Cir. 1946), *rev'd*, 333 U.S. 683 (1948).

[143] Brief for the Federal Trade Commission, at *122, FTC v. Cement Inst., 333 U.S. 683 (1948) (Nos. 23-34), 1947 WL 55533.

[144] *Id.* at *122–23.

[145] *See, e.g.*, *Cement Institute*., 333 U.S. at 714 (citing evidence of boycotts against "[d]ealers who persisted in selling foreign cement" and efforts by Institute officials to "secur[e] pledges by producers not to permit sales f.o.b. mill to purchasers who furnished their own trucks, a practice regarded as seriously disruptive of the entire delivered price structure of the industry"). The Court also pointed to unexplained, precisely identical bids by numerous rivals. *Id.* at 713 n.15.

[146] Comment, *Price Systems and Competition: The Basing-Point Issues*, 58 YALE L.J. 426, 442 (1949).

[147] Bell Atl. Corp. v. Twombly, 550 U.S. 544, 557 (2007).

[148] Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 588 (1986) ("To survive a motion for summary judgment or for a directed verdict, a plaintiff seeking damages for a violation of § 1 must present evidence that tends to exclude the possibility that the alleged conspirators acted independently.") (internal quotations omitted).

Given the variety of facilitating practices, as Buccirossi notes,[149] it is impossible, at this stage of our understanding, to generalize about the sorts of markets in which this condition will be met. But we can improve our ability to identify these sorts of markets by examining a small but illuminating economic literature on how facilitating practices have interacted with explicit communications to produce collusive outcomes in actual antitrust cases.[150] These studies use game theoretic models to predict when firms will be unable to solve coordination problems using facilitating practices alone, and then examine how firms' behavior during a known collusive period departed from those predictions.[151]

Robert Marshall, Leslie Marx, and Matthew Raiff, for example, have studied the interaction of price announcements with explicit communications in the international vitamin cartels. They "analyze[ ] price announcements during a period of admitted explicit collusion" as a "window" onto cartel administration that is "observable, in real time, by both customers and law enforcement."[152] On this basis, they suggest "how one might structure an empirical investigation to determine the existence of explicit collusion based on price announcement data" in industries with "high concentration, high entry barriers, homogeneous products, and inelastic demand."[153]

The authors observe that public price announcements enable a cartel to mitigate buyers' resistance to price increases (by assuring the buyers that everyone is facing the same increase) and to coordinate responses to resistance.[154] They construct a game theoretic model to "account for how [price] announcements facilitate collusion by increasing the likelihood that a cartel price increase is 'accepted' by buyers."[155] The model suggests that, in the absence of collusion, sellers never announce price changes simultaneously, and smaller rivals never lead a joint price announcement. In the vitamin industry, price announcements during the period before collusion apparently began were consistent with this prediction, but during collusion there were many instances in which smaller rivals led price increases.[156]

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[149] *See* Buccirossi, *supra* note 60.

[150] *See, e.g.*, Genesove & Mullin, *supra* note 131, at 383–85 (showing how the Sugar Institute's rules functioned as facilitating practices by exposing cheating by members of a cartel).

[151] These studies might provide the first volumes of "a library of cartels" that enforcers could use "to empirically identify collusive markers." Harrington, *Detecting Cartels*, *supra* note 135, at 252.

[152] Robert C. Marshall, Leslie M. Marx & Matthew E. Raiff, *Cartel Price Announcements: The Vitamins Industry*, 26 INT'L J. INDUS. ORG. 762, 763 (2008).

[153] *Id.* at 764.

[154] *Id.* at 766–67, 774.

[155] *Id.* at 766.

[156] *Id.* at 769–71. *Cf. In re* Pressure Sensitive Labelstock Antitrust Litig., 566 F. Supp. 2d 363, 372 (M.D. Pa. 2008) (holding that an allegation that a firm other than the usual price leader

The model also suggests that, by making the announced prices effective in the future, sellers are able to assess whether the price increase will stick and thus maintain the agreed market shares without incurring the substantial costs of redistributing cartel profits.[157] In the vitamin industry, price announcements during the cartel period differed from those during the competitive period in ways that corresponded to the predicted function of price announcements in coordinating price increases. For example, in the collusive period, the price announcements were made well in advance and matched by rivals[158] much more frequently than in the competitive period. Moreover, the timing of the announcements was correlated not with external cost increases but with the amount of time since the last price announcement, a result consistent with trial evidence that the cartel met quarterly.[159]

Zhongmin Wang's examination of the record in an Australian prosecution of a retail gasoline cartel also sheds light on the role of private communications and public price announcements in real-world collusion.[160] Gasoline retailing provides a familiar setting for hypothetical consciously parallel pricing.[161] Carlton, Gertner, and Rosenfield, for example, suggest that gas stations at a street corner in a remote town might be able to "coordinate a price increase" simply by posting prices: one posts a higher price and the others choose to match it, opting to maximize long-run profits at a noncompetitive equilibrium.[162] Wang suggests, however, that price behavior in real-world retail gasoline markets follows a price cycle predicted in a well-known game theoretic model of oligopoly.[163] In the model, rivals cut prices until they reach marginal cost, then fight a "war of attrition," in which "[b]oth firms would like price to be hiked, but neither would like to be the first to do so."[164] Two firms may resolve the problem by "mixed strategies [i.e., ones with assigned probabilities] within the cycle equilibrium."[165] More than two firms, however, can only do so by consecutive price hikes that all firms maintain until the last

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initiated a price increase immediately after a meeting at which the firms allegedly discussed prices plausibly suggested agreement).

[157] Marshall et al., *supra* note 152, at 773–74.

[158] *Id.* at 781, 783, 782–83.

[159] *Id.* at 782–86.

[160] Zhongmin Wang, *Collusive Communication and Pricing Coordination in a Retail Gasoline Market*, 32 REV. INDUS. ORG. 35 (2008).

[161] *See, e.g.*, Kaplow, *Horizontal Agreements, supra* note 41, at 692. *Cf.* White v. R.M. Packer Co., 635 F.3d 571, 580–86 (1st Cir. 2011) (holding that plaintiffs' evidence of noncompetitive pricing by gas stations on Martha's Vineyard failed to raise a jury issue of agreement).

[162] Carlton et al., *supra* note 91, at 428–29.

[163] Wang builds on Eric Maskin & Jean Tirole, *A Theory of Dynamic Oligopoly, II: Price Competition, Kinked Demand Curves and Edgeworth Cycles,* 56 ECONOMETRICA 571 (1988). Wang, *supra* note 160, at 38.

[164] Wang, *supra* note 160*,* at 38.

[165] *Id.* at 39.

holdout acts, a condition that becomes less and less likely to be met as the number of firms increases.[166] After a successful price increase, the rivals gradually undercut the price until they again reach the bottom of the cycle, and the process begins again. Wang observes that the model suggests that in markets with more than, say, three firms, rivals have an incentive to try to solve the war of attrition problem and coordinate price hikes by adopting "facilitating practices *other than mixed strategies within the cycle equilibrium*."[167] Those practices, as Wang notes, may include direct communication.

Wang discovered that, in the Australian cartel, the rivals were often able to coordinate significant sequential price increases with phone calls,[168] despite the presence in the market of a retailer that adopted a policy of always being the last mover. Interestingly, the rivals used "notification" and repeated "follow-up" calls as firms competed to be the last to increase price.[169] If the attempt failed, the rivals tried again several days later. If the attempt succeeded, as predicted by the model, prices gradually declined by fractions of a cent until the rivals determined that margins were "lower than acceptable," at which point the rivals would attempt another increase.[170]

A still more recent study of price fixing in retail gasoline markets also suggests the power of communication as a means of coordinating price increases, even where the market had several characteristics that made coordination difficult. Can Erutku and Vincent Hildebrand found that the announcement of an antitrust investigation into retail gasoline pricing in Canada caused a modest but significant decrease in the average price in the market.[171] Wiretap evidence in the investigation showed that cartel ringmasters were sometimes able to coordinate price increases by phone calls and by checking posted prices around town.[172] These efforts were sometimes successful even though there were sixty outlets in the market, entry was easy, and over fifty separate individuals participated in the phone calls.[173]

These results indicate that public or private enforcers should look for changing patterns in the use of facilitating practices that suggest the use of communication to resolve coordination problems. When changes accompany price increases that are not correlated with observable cost or demand

[166] *Id.* at 38–39.
[167] *Id.* at 39.
[168] *Id.* at 42–44. Even with communications, more than a third of the attempts failed because one of the high-volume retailers did not match it. *Id.* at 43–44.
[169] *Id.* at 46–49.
[170] *Id.* at 43.
[171] Can Erutku & Vincent A. Hildebrand, *Conspiracy at the Pump*, 53 J.L. & ECON. 223, 225 (2010).
[172] *Id.* at 223–24.
[173] *Id.* at 226–27.

changes, the rivals may be using both communication and established facilitating practices to solve coordination and policing problems. In *Cement Institute*,[174] the FTC emphasized the adoption of punitive basing points and other parallel responses to noncooperative behavior. Marshall, Marx, and Raiff's analysis of the vitamin cartel data finds that changes in the frequency, timing, leaders, regularity, effective dates, and success of price increase announcements may be significant.[175] Wang's analysis of the Australian retail cartel suggests that plaintiffs (in this instance, probably public enforcers) should look for increased success in resolving the war of attrition among rivals at the bottom of a cycle of price cuts unexplained by cost declines.[176] Closer examination of price increases can focus on the sequence in which rivals accomplish successful increases. By extension, plaintiffs should search for similar changes in the use and success of other facilitating practices, like most-favored-customer-clauses, meeting competition clauses, or resale price maintenance. Of course, more traditional sources of evidence may be equally probative. The Canadian wiretap investigation that Erutku and Hildebrand examine started when one station owner who cut prices complained that his rivals were threatening him.[177]

These recent studies also suggest a future role for game theory in identifying suspicious pricing behavior. In two studies, game theory predicted that facilitating practices alone were not enough to allow rivals fully to solve coordination problems. In the Marshall, Marx, and Raiff study, the authors' model predicted that sellers would not announce price changes simultaneously and smaller rivals would not lead a joint price announcement. The record in the case revealed that behavior before the conspiracy period was consistent with the model; only during the conspiracy period did the authors find the suggestive patterns of joint price increases led by both small and large firms. In Wang's study also, the game theoretic model suggested that, in markets with more than two or three rivals, firms would be unable to solve the war-of-attrition paradox using only mixed strategies. The record in the case confirmed that communication was effective in solving the coordination problem.

More generally, these studies suggest that future scholarship should focus on the weighting of and relationship among the factors that predispose markets toward collusion. The Erutku and Hildebrand study, for example, found that the only Stiglerian factors favoring the success of the conspiracy were price transparency, multimarket contacts among the sellers, and the presence

[174] FTC v. Cement Inst., 333 U.S. 683 (1948).

[175] Marshall et al., *supra* note 152.

[176] Wang, *supra* note 160.

[177] *Id.* at 223. *See* Porter, *supra* note 134, at 149 (describing complaints by various actors as "time-honored method[s] of detecting collusion").

of a multitude of buyers each making small purchases.[178] Under Stigler's analysis, fifty rivals should not have been able to collude at all; nevertheless, they were able to do so because of persistent, widespread communications. We still do not know how many and what combinations of the Stiglerian factors are necessary or sufficient for successful collusion with or without communication.[179]

IV. CONCLUSION

In his most recent scholarly discussion of the problem of oligopoly, Richard Posner recognized that the "relation of competing firms in a concentrated market is a natural to model in game-theoretic terms, and the literature that does so is now immense."[180] Nevertheless, he suggested that "the models do not yet yield implications that differ from those of non-game-theoretic approaches, notably that of George Stigler."[181] Posner, of course, derived his analysis of tacit collusion from Stigler's account of the conditions that make collusion feasible. I have argued that the lessons of game theory, experimental economics, real-world cartels, and dispositions of price-fixing cases over the past four decades support refocusing the analysis and investigation of concerted action on the role of communication. I characterize this adaptation of Posner's approach as Neo-Chicago because it draws on these evolving bodies of knowledge to estimate the costs of error that attend the available alternative definitions of concerted action. The studies confirm what courts have recognized—the central role of communication as a decisive marker of concerted action in markets characterized by interdependent behavior. This approach also suggests enforcers should look for unlawful concerted action, not in the markets in which rivals coordinate prices with facilitating practices, but in markets in which the evidence suggests that rivals are supplementing facilitating practices with communication.

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178 Erutku & Hildebrand, *supra* note 171, at 228.
179 *Id.*
180 POSNER, *supra* note 41, at 59.
181 *Id.* at 59–60.