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COLLUDING UNDER THE RADAR: ACHIEVING COLLUSION THROUGH VERTICAL EXCHANGE OF INFORMATION

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ABSTRACT

In the absence of antitrust regulations, rational profit-maximizing firms in an oligopoly may freely act in consort to reach a consensus and to maintain prices above the competitive level. However, in light of potential exposure to antitrust investigations and prospective heavy sanctions, firms attempt to achieve collusive outcomes without resorting to explicit agreements. One mechanism that may promote such tacit collusion is information-sharing; that is, the otherwise competing firms exchange their private information in order to set and maintain supra-competitive prices.

Thus far, the attention of the antitrust authorities and scholars has focused on the phenomenon of horizontal information-sharing, i.e., the exchange of information between rival firms that operate at the same economic level. Contrary to this body of work, this article focuses on the effect of vertical information-sharing on the ability of the firms to collude. Recently, it has been shown that when competing retailers disclose their private information to a mutual manufacturer, the wholesale price set by the latter provides a signal to the retailers. This signal allows the retailers to fix prices without the necessity of any direct communication between them, thereby achieving a collusive outcome while avoiding the risk of being exposed to the scrutiny of the antitrust authorities.

Another fascinating aspect of the collusion achieved through vertical information-exchange is that it can generate social costs higher than those of direct collusion. In other words, from the social welfare perspective, in certain instances—such as those discussed in this article—the social planner would be better off allowing competing firms to collude directly, rather than exchanging their private information via their mutual manufacturer.

Therefore, understanding the neglected impact of vertical information-sharing is important not only for effective antitrust laws, but also for developing effective policies and regulations. Calling into focus the strategic behavior of competing

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retailers that may produce outcomes similar—or even severer—than those resulting from collusive agreement based on horizontal information-sharing, this article is the first attempt to address the legal implications of such a scheme, while integrating the findings of the economic literature. In particular, this article argues that: (1) antitrust authorities should broaden the scope of their scrutiny to include vertical information-sharing; and (2) case law permits such information-sharing to be condemned under the Sherman Act if it produces anticompetitive effects without counterbalancing pro-competitive effects.

Keywords: antitrust, tacit collusion, facilitating practices, vertical information-sharing, price-fixing

I. INTRODUCTION

There is little debate regarding the negative implications of collusion and price-fixing for social welfare; in fact, scholars argue that the "condemnation of price fixing agreements is not merely seen as unproblematic but as the most central, important, and defensible feature of contemporary competition law."[1] The postulation that collusion and price-fixing should not be permitted may be "the least controversial

[1] Louis Kaplow, *On the Meaning of Horizontal Agreements in Competition Law*, 99 CAL. L. REV. 683, 685 (2011).

prohibition in competition law."[2] On the other hand, scholarly literature and policy both lack a precise definition of the nature of the practices that constitute collusion; moreover, the questions regarding how these practices should be addressed are still being debated.[3]

In fact, commentators frequently criticize antitrust laws as being vague and imprecise. For instance, Lande argues that "[t]he antitrust laws are among the least precise statutes enacted by Congress," because the central terms thereof "including 'competition,' 'unfair methods of competition,' 'conspiracy in restraint of trade,' and 'monopolize' are inherently vague and not self-defining."[4] Despite decades of research devoted to the investigation and analysis of collusion and price-fixing mechanisms, legal scholars and economic theorists have yet to provide clear parameters easily verifiable by antitrust enforcement agencies or the court.

In the U.S.—as well as in many other jurisdictions[5]—horizontal price-fixing agreements between competing firms are deemed to be illegal *per se*.[6] *Horizontal*

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[2] Louis Kaplow, *An Economic Approach to Price Fixing*, 77 ANTITRUST L.J. 343, 343 (2011).

[3] *Id.*; *see also* William E. Kovacic, *The Identification and Proof of Horizontal Agreements Under the Antitrust Laws*, 38 ANTITRUST BULL. 5 (1993); George A. Hay, *Horizontal Agreements: Concept and Proof*, 51 ANTITRUST BULL. 877 (2006).

[4] Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65, 81 (1982); *see also* Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 573 (1998) (observing that the antitrust statutes consist of "majestically general language overlapping a byzantine mixture of economic relationships").

[5] For instance, in the law of the European Union, Article 101(1)—formerly 81(1)—covers "all agreements between undertakings, decisions by associations of undertakings and concerted practices . . . which have as their object or effect the prevention, restriction or distortion of competition," including "in particular those which: (a) directly or indirectly fix purchase or selling prices or any other trading conditions." Consolidated Version of Treaty on the Functioning of the European Union, Art. 101(1), Jan. 5, 2008, 2008 O.J. (C 115) 88. For a comparison of the antitrust enforcement policies in the U.S. and Europe, see, for example, Douglas H. Ginsburg, *Comparing Antitrust Enforcement in the United States and Europe*, 1 J. COMP. L. & ECON. 427 (2005).

[6] Horizontal price-fixing is illegal *per se* unless it is "ancillary to an economic integration generating a large cost savings or other efficiency, tantamount to the creation of a new product. Those restraints that do not fall within the *per se* prohibition are illegal if unreasonable." Jonathan B. Baker, *Two Sherman Act Section 1 Dilemmas: Parallel Pricing, the Oligopoly Problem, and Contemporary Economic Theory,* 38 ANTITRUST BULL. 143, 143-44 n.2 (1993); *see also* Jonathan B. Baker, *Per Se Rules in the Antitrust Analysis of Horizontal Restraints,* 36 ANTITRUST BULL. 733 (1991). The antitrust law recognizes that some horizontal restraints may have outcomes that enhance—rather than restrict—competitiveness; however, the common understanding that this type of restraint tends to be more problematic underlies the distinction between *per se* illegality and the rule of reason. *See, e.g.*, Oreck Corp. v. Whirlpool Corp., 579 F.2d 126, 131 (2d Cir. 1978) (en banc), *cert. denied*, 439 U.S. 946 (1978).

> It is important to distinguish between 'horizontal' restraints, i.e., agreement between competitors at the same level of market structure, and 'vertical' restraints, i.e., combinations of persons at different levels of the market structure, such as manufacturers and distributors . . . [h]orizontal restraints alone have been characterized as naked restraints of trade with no purpose except stifling competition . . . and, therefore, per se violations of the Sherman Act. On the other hand, while vertical restrictions may reduce intrabrand competition by limiting the numbers of

agreements—i.e., agreements between "otherwise competing entities"[7]—have been extensively examined by scholars as well as by policy-makers and antitrust enforcement agencies.[8] Competition regimes strictly scrutinize horizontal agreements[9] and parties to such agreements are generally subject to harsh penalties. The sanctions for violations under Section 1 of the Sherman Act—the main piece of legislation that is applicable to collusion and price-fixing—may include fines, prison terms, and treble damages to private parties.[10]

While there is little controversy with respect to the negative implications of collusion for social welfare and the desirability of stimulating market competition,[11] cartels are inherently difficult to detect and prosecute. This complexity arises from the fact that the concept of *agreement*—which constitutes the core of antitrust conspiracy cases—"is elusive"[12] and direct evidence of agreements to conspire is usually absent.[13] In fact, the courts have repeatedly observed that "seldom are the conspiratorial villains

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> sellers of a particular product, competing for a given group of buyers, they also promote interbrand competition by allowing a manufacturer to achieve certain efficiencies in the distribution of its products... they are, therefore, to be examined under the rule of reason standard.

Id.

[7] Hay, *supra* note 3, at 877.

[8] Kovacic, *supra* note 3; RICHARD A. POSNER, ANTITRUST LAW (The Univ. of Chicago Press, 2d ed. 2001); 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); Donald C. Clark, *Price-Fixing Without Collusion: An Antitrust Analysis of Facilitating Devices After Ethyl Corp.*, 1983 WIS. L. REV. 887 (1983); George A. Hay, *Oligopoly, Shared Monopoly, and Antitrust Law*, 67 CORNELL L. REV. 439 (1982); Richard S. Markovits, *Oligopolistic Pricing Suits, the Sherman Act, and Economic Welfare*, 26 STAN. L. REV. 493 (1974); Richard A. Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 STAN. L. REV. 1562 (1969); Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 HARV. L. REV. 655 (1962); Kaplow, *supra* note 1. For a discussion of vertical agreements, see Herbert J. Hovenkamp, *Leegin, The Rule of Reason, and Vertical Agreement* (Dec. 15, 2010), U. Iowa Legal Studies Research Paper No. 10-40, http://ssrn.com/abstract=1673519 or http://dx.doi.org/10.2139/ssrn.1673519.

[9] Kaplow, *supra* note 1, at 685.

[10] Section 4 of the Clayton Act supplements the public enforcement sanctions by providing an incentive for private enforcement: "[T]hat any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefore . . . without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of the suit, including a reasonable attorney's fee." 15 U.S.C. § 15 (1982).

[11] *See, e.g.*, Louis Kaplow, *Direct versus Communications-Based Prohibitions on Price Fixing*, 3 J. LEGAL ANALYSIS 449 (2011).

[12] United States v. Ashland-Warren, Inc., 537 F. Supp. 433, 442 (M.D. Tenn. 1982); *see also* Kaplow, *supra* note 1, at 729 (stating that "although it is black letter law that an agreement must exist in order for Section 1 to be triggered, the concept of agreement, whether viewed by itself or illuminated by the underlying statutory language, does little to indicate what is or should be required.").

[13] *See* Kovacic, *supra* note 3, at 27 n.75 (citing various instances in which courts recognized the fact that direct evidence of an express agreement is rarely available).

so devoid of cleverness as to broadcast their oral agreements or publicly circulate the written memos which describe their plan."[14]

Moreover, because the likelihood of being exposed to antitrust investigation and potential sanctions has "significantly increased" in the last decades,[15] the business community reacted to the tightened antitrust enforcement methods by installing rigorous compliance programs to preclude suspicious practices, such as direct communications that constitute collusion with rival firms.[16] Competing firms refrain from communicating and conspiring *directly*.[17] However, it is quite conceivable that with the increase in the threat of detecting express collusive action, firms may have turned to less dangerous forms of achieving the same ends, such as signaling and other tactics.[18]

Although the indirect schemes of collusion may be less effective than direct and express communications between cartel members, they are less likely to elicit governmental investigation and potential criminal prosecution, while potentially producing equivalent results.[19] In some cases, practices that fall short of formal collusion "may be adequate substitutes,"[20] in inducing collusive outcomes, such as supra-competitive pricing. In other words, while communications between firms are a central part of the operation of a cartel,[21] as a result of the risk of bearing severe sanctions,[22] firms explore alternative schemes to attain collusive outcomes without resorting to what the legal doctrine traditionally terms an 'agreement.'[23]

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[14] Rutledge v. Electric Hose & Rubber Co., 327 F. Supp. 1267, 1274 (C.D. Cal. 1971).

[15] Kovacic, *supra* note 3, at 10-11 (discussing the increased likelihood that "efforts by competitors to coordinate their behavior through a direct exchange of assurances would be detected, prosecuted, and, as discussed immediately below, penalized severely" during the Reagan and Bush administrations).

[16] Douglas H. Ginsburg, *The Appropriate Role of the Antitrust Enforcement Agencies*, 9 CARDOZO L. REV. 1277, 1289 (1988).

[17] *See, e.g.*, Clark, who asserts that due to the fact that the Sherman Act prohibits competitors from negotiating a consensus on pricing and output strategies, states that an accommodation on price and output levels "must be arrived at by means of more oblique methods . . . ." Clark, *supra* note 8, at 892.

[18] *See, e.g.*, Joseph Kattan, *Beyond Facilitating Practices: Price Signaling and Price Protection Clauses in the New Antitrust Environment*, 63 ANTITRUST L.J. 133 (1994).

[19] Kovacic, *supra* note 3, at 12-13.

[20] Hay, s*upra* note 8, at 453.

[21] Express collusion "provides the greatest opportunity for exchange of information, resolution of disagreement, and communication of intentions." *Id.*; *see also* William H. Page, *Communication and Concerted Action*, 38 LOY. U. CHI. L.J. 405 (2007).

[22] William E. Kovacic, *Criminal Enforcement Norms in Competition Policy: Insights from U.S. Experience* 45, *in* CRIMINALIZING CARTELS: CRITICAL STUDIES OF AN INTERNATIONAL REGULATORY MOVEMENT 66-67 (Caron Beaton-Wells & Ariel Ezrachi eds., Oxford: Hart Publishing 2011) (discussing modern trends in sanctions for cartel offenses).

[23] "The expanded use of powerful means of detection—including amnesty programs that give certain informants full dispensation from criminal penalties—and ever stronger remedies will encourage firms to achieve consensus through more subtle techniques that fall short of an express exchange of assurances in a covert meeting." William E. Kovacic, Robert C. Marshall,

Due to competitors' attempts to achieve collusion by indirect means, courts have long recognized that rarely can an express agreement be demonstrated in order to prove the existence of a conspiracy.[24] Thus, it has been ruled that an agreement under the Sherman Act need not be *explicit*,[25] *express*,[26] or *formal*;[27] rather "most conspiracies are inferred from the behavior of the alleged conspirators."[28] However, the courts continue to struggle with the question of what circumstantial evidence may suffice to justify inference of an *illegal tacit agreement*.[29] Indeed, *tacit* collusion appears to be particularly challenging to tackle.[30] In fact, despite the overall consensus on the negative welfare implications of collusion and price-fixing among competing firms, the detection and proof of the behavior that constitutes illegal collusion is

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Leslie M. Marx & Halbert L. White, *Plus Factors and Agreement In Antitrust Law*, 110 MICH. L. REV. 393, 396 (2011).

[24] *See, e.g.*, ES Dev. v. RWM Enters., 939 F.2d 547 (8th Cir. 1991).

[25] United States v. Gen. Motors Corp., 384 U.S. 127, 142-43 (1966) (the Court noted that "it has long been settled that explicit agreement is not a necessary part of a Sherman Act conspiracy—certainly not where, as here, joint and collaborative action was pervasive in the initiation, execution, and fulfillment of the plan.").

[26] 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.").

[27] Am. Tobacco Co. v. United States, 328 U.S. 781, 809-10 (1946) ("no formal agreement is necessary to constitute an unlawful conspiracy;" evidence of an antitrust violation "may be found in a course of dealings or other circumstances as well as in any exchange of words.").

[28] Seafood Trading Corp. v. Jerrico, Inc., 924 F.2d 1555, 1573 (11th Cir. 2001) (the Court noted that "[I]t is only in rare cases that a plaintiff can establish the existence of a Section 1 conspiracy by showing an explicit agreement; most conspiracies are inferred from the behavior of the alleged conspirators.").

[29] *See, e.g.*, Interstate Circuit Inc. v. United States, 306 U.S. 208, 221 (1939) (in which the court stated that "[A]s is usual in cases of alleged unlawful agreements to restrain commerce, the Government is without the aid of direct testimony that the distributors entered into any agreement with each other to impose the restrictions upon subsequent-run exhibitors. In order to establish agreement, it is compelled to rely on inferences drawn from the course of conduct of the alleged conspirators."). In *Am. Tobacco Co.*, 328 U.S. at 809-10, the Court stated that "[n]o formal agreement is necessary to constitute an unlawful conspiracy" and that a finding of conspiracy is justified "[w]here the circumstances are such as to warrant a jury in finding that the conspirators had a unity of purpose or a common design and understanding, or a meeting of minds in an unlawful arrangement." In *Monsanto Co. v. Spray-Rite Serv. Corp*, 465 U.S. 752, 768 (1984), the Court ruled that "[T]he correct standard is that there must be evidence that tends to exclude the possibility of independent action by the [parties]. That is, there must be direct or circumstantial evidence that reasonably tends to prove that [the parties] had a conscious commitment to a common scheme designed to achieve an unlawful objective." *See also In re* Text Messaging Antitrust Litigation, 630 F.3d 622, 629 (7th Cir. 2010) (Judge Richard Posner observed, "[D]irect evidence of conspiracy is not a sine qua non . . . [c]ircumstantial evidence can establish an antitrust conspiracy.").

[30] While much debate surrounds the question of whether the relevant piece of legislation—i.e., the Sherman Act—requires an explicit agreement or whether a mere *tacit* or *implicit* agreement may suffice for liability to arise, there is a general consensus that tacit collusion is prohibited (for an extensive discussion, see below).

exceedingly challenging[31] and "inevitably imperfect."[32] As has been noted by commentators, collusive actions are "notoriously difficult to prove in court."[33]

Within the general challenge presented by the issues of detecting and establishing illegal collusion, oligopolic markets constitute a particularly difficult case.[34] This is the case, because while the evidence of the *explicit* collusive agreements is usually scarce, it is virtually non-existent in instances when there are no agreements to collude in the first place, "but firms establish collusive outcomes because they understand the interaction of the market."[35] More specifically, the firms may coordinate their conduct simply by observing and reacting to their competitors' moves, which—in turn—may result in parallel behavior, such as parallel price movements, leading to the results associated with traditional constraints of trade.

In the absence of direct proof of conspiracy, the major challenge presented by inferring illegal tacit collusion from the behavior of alleged conspirators lies in distinguishing it from independent decision-making by profit-maximizing firms that simply take the actions of their rivals into account. This is an imperative, but exceedingly complex task.[36] Courts and legal scholars have long debated the conceptual uncertainty and doctrinal confusion between the lawful unilateral conduct and illegal collective behavior.[37]

As a response to the variety of tactics that are used by competing firms to reach collusive outcomes in the absence of express agreements, the courts have ruled that an agreement under Section 1 may be inferred from the evidence that the alleged conspirators have engaged in parallel conduct. However, in itself *conscious parallelism*—i.e., parallel movement in price—is deemed insufficient to establish that a concerted action has taken place, because such a pricing-scheme, while consistent with conspiracy, aligns with a wide swath of rational and competitive business

31 *See* POSNER (2001), *supra* note 8, at 98–99; Posner (1969), *supra* note 8, at 1578, 1583, 1593.

32 Kaplow, *supra* note 2, at 362.

33 Kai-Uwe Kühn & Xavier Vives, *Information Exchanges Among Firms and Their Impact on Competition* (1995) (Report to the European Commission), at 112.

34 An oligopoly differs from a monopoly in that no one firm can unilaterally control the market price (e.g., by altering its own output). However, in highly concentrated markets, firms can control prices "by recognizing their shared economic interests and their interdependence with respect to price and output decisions." Brooke Group v. Brown & Williamson Tobacco Co., 509 U.S. 209, 227 (1993).

35 Kühn & Vives, *supra* note 33, at 112.

36 For example, Kovacic notes that "[D]espite a half-century of effort, antitrust law and policy have achieved only modest success in devising a satisfactory definition for the concept of concerted action and creating a suitable methodology for establishing the existence of an agreement in litigation." Kovacic, *supra* note 3, at 80.

37 *See, e.g.*, Holiday Wholesale Grocery Co. v. Philip Morris, Inc., 231 F. Supp. 2d 1253, 1270 (N.D. Ga. 2002), *aff'd sub nom,* Williamson Oil Co. v. Philip Morris USA, 346 F.3d 1287 (11th Cir. 2003); Kovacic et al., *supra* note 23.

strategies unilaterally prompted by common perceptions of the market.[38] In light of the fact that the actions of firms acting independently, but responding to market stimuli, may resemble the actions of conspirators, the evidence of such parallel conduct must support a plausible theory of conspiracy and be accompanied by evidence of some *plus factors* that enable the courts to distinguish between unilateral and conspiratorial conduct.[39]

The literature has identified a number of ways in which rival firms can coordinate their behavior, without resorting to express agreements.[40] One such method is horizontal information-sharing—i.e., the exchange of private information between firms that operate on the same economic level—which may produce the same outcome as the direct price-fixing mechanism.[41] This scheme allows engaging firms to overcome one of the major challenges facing a cartel, namely, determining the cartel's price. More specifically, in an environment characterized by uncertainty, the absence of communication, competing firms may find it difficult to coordinate on the monopoly price. This lack of coordination can result in lowering the sustainability level of the cartel. To avoid this situation, horizontally-competing firms can exchange information, thereby reducing the uncertainty level in the market, which—in turn—allows the firms to set a uniform monopoly price without resorting to an express agreement. Due to this positive effect of information-sharing on the sustainability of the cartel, some economists argue that any horizontal information-exchange between competing firms should be scrutinized by antitrust authorities.[42]

In light of the significant consequences of horizontal information-sharing for the firms' ability to form and maintain a cartel, the exchange of private information between competitors is considered to be a possible signal for collusion.[43] In fact, "the communication or exchange of information . . . might lead, through coordinated or

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[38] ANDREW I. GAVIL, WILLIAM E. KOVACIC AND JONATHAN B. BAKER, ANTITRUST LAW IN PERSPECTIVE: CASES, CONCEPTS, AND PROBLEMS IN COMPETITION POLICY 267-68, (Thomson West, 2d ed. 2008); Kovacic et al., *supra* note 23, at 395.

[39] Merck-Medco Managed Care v. Rite Aid Corp., No. 98-2847, 1999 WL 691840, at *8-9 (4th Cir. Sept. 7, 1999); ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS 11-16 (ABA Publishing, 6th ed. 2007).

[40] These schemes include such practices as augmented price leadership, pricing formulas, price protection and others. Hay, s*upra* note 8, at 453.

[41] *See, e.g.*, Susan S. DeSanti & Ernest A. Nagata, *Competitor Communications: Facilitating Practices or Invitations To Collude? An Application of Theories to Proposed Horizontal Agreements Submitted for Antitrust Review*, 63 ANTITRUST L.J. 93, 121 (1994).

[42] *See, e.g.*, Kai-Uwe Kühn, *Fighting Collusion by Regulating Communication Between Firms*, 16 ECON. POL'Y 167 (2001).

[43] Steven C. Salop, *Practices that (Credibly) Facilitate Oligopoly Coordination*, *in* NEW DEVELOPMENTS IN THE ANALYSIS OF MARKET STRUCTURE 265 (Joseph E. Stiglitz & G. Frank Matthewson eds., MIT Press 1986); Baker (1993), *supra* note 6; Kovacic et al., *supra* note 23. For a general overview of the theory, see JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION ch. 6 (Cambridge: MIT Press 1988); STEPHEN MARTIN, ADVANCED INDUSTRIAL ECONOMICS ch. 10 (Oxford: Blackwell, 2d. ed. 2002).

oligopolistic interdependence, to the same results the parties sought to achieve through their proposed formal agreement."[44]

However, due to the fact that the direct information-sharing among competing firms may expose the latter to investigations for antitrust violations, with subsequent heavy penalties, firms often seek alternative schemes for information-sharing and collusion. In this article, we focus on an alternative information-sharing scheme that may lead to collusive outcomes, namely, *vertical information-sharing in a supply chain*.[45] Collusion using *vertical* information-exchange refers to the scenario in which the competing retailers do not exchange information directly; rather, they divulge their private information to a mutual manufacturer. Endowed with the retailers' private information, the manufacturer sets the wholesale price. This price—in turn—serves as a signal for the retailers, enabling them to infer each other's private information; this price allows them to coordinate on the collusive price, thereby bringing about the same undesirable consequences as a direct information-exchange. To the best of our knowledge, this particular alternative mechanism of collusion between horizontally-competing firms through information-exchange with a vertically-related firm has not been previously examined by the legal scholarship of antitrust.

A number of important points should be emphasized here. First, our scenario differs from a simple *indirect* horizontal information-exchange, where rather than engaging in face-to-face communications, competing firms use an outside messenger—a third party—who conveys the contents of the information received from one firm to its competitor. To elaborate, in our case, the vertically-related firm—in the model that underlies this work, this entity identified as the manufacturer—does not forward the *contents* of the data received from one firm—a retailer—to its competitor. Rather, the manufacturer uses this information for his personal benefit. However, although the information is not forwarded by the manufacturer to the competing firms, the latter are able to infer the information necessary for establishing the cartel from the manufacturer's actions.

Second, not only may actions of *horizontally*-related entities be challenged as violating Section 1 of the Sherman Act. In many instances, the courts have also examined and condemned restraints on trade achieved by vertically-related firms, such as agreements between manufacturers and retailers.[46] While there is an important difference between condemning the horizontal and the vertical agreements as being illegal,[47] in essence, both types of agreements concentrate on the existence and the substance of communications: communications between the competing firms in the first case, and communications between firms in a vertical relationship in the latter.

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[44] DeSanti & Nagata, *supra* note 41, at 121. On the potential importance of these information-exchange arrangements as monitoring devices, see GAVIL ET AL., *supra* note 38, at 283–301.

[45] By *vertical* we mean a relationship among firms that operate at different, but connected, economic levels, such as a manufacturer and a retailer.

[46] Leegin Creative Leather Products, Inc. v. PSKS, Inc., 551 U.S. 877 (2007); *see, e.g.*, Rossi v. Standard Roofing, 156 F.3d 452 (3d Cir. 1998); Helicopter Support Sys. v. Hughes Helicopter, 818 F.2d 1530 (11th Cir. 1987); McCabe's Furniture v. La-Z-Boy Chair Co., 798 F.2d 323 (8th Cir. 1986).

[47] In *Leegin*, 551 U.S. at 885, the Supreme Court overturned the traditional *per se* rule with respect to vertical relationships, stating that the appropriate measure for vertical—as opposed to horizontal—price restraints is the rule of reason.

It is important to emphasize that such vertical collusion differs from our case. Contrary to research in the existing literature, this article offers a new perspective on potential illegal *horizontal* collusion that is achieved through information-sharing by firms in a *vertical* relationship—i.e., exchange of information among sequential parties in the supply chain—when no direct collusion, or even mere direct communications, between the competing firms takes place. Such mechanism of vertical information-exchange may be employed as a signaling device that generates horizontal collusive price-fixing outcome between otherwise competing firms.

Finally, it should be stressed that while the argument set forth hereafter is grounded in a formal mathematical model, the factual scenario that underlies it is not a mere figment of our imagination. To the contrary, in real life settings competing firms have been continuously—alas, perhaps mostly undetected—employing the scheme of vertical communications. For instance, in the United Kingdom, the Office of Fair Trading (OFT) has investigated a number of vertical information-exchange cases, such as *Replica Football Kit*,[48] *Toys and Games*[49] and others.[50] Therefore, as will be discussed in detail hereafter, our goal here is not to imagine a theoretical, but unrealistic, scenario. Rather, we strive to provide sufficient grounds for the antitrust authorities to divert their attention to the type of collusion that has been so far escaping their consideration.

Our concrete scenario focuses on competing retailers who individually share their private information about the estimated future market demand with their mutual manufacturer. As has recently been demonstrated by Shamir, the wholesale price—which is set by the manufacturer—reflects the information he received from the retailers; based on the wholesale price the retailers—in turn—have been able to coordinate on a monopoly outcome.[51] This strategy allows the retailers to fix the price at a desired—supra-competitive—level, while avoiding the risk of being exposed to antitrust investigations and prosecution. On the other hand, the retailers also avoid the price-cutting and price wars that may occur when the prices are based solely on the retailers' own private information. Moreover, in certain instances, the social welfare loss resulting from collusion based on *vertical* information-exchange described in this article may be even greater than the loss generated by direct collusion.

Shamir's model has important implications from the perspective of the law and antitrust authorities. Currently, for the purposes of establishing illegal collusion, the antitrust enforcement agencies concentrate on *horizontal* information-sharing between competing firms by sharing their information with the manufacturer, rather than with

[48] OFT Decision No. CA98/06/2003 (Aug. 1, 2003). In this case, the OFT discovered concerted practices to set a minimum price for certain football replica kits, achieved through indirect contacts between competing retailers via a mutual manufacturer.

[49] OFT Decision No. CA98/8/2003 (Nov. 21, 2003). The OFT's finding, subsequently upheld by the Competition Appeal Tribunal, included—among others—the finding that the pricing intentions of one retailer were disclosed by the manufacturer to the other retailer.

[50] *See, e.g.*, OFT Decision No. CA 98/08/2004 (Nov. 8, 2004).

[51] Noam Shamir, Cartel Formation through Strategic Information Leakage in a Distribution Channel (July 11, 2013) (working paper) (under revision for review in *Marketing Science*). While earlier economic research assumed that if precluded from horizontal information-sharing, competing firms must collude using sophisticated signaling games or by ignoring their private information, Shamir examined whether retailers who source their product from a mutual manufacturer can collude using the manufacturer's wholesale price as a coordination device.

their rivals—i.e., *vertical* information-sharing. As a result, the retailers evade the risk of becoming the subjects of antitrust investigation and potential sanctions, while achieving their collusive outcomes. This paper extends the environment in which the colluding firms operate by discussing how *vertical* information-sharing can serve as a tool that enables the cartel members to coordinate on collusive pricing. Specifically, we suggest that courts and antitrust authorities adjust the framework they currently use to determine the existence of concerted action based on circumstantial evidence by including the information-sharing in *vertical* relationships as well.

Over three decades ago, Hay suggested expanding antitrust regulations to include indirect concerted action, arguing that firms engaging in indirect collusion by means of facilitating practices should face antitrust liability, because indirect and direct collusion are not fundamentally different.[52] Hay's argument is based on the observation that like formal collusion, these practices "establish the meeting of the minds that makes it individually rational for each firm to behave in a parallel noncompetitive way."[53] This 'meeting of the minds,' coupled with the fact that in cases of indirect collusion, the problem of the lack of culpability does not exist—because the firms have taken specific avoidable means to reach a consensus price—provides a coherent basis for including 'indirect collusion' in the antitrust enforcement policies.

We argue that in the case of competing retailers who share their private information with a mutual manufacturer, both of the aforementioned elements are present. While there is no pre-existing 'agreement' between the firms, there is a 'meeting of the minds,' in the sense that the competing firms both intend to follow a common course of action.

The remainder of the article is structured as follows. Section II is devoted to a detailed discussion of the phenomenon of collusion. While some elements of the discussion are relevant to any type of collusion, we specifically concentrate on the issue of *tacit* collusion. The reason for this focus is due to the nature of the particular information-sharing scheme that is the focal point of this work—i.e., *vertical* information-sharing between competing retailers and their mutual manufacturer—there is no explicit agreement between the otherwise competing retailers; in fact, in our scenario, the retailers never resort to any sort of direct communications between one another.

In addition to the general description of the phenomenon of collusion, we address the firms' incentives to share-information as well as the means to detect and infer collusive behavior that have been employed by the antitrust agencies thus far. Furthermore, we discuss the existing literature that deals with various plus factors employed by the courts in attempting to establish tacit collusion, concentrating, in particular, on the information-exchange as a *plus factor*.

Section III discusses the phenomenon of *vertical* information-sharing in competitive settings. In this Section, we consider the literature that modeled and analyzed the incentives of firms to share their private information in vertical relationships. Specifically, we focus on the phenomenon of *information leakage*, which occurs when certain private information—such as projected market demand—that is exchanged between two parties in a supply chain finds its way to other players in the market.

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52 Hay, s*upra* note 8, at 468.

53 *Id.*

As discussed in Section IV, information leakage may result in an outcome that promotes collusive behavior and price-fixing among competing retailers. Interestingly, in certain instances, this phenomenon can lead to a *greater* social welfare loss than the one that occurs as a result of collusion achieved by 'traditional' horizontal information-exchange. In other words, paradoxically, the social planner would be better-off allowing the competing retailers to sit at the table and exchange their private information directly, than having them share this information vertically with their mutual manufacturer due to their fear of being exposed to the antitrust sanctions.

While antitrust enforcement agencies currently focus their attention and resources on detecting and investigating the instances of *horizontal* information-sharing, we argue that some instances of *vertical* exchanges of information should be included in the enforcement efforts. We argue that applying the same economic principles that govern horizontal information-sharing to the vertical settings would permit the courts to condemn certain practices of vertical communications in instances that currently elude their focus. We leave it to future research to consider—and suggest—whether new tools should be applied to the settings of vertical information-sharing.

In Section V, we conclude with final remarks and policy recommendations with respect to the potential antitrust consequences of *vertical* information-sharing in supply chains.

II. COLLUSION

A. The Concept of Agreement and Oligopoly

The relevant piece of legislation that addresses collusion is the Sherman Act of 1890.[54] Section 1 of the Sherman Act declares to be illegal "[e]very contract, combination in the form of trust or otherwise, or conspiracy[] in restraint of trade or commerce."[55] It should be noted that while the original prohibition addresses 'contracts,' 'combinations' and 'conspiracies,' the courts do not make distinctions between these terms. As Posner observes, "the courts sensibly have not worried about whether the terms 'contract,' 'combination,' and 'conspiracy,' in section 1, have nonoverlapping meanings."[56]

However, the attempts of the antitrust law to determine the legitimacy of actions by assessing whether they conform to the term 'agreement' have been widely criticized both for being vague,[57] and for being inappropriate from the vantage point

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[54] For further historical background on the enactment of the Sherman Act, see Michael A. Carrier, *The Real Rule of Reason: Bridging the Disconnect*, 1999 BYU L. REV. 1265, 1294-98 (1999).

[55] 15 U.S.C. § 1 (2012). Also, Section 5 of the Federal Trade Commission Act (15 U.S.C. § 45) challenges the conduct prohibited by Section 1 as "unfair methods of competition." The courts have interpreted Section 5 to include behavior beyond the reach of Section l. *See* Kovacic, *supra* note 3, at 15 nn.38-39 and accompanying text. For the purpose of Section 5, no proof of "contract, combination . . . or conspiracy, in restraint of trade" is necessary; thus, commentators argued that it can be used as a mechanism to attack facilitating practices and forms of inter-firm coordination that may defy characterization as an agreement for Sherman Act purposes. Baker (1993), *supra* note 6; Clark, *supra* note 8.

[56] POSNER (2001), *supra* note 8, at 262.

[57] Kaplow, *supra* note 1, at 728 (stating that the definition is "reminiscent of a common legal drafting technique that strives to be all-inclusive."); *see also* Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 NW. U. L. REV. 281, 295 (1956) ("the serious

of economics.[58] For one, economic analysis focuses on the quality of conduct and its potential tendency to exploit market power or exclude competitors; whether the conduct is a result of collusive or unilateral action has no direct bearing on its quality.[59] In contrast, to fall within the scope of the antitrust laws, behavior must either be monopolistic or collusive; therefore, the distinction between collusive and unilateral conduct is central to legal analysis.[60]

Another critique of the formalistic approach with respect to the antitrust authorities' definition of the illegal collusion concerns the social welfare implications. It has been rightly noted that the negative consequences that price-fixing has on social welfare do not depend on the means by which the collusive outcome was accomplished. Whether the supra-competitive prices were reached through recognized interdependence—when competing firms rationally and independently respond to market stimuli—or following a secret meeting, its results are undesirable.[61]

Oligopolistic markets—which are dominated by a few firms powerful enough to influence the market price by controlling most of the sales[62]—present a special challenge to antitrust regulations and policies. The problem of collusion in such markets is exacerbated by the market structure, which facilitates collective behavior.[63]

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problem of collusion is to determine what conduct is to be characterized as the equivalent of an agreement . . . .").

[58] Dennis W. Carlton, Robert H. Gertner & Andrew M. Rosenfield, *Communication Among Competitors: Game Theory and Antitrust*, 5 GEO. MASON L. REV. 423, 423-24 (1997) (arguing 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."). In fact, Hay maintains that these two disciplines have fundamentally different conceptual approaches; the efforts to incorporate economic concepts into the legal doctrine have been "counter-productive" because they generated "confusion and inconsistencies." Hay, s*upra* note 8, at 440. For a discussion of the inapplicability of the term 'agreement' from the law of contracts or economics, see William H. Page, *Facilitating Practices and Concerted Action Under Section 1 of the Sherman Act*, *in* ANTITRUST LAW AND ECONOMICS (Keith N. Hylton ed., Edward Elgar Publ'g Ltd. 2d ed. 2010).

[59] Markovits, *supra* note 8; Steven C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 AM. ECON. REV. 267 (1983).

[60] Peter C. Carstensen, *Commentary: Reflections on Hay, Clark, and the Relationship of Economic Analysis and Policy to Rules of Antitrust Law*, 1983 WIS. L. REV. 953 (1983); *see also* Kovacic et al., *supra* note 23, at 435 (arguing that "[T]he resolution of many antitrust cases hinges on the determination of whether observed conduct is the product of unilateral behavior or collective action."). Baker observed that "[b]y operationalizing the idea of an agreement, antitrust law clarified that the idea of an agreement describes a process that firms engage in, not merely the outcome that they reach. Not every parallel pricing outcome constitutes an agreement because not every such outcome was reached through the process to which the law objects: a negotiation that concludes when the firms convey mutual assurances that the understanding they reached will be carried out." Baker (1993), *supra* note 6, at 179.

[61] Kaplow, *supra* note 11.

[62] George J. Stigler, *A Theory of Oligopoly*, *in* THE ORGANIZATION OF INDUSTRY 39 (The Univ. of Chicago Press 1968).

[63] Philipp E. Areeda, *Introduction to Antitrust Economics* 50, *in* ANTITRUST POLICY IN TRANSITION: THE CONVERGENCE OF LAW AND ECONOMICS (Eleanor M. Ox & James T. Halverston eds., Am. Bar Assn. 1984); ROGER D. BLAIR & DAVID L. KASERMAN, ANTITRUST

Firms in concentrated markets are more likely to attempt—and to succeed in creating—collusion, than firms in less concentrated markets.[64] In fact, scholars predict that due to the high levels of concentration in many segments of the U.S. market, collusion will be a continuing problem.[65]

Specifying the standards for regulating the anticompetitive behavior of firms in oligopolistic markets continues to present a challenge for the antitrust policy-makers:[66] "for more than 100 years, the courts and antitrust enforcement agencies have struggled unsuccessfully to regulate the anticompetitive conduct of oligopolists."[67] It appears to be impossible to point to an economic distinction between a meeting to fix prices and "a situation in which two firms are sitting at their computer terminals rapidly changing prices in response to the others' actions."[68] While the economic theory of oligopoly is not incompatible with the possibility that the otherwise competing firms would reach a consensus to secure noncompetitive prices as a result of an actual 'agreement,' it suggests that the same supra-competitive prices can emerge as a result of a rational pricing strategy, i.e., *conscious parallelism*.[69] In other words, competition, consumer preferences, or market conditions—rather than conspiring with each other—force the firms to act in a manner similar to a consort action.

ECONOMICS (2d. ed., Oxford Univ. Press 2008); *see also* KEITH N. HYLTON, ANTITRUST LAW: ECONOMIC THEORY AND COMMON LAW EVOLUTION 73 (Cambridge Univ. Press 2003).

[64] Margaret C. Levenstein & Valerie Y. Suslow, *What Determines Cartel Success?*, 44 J. ECON. LIT. 43, 57 (2006).

[65] Thomas A. Piraino, Jr., *Regulating Oligopoly Conduct under the Antitrust Laws*, 89 MINN. L. REV. 9, 11 (2004).

[66] ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 102-04 (New York: Basic Books Inc. 1978). *See generally* BLAIR & KASERMAN, *supra* note 63; *see also* William E. Kovacic, *Antitrust Policy and Horizontal Collusion in the 21st Century*, 9 LOY. CONSUMER L. REV. 97, 97 (1997) ("Three troubling phenomena attend current efforts to attack collusion and will beset future enforcement programs. One is substantial conceptual uncertainty and doctrinal confusion about how to distinguish between lawful unilateral conduct and illegal collective behavior."); Alan Devlin, Note, *A Proposed Solution to the Problem of Parallel Pricing in Oligopolistic Markets*, 59 STAN L. REV. 1111, 1112 n.1 (2007) (quoting Daniel R. Shulman, *Proof of Conspiracy in Antitrust Cases and the Oligopoly Problem*, 4 SEDONA CONF. J 1, 1 (2003)) ("Proof of conspiracy in antitrust cases has become one of the more muddled areas of antitrust law.").

[67] Piraino, *supra* note 65, at 9.

[68] Carlton et al., *supra* note 58, at 437.

[69] HYLTON, *supra* note 63, at 73. More specifically, firms—recognizing their interdependence with the competitors—would individually accommodate their prices to reflect their rational analysis of other market players. Hylton explains that "the term conscious parallelism refers to a form of tacit collusion in which each firm in an oligopoly realizes that it is within the interests of the entire group of firms to maintain a high price or to avoid vigorous price competition, and the firms act in accordance with this realization." *Id.* Hans-Theo Normann, *Conscious Parallelism in Asymmetric Oligopoly*, 51 METROECONOMICA 343, 343 (2000) ("Conscious parallelism describes forms of tacitly collusive conduct in oligopoly. Firms engage in parallel behaviour in order to gain collusive profits. A cartel is not set up explicitly; instead, firms establish parallel conduct understanding the accomplishment of a common purpose."); *see also* D.J. Simonetti, Note, *Conscious Parallelism and the Sherman Act: An Analysis and Proposal*, 30 VAND. L. REV. 1227, 1228 (1977).

Whether the objective of competition policy is the maximization of consumers' welfare,[70] or the overall efficiency or social welfare[71]—which includes producers' profits as well—oligopoly pricing is generally regarded to be undesirable in itself.[72] After all, from the economic perspective, whether supra-competitive pricing is "achieved by direct agreement or sophisticated conscious parallelism,"[73] it results in the same economic harm.[74] "The core objection to oligopoly pricing is that prices are higher: higher than the competitive level and higher than is ordinarily necessary to induce producers to supply goods and services to consumers."[75]

Moreover, the collusive behavior of firms in an oligopolistic market may, in fact, be *more* harmful to consumers than an overt price-fixing cartel, because the latter is easier to detect and penalize; it is also more prone to being undermined by cheating.[76] On the other hand, tacit coordination among oligopolists is difficult to discover, and their collusive conduct is likely to be sustained for a longer period of time.[77]

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70 Reiter v. Sonotone Corp., 442 U.S. 330, 343 (1979) (stating that the Sherman Act creates a "consumer welfare prescription"). *See generally* Reza Dibadj, *Saving Antitrust*, 75 U. COLO. L. REV. 745 (2004).

71 BORK, *supra* note 66, at 263. For a summary of opinions, see generally Lande, *supra* note 4; TIROLE, *supra* note 43.

72 In *Northern Pac. Ry. v. United States,* 356 U.S. 1 (1958), the Supreme Court stated that

> [T]he Sherman Act was designed to be a comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade. It rests on the premise that the unrestrained interaction of competitive forces will yield the best allocation of our economic resources, the lowest prices, the highest quality and the greatest material progress, while at the same time providing an environment conducive to the preservation of our democratic political and social institutions. But even were that premise open to question, the policy unequivocally laid down by the Act is competition.

Id.; *see also* Kaplow, *supra* note 11, at 458-59; Kaplow, *supra* note 1, at 810. This objection to oligopoly pricing is that it is akin to monopoly pricing, because if instead of competing, multiple rival firms successfully engage in interdependent oligopolistic coordination, they act as if they were a single firm, reaping monopoly profits at the expense of consumers and, as explained, total efficiency or welfare.

73 W.T. Stanbury & G.B. Reschenthaler, *Oligopoly and Conscious Parallelism: Theory, Policy and the Canadian Cases*, 15 OSGOODE HALL L.J. 617, 688 (1977).

74 Shulman, *supra* note 66, at 14 ("[F]rom an economic standpoint, supracompetitive pricing achieved by oligopolists engaging in conscious parallelism is equally as abhorrent and destructive of efficiency as is explicit unlawful price-fixing.").

75 Kaplow, *supra* note 1, at 810; *see also* Stephen A. Nye, *Can Conduct Oriented Enforcement Inhibit Conscious Parallelism?*, 44 ANTITRUST L.J. 206, 206 (1975) (arguing that "it is widely understood to be an objective of antitrust policy to forestall oligopolistic pricing. The question is how.").

76 Piraino, *supra* note 65, at 12-13.

77 *Id.* at 12-13, 30 (arguing that tacit collusion is more durable and more difficult to discover in oligopoly than in an explicit price-fixing cartel, because "tacit price-fixing arrangements spring from the very nature of oligopolistic markets, they are likely to persist for long periods of time."); *see also* RICHARD A. POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE (The Univ. of Chicago Press 2001) (pointing out that oligopolists are more likely to collude without an express communication); Christopher R. Leslie, *Trust, Distrust, and Antitrust*, 82 TEX L.

Despite the negative consequences of oligopoly pricing, a debate about the issue of whether oligopolists' coordinated actions are prohibited under the Sherman Act has long been central to the antitrust literature. In this respect, we should mention the famous Turner-Posner debate. Turner offered two reasons for his view that *conscious parallelism*—i.e., parallel movement in price—in itself does not constitute an illegal agreement under Section 1.[78] First, Turner argued, conscious parallelism concerns situations in which the competing firms are acting rationally based on available market information.[79] The second reason focuses on the potential remedy: an attempt to preclude such economically rational conduct would require the court to draft an injunction requiring competing firms to act irrationally.[80] Other commentators, who support the view that interdependent oligopoly pricing should be legal, base their opinion on the fact that price elevation by monopolists is permitted.[81]

Posner, on the other hand, reasoned that because tacit collusion requires voluntary conscious choices on the part of the participants, it should be viewed as "a form of concerted action." In his opinion, this behavior could be remedied by the law without "telling oligopolists to behave irrationally."[82]

REV. 515, 564-65 (2004) (arguing that the small number of firms in concentrated markets promote trust among the cartel members, which—in turn—helps in creating and a maintaining cartel).

[78] For instance, when parallel pricing is present along with firms adopting the same facilitating practice. Turner, *supra* note 8, at 675-76; POSNER, *supra* note 77, at 98-99. The difference between such a case and simple parallel pricing lies in the fact that in the case of the parallel adoption of a facilitating practice that permits noncompetitive pricing the problem of remedy is mitigated.

[79] Turner, *supra* note 8, at 671 (concluding that "oligopolists who take into account the probable reactions of competitors in setting their basic prices, without more in the way of 'agreement' than is found in 'conscious parallelism,' should not be held unlawful conspirators under the Sherman Act.").

[80] Turner argued that an injunction that prohibits firms from taking competitors' market behavior into account in designing their business strategies "would demand such irrational behavior that full compliance would be virtually impossible." *Id.* at 669. Furthermore, Turner argues that courts cannot impose a legal obligation to determine a price upon a theoretical economic view of competitive results, i.e., a price equal to marginal cost. Among all other objections, enforcement of such an obligation by a court would resemble public utility regulation and would be quite inappropriate or impossible for a district court, and entirely out of keeping with the goals of antitrust. *Id.* at 670.

[81] PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW 232, 272 (2d ed. New York: Aspen Law & Bus. 2003) (arguing against prohibition of pure interdependence because such would be inconsistent with rules on monopoly); *see also* Turner, *supra* note 8, at 668 (arguing that "[I]t would make no sense to deprive lawful oligopolists—those who have achieved their position by accidental events or estimable endeavor—of the natural consequence of their position if the lawful monopolist is left with his."). For a critique of this view, see John E. Lopatka, *Solving the Oligopoly Problem: Turner's Try*, 41 ANTITRUST BULL. 843, 854–55 (1996); Kaplow, *supra* note 11, at 461-62.

[82] POSNER, *supra* note 77, at 94, 96-97; Posner (1969), *supra* note 8, at 1592 (arguing that coordinated pricing by oligopolists should be prohibited and that "[B]usinessmen should have no difficulty . . . in determining when they are behaving noncompetitively. Tacit collusion is not an unconscious state."). In his decision in *In re High Fructose Corn Syrup Antitrust Litigation,* 295 F.3d 651, 661-65 (7th Cir. 2002), Judge Posner reversed summary judgment

Courts have largely adopted Turner's reasoning on this question.[83] Recently, in the *Twombly* decision,[84] the Supreme Court held that to establish illegal collusion, the antitrust plaintiffs must provide "enough factual matter (taken as true) to suggest that an agreement was made,"[85] asserting that parallel conduct is "consistent with conspiracy, but just as much in line with a wide swath of rational and competitive business strategy unilaterally prompted by common perceptions of the market."[86]

Therefore, in order to establish illegal tacit collusion, proof of the mere conscious parallel behavior of competing firms is insufficient. We further discuss the issues of defining and establishing the fact of tacit collusion in the next sections.[87]

B. Tacit Collusion Defined

The concept of *agreement* is central to the doctrine of liability under Section 1.[88] While in its early antitrust decisions, the courts rarely posed the question of whether the requisite agreement existed—focusing, instead, on whether Sherman Act condemns particular agreements[89]—later antitrust litigation recognized that indirect means of communication may be sufficient to constitute an agreement.[90] In an often-cited piece, the Supreme Court ruled that the "[a]cceptance by competitors, without

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using circumstantial evidence to infer a possible illegal price-fixing agreement among suppliers of corn syrup.

[83] William H. Page, *Twombly and Communication: The Emerging Definition of Concerted Action Under The New Pleading Standards*, 5 J. COMP. L. & ECON. 439, 443-44 nn.26-28 and accompanying text (2009).

[84] For an interpretation and analysis of *Twombly* as an antitrust decision, see Alvin K. Klevorick & Issa B. Kohler-Hausmann, *The Plausibility of Twombly: Proving Horizontal Agreements After Twombly*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW (Einer R. Elhauge ed., Edward Elgar Pub 2010).

[85] Bell Atlantic Corp. v. Twombly, 550 U.S. 544, at 555 (2007); *see also* Iqbal v. Hasty, 490 F.3d 143 (2d Cir. 2007).

[86] *Id.* at 1964.

[87] We concentrate on *tacit* collusion because due to the nature of the collusion scheme that is the focal point of this work—i.e., *vertical* information-sharing between competing retailers and their mutual manufacturer—no explicit agreement between the firms exists.

[88] In *Copperweld Corp. v. Independence Tube Corp.*, 467 U.S. 752, 768-69 (1984), the Supreme Court has emphasized that the 'agreement' element of Section 1 of Sherman Act limits the restraints of trade to those that are more likely to be harmful.

> [C]oncerted activity inherently is fraught with anticompetitive risk . . . . In any conspiracy, two or more entities that previously pursued their own interests separately are combining to act as one for their common benefit . . . . Of course, such mergings of resources may well lead to efficiencies that benefit consumers, but their anticompetitive potential is sufficient to warrant scrutiny even in the absence of incipient monopoly.

Id.

[89] United States v. Trans-Missouri Freight Ass'n, 166 U.S. 290 (1897); United States v. Joint Traffic Ass'n, 171 U.S. 505 (1898).

[90] As Page observes: "[T]he interpretive conundrum concerning the meaning of agreement arises when informal patterns of conduct in oligopoly mimic the effects of an express cartel." Page, *supra* note 58, at 24.

previous agreement, of an invitation to participate in a plan, the necessary consequence of which, if carried out, is restraint of interstate commerce, is sufficient to establish an unlawful conspiracy under the Sherman Act."[91]

The courts have continuously found that collusion need not be explicit.[92] Rather, *tacit* collusion may suffice in order to establish collusive behavior.[93] This finding appears to be logical in light of the apparent consensus among economists that *tacit* price-fixing may be just as harmful as explicit price-fixing agreements.[94] In fact, competing firms engaged in tacit collusion are able to replicate the conditions that occur under an explicit cartel by reaching a consensus on supra-competitive prices and by adopting a means of enforcing adherence to that consensus.[95]

A significant difficulty that characterizes the practice of tacit collusion in oligopolistic markets is its durability, which is due to two factors.[96] First, price-fixing arrangements are embedded in the very nature of oligopolistic markets; game theory suggests that firms in an oligopoly will naturally gravitate toward an implicit consensus price.[97] Second, not only may tacit collusion be more durable than express collusion, it is also more difficult to detect and to prosecute, because the evidence of conspiracy between the firms is indirect and notoriously ambiguous.[98]

An additional predicament of the tacit collusion in an oligopoly is distinguishing illegal consort action from independent conduct. This task has proven to be challenging,[99] because the distinction between an illegal *tacit agreement* and *recognized interdependence*[100] is elusive, and the use of the term itself by the courts has been inconsistent.[101] In fact, the difficulty of distinguishing tacit collusion from

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[91] Interstate Circuit, Inc. v. United States, 306 U.S. 208, 227 (1939).

[92] *E.g.*, United States v. Gen. Motors Corp., 384 U.S. 127, 142-43 (1966).

[93] For instance, in *In re High Fructose Corn Syrup Antitrust Litigation,* 295 F.3d 651 (7th Cir. 2002), Judge Posner recognized that tacit agreement may suffice for the purposes of Section 1: "Section 1 of the Sherman act forbids contracts, combinations, and conspiracies in restriction of trade. This statutory language is broad enough . . . to encompass a purely tacit agreement to fix prices, that is, an agreement made without any actual communication among the parties to the agreement."

[94] *See generally* BLAIR & KASERMAN, *supra* note 63.

[95] Hay, s*upra* note 8, at 446-7 (arguing that firms engaged in tacit coordination can reach a mutual understanding of the price and a mutual sense of confidence that all firms will adhere to that price).

[96] Piraino, *supra* note 65, at 12-13, 30.

[97] Hay, s*upra* note 8.

[98] Piraino, *supra* note 65, at 30.

[99] *See* Kaplow, *supra* note 1, at 734 and accompanying text.

[100] "The analytical problem is that there is a 'no man's land' between the traditional agreement and tacit coordination through recognized interdependence." Dennis A. Yao & Susan S. DeSanti, *Game Theory and the Legal Analysis of Tacit Collusion*, 38 ANTITRUST BULL. 113, 115 n.8 (1993) (quoting PHILIPPE AREEDA, ANTITRUST LAW 1410c (1986)).

[101] For instance, see Hay, *supra* note 3, at 891–5 (discussing the lack of clarity of the term 'tacit agreement' as used by the courts); Kovacic, *supra* note 3 (discussing courts' varying usage of the term tacit agreement); Page, *supra* note 83, at 449-50 nn.71-7 and accompanying text.

independent conduct is exacerbated in oligopoly markets, which are characterized by *interdependence* and parallel behavior.[102]

In other words, the complexity of establishing the existence of tacit agreement lies in the fact that the market outcome that appears to be inconsistent with vigorous competition—such as prices above the competitive level—may result from a tacit agreement, but they also may be generated by the market forces that are characteristic of an oligopoly.[103] Firms may be able to achieve "cartel-like results without any explicit communication, but they may be found to have engaged in or achieved a 'tacit' agreement that is prohibited by the Sherman Act."[104]

Some scholars regard the distinction between *express* and *tacit* agreements as an effort to identify differences in the types of evidence needed to establish the fact of collusive behavior, where the first usually involve direct evidence—such as a written agreement—while the latter is based on circumstantial evidence.[105] For instance, Kovacic argues that, "the crucial policy issue in such matters is how courts define the minimum quantum of indirect proof that will suffice to permit an inference that the defendants have exchanged assurances."[106]

Courts have not been consistent in their attitudes towards the instances of tacit collusion. In fact, scholars have continuously critiqued the courts' failed efforts to articulate a coherent and unambiguous formula for antitrust liability.[107] We tackle the

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[102] For instance, in *Brooke Group v. Brown & Williamson Tobacco Co*., 509 U.S. 209, 227 (1993), the Supreme Court noted that

> 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.

Id.; see also *In re* Flat Glass Antitrust Litigation, 385 F.3d 350, 358-9 (3d Cir. 2004) (observing that courts have been "cautious" when required to establish anticompetitive actions involving firms in oligopolistic markets, because of the "interdependence" by which such markets are characterized).

[103] *See, e.g.*, Blechman, *supra* note 8.

[104] Hay, *supra* note 3, at 892. Similarly, Kai-Uwe Kühn and Xavier Vives define tacit collusion as "any type of cooperation between firms which is not sustained by legally enforceable contracts," arguing that "[t]he theories do not distinguish between explicit 'agreements' between firms and implicit anticipation of reactions by rivals in dynamic interactions (as for example in what is termed 'conscious parallelism' in the competition policy literature). This is because in theory there is no significant difference between these two types of behavior (sic)." Kühn & Vives, *supra* note 33, at 43. *Cf.* Hay, s*upra* note 8 (discussing two elements for liability: 'meeting of the minds' and culpability); *see also* Kaplow, *supra* note 1, at 769, n.200 and accompanying text (citing ABA SECTION OF ANTITRUST LAW, ANTITRUST COMPLIANCE: PERSPECTIVES AND RESOURCES FOR CORPORATE COUNSELORS 66 (ABA Publishing 2005) (agreements include "written agreements, verbal agreements and even tacit understandings that are reached through a course of conduct or other form of communication").

[105] Kovacic, *supra* note 3, at 19.

[106] *Id.*

[107] Hay, s*upra* note 8, at 465; Lee Goldman, *Trouble for Private Enforcement of the Sherman Act: Twombly*, *Pleading Standards, and the Oligopoly Problem*, 2008 BYU L. REV.

issue of the detection and the required standard of proving *tacit* collusion in the next section.

C. Detecting and Establishing Tacit Collusion

Detection of collusive behavior has proven to be a laborious task; the detection and proof of the fact of *tacit* collusion is even more so. In fact, many scholars hold the view that "despite more than a century of litigation under the Sherman Act and the ability to draw on almost two centuries of economic theory, the federal courts have been unable to develop an effective means of regulating oligopolists' tacit collusion."[108]

The legal theory was challenged by the concerns that the traditional concept of conspiracy was outdated and that parallel conduct by firms in an oligopoly was the economic equivalent of conspiracy.[109] Courts have continuously struggled with formulating a satisfactory conceptual basis for distinguishing firms' permissible unilateral interdependent behavior from illegal collective action in the absence of direct evidence. Baker describes the central question of the debate: "with nothing more in the evidentiary record than parallel price increases and an oligopoly setting, should a § 1 agreement to restrain prices be inferred?"[110] Commentators argue that the courts' efforts to address this question "have been largely unsuccessful, producing a confused series of opinions that provide little guidance on when antitrust liability will be found."[111]

Beginning with *Interstate Circuit, Inc. v. United States*,[112] courts have struggled with definition of consorted action. In that case, the Supreme Court ruled that "[a]cceptance by competitors, without previous agreement, of an invitation to participate in a plan, the necessary consequence of which, if carried out, is restraint of interstate commerce, is sufficient to establish an unlawful conspiracy under the Sherman Act."[113]

Less than a decade after *Interstate Circuit, Inc.*, in the 1946 case *American Tobacco Co. v. United States*,[114] the Court stated that if "the circumstances are such as to warrant a jury in finding that the conspirators had a unity of purpose or a common design and understanding, or a meeting of minds in an unlawful arrangement," no formal agreement is necessary to establish collusive behavior.[115]

1057, 1057 (2008) ("Courts and commentators have long struggled with the proper treatment of parallel conduct by competitors in oligopoly markets.").

[108] Piraino, *supra* note 65, at 24.

[109] Blechman, *supra* note 8, at 882.

[110] Baker (1993), *supra* note 6, at 171.

[111] Hay, s*upra* note 8, at 465.

[112] Interstate Circuit, Inc. v. United States, 306 U.S. 208, 227 (1939).

[113] *Id.* at 227.

[114] 328 U.S. 781 (1946).

[115] *Id.* at 809-10.

A few years later, in the case *United States v. Paramount Pictures, Inc.*,[116] the Court again asserted that "[i]t is not necessary to find an express agreement in order to find a conspiracy. It is enough that a concert of action is contemplated and that the defendants conformed to the arrangement."[117]

In the 1954 case of *Theatre Enterprises*, the Court ruled that "[c]ircumstantial evidence of consciously parallel behavior may have made heavy inroads into the traditional judicial attitude toward conspiracy; but 'conscious parallelism' has not read conspiracy out of the Sherman Act entirely."[118] While commentators debated whether the findings of this case suggest that proof of parallel behavior does not, *ipso facto*, entitle a plaintiff to a directed verdict,[119] most decisions after *Theatre Enterprises* have applied a rule of 'conscious parallelism plus,' requiring the presentation of some additional circumstantial evidence, in addition to the fact of the firms' uniform conduct—such as parallel price move—in order to establish conspiracy.

Thus, the courts were able to establish concerted action in which inter-firm coordination effectuated by means other than a direct exchange of assurances was present. The courts also allowed agreements to be inferred by circumstantial evidence if the challenged behavior, more likely than not, resulted from a collectively established course of action. Finally, the courts declined to find concerted action where the evidence suggested nothing more than the fact that the competing firms had recognized the influence of their own pricing decisions on the profitability and conduct of their rivals and mimicked their competitors' pricing moves.

Subsequent judicial decisions attempted to construct a formula to define these principles. In 1984, in the case of *Monsanto Co. v. Spray-Rite Service Corp*, the Court ruled that collusion requires some conscientious commitment to a common scheme, ruling that "there must be evidence that tends to exclude the possibility of independent action by the [parties]. That is, there must be direct or circumstantial evidence that reasonably tends to prove that [the parties] had a conscious commitment to a common scheme designed to achieve an unlawful objective."[120]

However, the proposed standards and conventional legal formulas failed to provide meaningful analytical guidance for identifying conduct that constitutes illegal collusion.[121] While the concept of collective action encompasses more than a written document or a face-to-face exchange of assurances, it offers no tools to effectively distinguish between the instances of collusion and when the competing firms have

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116 United States v. Paramount Pictures, Inc., 334 U.S. 131, 142 (1948)

117 *Id.* at 142.

118 Theatre Enterprises v. Paramount Film Distributing Corp., 346 U.S. 537 (1954). In this case, the Court left open the question of whether consciously parallel behavior, in itself, would be sufficient to establish conspiracy.

119 *See, e.g.*, Nye, *supra* note 75.

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

121 Baker (1993), *supra* note 6; Yao & DeSanti, *supra* note 100; Carstensen, *supra* note 60, at 962 (observing that commentators have failed to provide "a clear standard to separate unlawful collusion from permissible interdependency"; concluding that "[t]he courts have sought, with a similar lack of success, to find legal criteria to determine the existence of an unlawful combination."); Page, *supra* note 21, at 410-23.

merely engaged in consciously parallel conduct.[122] Moreover, as Kaplow notes, "because parties may reap great profits if they are on one side of the line (even if just barely) but suffer stiff penalties if they are on the other side (even slightly), their strategic anticipatory behavior places great pressure on the boundary, wherever it is drawn."[123]

This problem arises when mistaken inferences of collusive behavior from ambiguous evidence deter pro-competitive or benign conduct. In fact, it was "the goal of reducing error costs associated with excessively broad application of liability standards"[124] that led the Supreme Court in *Matsushita Electrical Industrial Co. v. Zenith Radio Corp.*[125] to expand *Monsanto's* conspiracy standards. The Court ruled that "antitrust law limits the range of permissible inferences from ambiguous evidence in a Section 1 case," emphasizing that "conduct as consistent with permissible competition as with illegal conspiracy does not, standing alone, support an inference of antitrust conspiracy."[126]

In its recent decision in the case of *Bell Atlantic Corp. v. Twombly*, the Supreme Court repeated that an agreement requires a "meeting of the minds" and that parallel conduct is "consistent with conspiracy, but just as much in line with a wide swath of rational and competitive business strategy unilaterally prompted by common perceptions of the market."[127] The Court clarified that when competing firms coordinate their actions by conscious parallelism, they act independently as a matter of law.[128]

The fact that in oligopolistic markets, firms' independent decision-making takes the likely reactions of their competitors into account is problematic for the antitrust analysis. Although whether the supra-competitive prices are established following firms engaging in true collusive behavior, or by practicing conscious parallelism—i.e., individually adapting their conduct to that of their competitors—"the effect on the market is identical,"[129] the lack of explicit agreement seemingly creates a problem for antitrust law.[130]

Even ignoring the issue of the remedy—i.e., how the antitrust agencies should instruct firms to avoid conduct that is in their own independent best interest[131]—the

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[122] Kovacic et al., *supra* note 23, at 401.

[123] Kaplow, *supra* note 1, at 690

[124] Kovacic, *supra* note 3, at 29.

[125] 475 U.S. 574 (1986). The case of *Matsushita* involved an alleged conspiracy to charge predatory prices, which is a highly improbable phenomenon.

[126] *Id.* at 588.

[127] Bell Atlantic Corp. v. Twombly, 550 U.S. 544, 555 (2007).

[128] However, it should be noted that by applying the *Twombly* decision to the antitrust issues and its consequences for future antitrust disputes are viewed as equivocal by many scholars. For an extensive discussion of these issues see, Kaplow, *supra* note 1.

[129] Enrico Adriano Raffaelli, *Oligopolies and Antitrust Law*, 19(3) FORDHAM INT'L L.J. 915, 917-8 (1996) (footnote omitted).

[130] Reza Dibadj, *Conscious Parallelism Revisited*, 47(3) SAN DIEGO L. REV. 589 (2010).

[131] For instance, in *Clamp-All Corp. v. Cast Iron Soil Pipe Institute,* 851 F.2d 478, 484 (1st Cir. 1988) the court noted that

distinction between an independent business decision—one that is based on assessments of competitors' likely behavior and promotes the firm's own best strategy given the market circumstances—and collusive behavior is extremely complicated.[132] Indeed, "the line that distinguishes tacit agreements (which are subject to section 1 scrutiny) from mere tacit coordination attained through recognized oligopolistic interdependence (which eludes section 1's reach) is decidedly indistinct."[133]

This problem arises when the only observable parameter for the antitrust enforcement agencies is the market outcome—e.g., parallel price movements. While the effect of oligopolistic coordination is parallel behavior that "approaches the results that one might associate with a traditional agreement to set prices, output levels, or other conditions of trade,"[134] differentiating it from illegal collusive agreements based on market data is extremely difficult. Some economists even argue that inferring collusive behavior from market data is virtually impossible, since the relevant market data is not available to antitrust authorities.[135]

> individual pricing decisions (even when each firm rests its own decision upon its belief that competitors do the same) do *not* constitute an unlawful agreement under section 1 of the Sherman Act . . . . That is not because such pricing is desirable (it is not), but because it is close to impossible to devise a judicially enforceable remedy for 'interdependent' pricing. How does one order a firm to set its prices *without regard* to the likely reactions of its competitors?

Id.; *see also* Posner (1969), *supra* note 8, at 1564; W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 131 (Mass. Inst. Tech. Press, 3d ed. 2000) (arguing that although the outcome of tacit collusion is just as harmful "as if the firms operated a cartel," the remedies under antitrust laws "would probably need to differ" because "tacit understandings might require a structure dissolution of the industry to be made ineffective"); Goldman, *supra* note 107, at 1080.

132 An addition to the difficulty pointed out by Hay is that liability in the antitrust context "normally requires some form of culpable behavior," but in oligopoly, "the firm has done nothing more than to conclude that it would be foolish to charge less than a 'monopoly' price" Hay, s*upra* note 8, at 441.

133 Kovacic, *supra* note 3, at 35.

134 *Id.* at 31.

135 *See, e.g.*, Kühn & Vives, *supra* note 33; Kühn, *supra* note 42, at 171 (contending that "[I]t is typically impossible for a court to establish with any accuracy whether oligopolists have charged prices close to monopoly prices or not. In the vast majority of cases, the available data will not allow making such inferences."); MOTTA M., COMPETITION POLICY: THEORY AND PRACTICE (Cambridge Univ. Press 2004); *see also* Robert H. Porter, *A Study of Cartel Stability: The Joint Executive Committee*, 14 BELL J. ECON. 301 (1983) (studies by Porter and Ellison, who demonstrate the difficulty of inferring collusion from market data; based on the same market data, the authors reached opposite conclusions with respect to the existence of a railroad cartel in the U.S. in 1880s); Glenn Ellison, *Theories of Cartel Stability and the Joint Executive Committee*, 25 RAND J. ECON. 37 (1994); Alexis Jacquemin & Margaret E. Slade, *Cartels, Collusion, and Horizontal Merger*, *in* HANDBOOK OF INDUSTRIAL ORGANIZATION vol. 3, 452 (Richard Schmalensee & Robert D. Willig eds.,Amsterdam: North-Holland 1989) (Jacquemin and Slade argue that "[I]t is impossible to distinguish pure tacit collusion from . . . explicit cartel agreements. What matters for the empirical estimates is the outcome and not the cause of noncompetitive pricing."); Robert H. Porter & J. Douglas Zona, *Collusion*, *in* ISSUES IN COMPETITION LAW AND POLICY vol. 2, 1071 (Wayne Dale Collins ed., Chicago: ABA Publishing 2008) (Porter and Zona, assert that "[A]s a matter of economics, it is difficult and perhaps

Moreover, using the conventional economic theory of oligopoly in attempting to establish antitrust liability may be challenging, because this model:

> [I]s premised on separate profit-maximizing decisions by each firm that treat the likely reaction of rivals simply as a parameter, virtually precludes any extension of antitrust beyond situations where formal conspiracy can be proved. Liability is avoided because in the standard model, nothing that the individual oligopolist has done appears to be culpable; its decision-making merely takes into account the assumed reaction of rivals.[136]

Following the *Matsushita* and *Twombly* rulings, if the observed parallelism is as consistent with independent action—i.e., a response to interdependence—as is the case with the presence of collusive behavior, antitrust intervention would be precluded. Thus, evidence of parallel conduct without additional factors is insufficient, as a matter of law, to meet the burden of proof for finding a conspiracy. Moreover, in *Twombly* the Supreme Court held that the allegations of an illegal collusion 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," thereby ruling that the plaintiff must allege some plausible ground for thinking the parallel conduct is the result of a conspiracy.[137]

In their attempt to address the challenge posed by the issue of whether parallel conduct is sufficient to support an inference of agreement, the courts generally have held that conscious parallelism or oligopolistic interdependence does not permit an inference of conspiracy, unless supported by additional factors, often termed plus factors.[138] These factors comprise the "extra ingredient of centralized orchestration of policy which will carry parallel action over the line into the forbidden zone of implied contract and combination."[139]

Unfortunately, "the analysis of plus factors is one of the most unsettled and perplexing doctrinal issues of modern antitrust law."[140] Types of behavior that may

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impossible to distinguish between [interdependent oligopoly, conscious parallelism, tacit collusion, and explicit collusion] on the basis of outcomes alone.").

[136] Hay, *supra* note 8, at 480; *see also* Kovacic, *supra* note 3, at 31 (maintaining that "the recognition of interdependence can lead firms to coordinate their conduct simply by observing arid reacting to the moves of their competitors. In some instances, the effect of such oligopolistic coordination is parallel behavior (e.g., parallel price movements) that approaches the results that one might associate with a traditional agreement to set prices, output levels, or other conditions of trade.").

[137] Bell Atl. Corp. v. Twombly, 127 S. Ct. 1955, 1966 (2007).

[138] *See, e.g.*, Blomkest Fertilizer, Inc. v. Potash Corp. of Sask., 203 F.3d 1028, 1032-34 (8th Cir. 2000) (the Court granted defendant summary judgment because plaintiff did not meet its burden "to present evidence of consciously paralleled pricing supplemented with one or more plus factors"); *see also* Kovacic, *supra* note 3, at 31 n.91 and accompanying text; Piraino, *supra* note 65, at 37; Blechman, *supra* note 8, at 885 n.25 and accompanying text (Blechman reports that the term plus factors was first used in an antitrust conspiracy context in *C-O-Two Fire Equip. Co. v. United States*, 197 F.2d 489, 493 (9th Cir.), *cert. denied,* 344 U.S. 892 (1952)).

[139] L.B. SCHWARTZ, J.J. FLYNN & H. FIRST, FREE ENTERPRISE AND ECONOMIC ORGANIZATION: ANTITRUST 439 (Foundation Press, 6th ed. 1983).

[140] Kovacic et al., *supra* note 23, at 435.

constitute plus factors vary. Courts enjoy broad discretion to interpret the 'extra ingredient' broadly or narrowly,[141] so much that some observers argue that the disparities in the outcomes of cases where the courts had to interpret plus factors suggest that they depend upon the court's "unarticulated intuition about the likely cause of observed parallel behavior."[142]

We explore the nature and the role of the plus factors and the phenomenon of interdependent behavior in depth in the following sub-section.

D. Interdependence and the Role of 'Plus Factors'

1. The 'Plus Factors'

The economic literature has recognized that in repeated interactions in an oligopoly industries market-outcomes that resemble collusive schemes can result from the interdependent, consciously parallel conduct of the firms, rather than from actual conspiracy.[143] Kühn and Vives describe this problem as follows: "a firm knows that other firms know when it acquires information and it knows that these firms act according to that knowledge. If a firm knows that another firm has just acquired the information it has itself it will change its behaviour [sic] accordingly."[144]

However, because distinguishing collusive action from independent rational response to market stimuli based on parallel conduct alone is difficult, if not unfeasible,[145] courts have relied on operational criteria known as plus factors to determine whether a pattern of parallel conduct results from independent parallel conduct or from illegal collusion.[146]

In *Petruzzi's IGA Supermarkets*,[147] the Court explained that the need for plus factors stems from "the desire not to curb procompetitive behavior."[148] Thus, in addition to demonstrating proof of consciously parallel behavior, a plaintiff must establish "the existence of certain 'plus' factors, including: (1) actions contrary to the defendants' economic interests, and (2) a motivation to enter into such an agreement."[149] These plus factors comprise of some independent circumstantial evidence that gives rise to an inference of consorted action. In *In re Flat Glass*

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[141] Page maintains that with respect to the question of what would satisfy the requirement of "more" is far less clear from the opinion "[T]he Court offered a grab-bag of formulations." Page, *supra* note 83, at 446 nn.42-52 and accompanying text.

[142] Kovacic, *supra* note 3, at 36.

[143] Baker (1993), *supra* note 6, at 145-98. The courts have explicitly recognized that "the distinctive characteristic of oligopoly is recognized interdependence among the leading firms: the profit-maximizing choice of price and output for one depends on the choices made by others." Bailey v. Allgas, Inc., 284 F.3d 1237, 1251 (11th Cir. 2002).

[144] Kühn & Vives, *supra* note 33, at 25.

[145] Theatre Enterprises v. Paramount Film Distributing Corp., 346 U.S. 537 (1954).

[146] "The inelegant term 'plus factors' refers simply to the additional facts or factors required to be proved as a prerequisite to finding that parallel action amounts to a conspiracy." AREEDA & HOVENKAMP, *supra* note 81, at 240.

[147] Petruzzi's IGA Supermarkets v. Darling-Delaware Co., 998 F.2d 1224 (3d Cir. 1993).

[148] *Id.* at 1242.

[149] *Id.*

Antitrust Litigation,[150] the Court observed that the "existence of these plus factors tends to ensure that courts punish 'consorted action'—an actual agreement—instead of the 'unilateral, independent conduct of competitors.'"[151]

The precise nature of the circumstances that may point in the direction of conspiracy in the presence of conscious parallel conduct has not been defined by the courts;[152] rather, the list of possible plus factors has varied from case to case. It has been observed that "[t]here is no finite set of such criteria; no exhaustive list exists."[153] Furthermore, various actions that may be perceived as constituting plus factors are not necessarily independent of one another; in fact, "some are likely to be simultaneously present or may otherwise be mutually reinforcing."[154] Finally, while there is no hierarchical relationship among the different circumstances that may constitute plus factors,[155] the success rate of plaintiffs alleging different types of plus factors varies.[156]

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[150] *In re* Flat Glass Antitrust Litigation, 385 F.3d 350 (3d Cir. 2004).

[151] *Id.* at 360.

[152] The existence of successful oligopolistic coordination may be inferred from a vast number of circumstances. Jonathan B. Baker & Timothy F. Bresnahan, *Economic Evidence in Antitrust: Defining Markets and Measuring Market Power*, *in* HANDBOOK OF ANTITRUST ECONOMICS 1 (Paolo Buccirossi ed., MIT Press 2008); Jonathan B. Baker & Timothy F. Bresnahan, *Empirical Methods of Identifying and Measuring Market Power*, 61 ANTITRUST L.J. 3 (1992); Joseph E. Harrington, Jr., *Detecting Cartels*, *in* HANDBOOK OF ANTITRUST ECONOMICS 1 (Paolo Buccirossi ed., MIT Press 2008); Robert H. Porter, *Detecting Collusion*, 26 REV. INDUS. ORG. 147 (2005). In *Re/Max Int'l v. Reality One*, 173 F.3d 995 (6th Cir. 1999), the court considered the following list of plus factors:

> (1)whether the defendants' actions, if taken independently, would be contrary to their economic self-interest; (2) whether the defendants have been uniform in their actions; (3) whether the defendants have exchanged or have had the opportunity to exchange information relative to the alleged conspiracy; and (4) whether the defendants have a common motive to conspire.

Id. at 1009.

[153] *In re Flat Glass*, 385 F.3d at 360.

[154] Kaplow, *supra* note 2, at 343.

[155] ABA SECTION OF ANTITRUST LAW, *supra* note 39, at 12; Kovacic et al., *supra* note 23, at 406.

[156] For instance, the element of opportunity to conspire—such as meetings among the alleged conspirators—has been given relatively little weight. *See, e.g.*, *In re* Baby Food Antitrust Litigation, 166 F.3d 112 (3d Cir. 1999); Williamson Oil Co. v. Philip Morris USA, 346 F.3d 1287, 1319 (11th Cir. 2003). The Court asserted that "opportunity to fix prices without any showing that appellees *actually* conspired does not tend to exclude the possibility that they did not avail themselves of such opportunity or, conversely, that they actually did conspire." *Id.* Furthermore, as a result of the advances in the economic literature, some observers suggest implementing economically oriented reformulation of agreement jurisprudence in circumstantial evidence cases, focusing on the components of successful cooperation by rivals. Kovacic et al. suggest that "[T]he most important threshold element of proof in this framework [in proposed circumstantial evidence cases] would consist of evidence showing how the defendants communicated their intentions and confirmed their commitment to a proposed course of action," deeming a pattern of extensive communication among the firms that preceded a complex, parallel adjustment in behavior that could not readily be explained by their

As mentioned, the plus factors required by courts to establish that parallel behavior in particular circumstances constitutes concerted action differ. Perhaps the most-cited plus factor proposed by courts is the '*contrary to self-interest*' factor.[157] This factor consists of a formula used to determine whether the market under consideration is characterized by interdependence. The basic concept behind this factor is that collusion may be found if the conduct in question would have served the firm's self-interest only if its competitors acted in concert, but would have contradicted its rational economic self-interest if pursued unilaterally.

Other courts required the plaintiff to demonstrate a rational motive for defendants to behave collectively.[158] Still other types of circumstantial evidence include: the lack of other rational explanations for the observed market phenomenon except for the fact that it is the product of concerted action;[159] evidence of direct communications among alleged conspirators;[160] industry structure characteristics that complicate or facilitate

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independent efforts to be, perhaps, the most probative proof of the mechanism for achieving collusion. Kovacic et al., *supra* note 23, at 408.

[157] Petruzzi's IGA Supermarkets v. Darling-Delaware Co., 998 F.2d 1224 (3d Cir. 1993); *In re* High Fructose Corn Syrup Antitrust Litigation, 295 F.3d 651 (7th Cir. 2002); *Re/Max Int'l*, 173 F.3d at 1009 (stating that "[O]rdinarily, an affirmative answer to the first of these factors [i.e., action contrary to economic self-interest] will consistently tend to exclude the likelihood of independent conduct."); City of Tuscaloosa v. Harcros Chems., Inc., 158 F.3d 548, 571 n.35 (11th Cir.1998) ("[A] showing that the defendant acted contrary to its legitimate economic self-interest . . . is sufficient to satisfy the requirement that the plaintiff show 'plus factors' beyond mere consciously parallel action. Other 'plus factors,' however, may also exist."); *see also* Gregory J. Werden, *Economic Evidence on the Existence of Collusion: Reconciling Antitrust Law with Oligopoly Theory*, 71 ANTITRUST L.J. 719, 748–9, n.131 (2004) (illustratively citing eleven cases, some of which cite or quote additional cases).

[158] First Nat'l Bank v. Cities Serv. Co., 391 U.S. 253, 286-7 (1968). However, it should be noted that in many cases, courts have been reluctant to confirm that the existence of a motive to conspire should amount to a 'plus factor' (e.g., *In re Baby Food Antitrust Litigation*, 166 F.3d at 12); *see also* EINER R. ELHAUGE & DAMIEN GERALDIN, GLOBAL ANTITRUST LAW AND ECONOMICS 837 (Foundation Press 2007) (stating that "[A]nother major plus factor is understood to be a 'motivation for common action,' that is, some indication that the firms would have a disincentive to engage in the conduct unless others did the same. The problem is that this plus factor is true for cases of pure oligopolistic coordination, when no conspiracy is inferred."); Werden, *supra* note 158, at 750–1 n.137 (see discussion and cases cited).

[159] United States v. Finis P. Ernest, Inc., 509 F.2d 1256, 1262 (7th Cir.), *cert. denied,* 423 U.S. 874 (1975); Morton Salt Co. v. United States, 235 F.2d 573 (10th Cir. 1956); United States v. Morton Salt Co., 1964 Trade Cas. (CCH) 71,304, at 80,268-9 (D. Minn. 1964).

[160] In such instances, courts may infer that the firms used these opportunities to communicate a common action. *E.g.*, United States v. Foley, 598 F.2d 1323, 1331-2 (4th Cir. 1979); *In re* Coordinated Pretrial Proceedings in Petroleum Prods. Antitrust Litig., 906 F.2d 432, 445-60 (9th Cir. 1990), *cert. denied,* 500 U.S. 959 (1991); City of Long Beach v. Standard Oil Co. of California, 872 F.2d 1401, 1406-7 (9th Cir. 1989) (although often they hold that a "mere opportunity to conspire" cannot, by itself, establish an inference of collective action); Seagood Trading Corp. v. Jerrico, Inc., 924 F.2d 1555, 1574-5 (11th Cir. 1991); Bolt v. Halifax Hosp. Med. Ctr., 891 F.2d 810, 827 (11th Cir. 1990).

the avoidance of competition;[161] and, industry performance factors that suggest or rebut an inference of horizontal collaboration.[162]

Finally, the courts highlighted the implications of *information-sharing* as a mechanism that may constitute a *plus factor* to establish collusion.[163] While the courts refrained from generating a comprehensive hierarchical framework of the plus factors,[164] some observers view information-sharing as the most significant mechanism in collusion cases.[165] The existence of communications between competing firms regarding price or other sensitive competitive information, coupled with parallel behavior that "tends to exclude" the possibility of independent action, can serve as evidence of tacit collusion.[166] Communications that may contribute to the finding of conspiracy need not be direct however; such circuitous communications are often termed *signaling*.

Signaling refers to the phenomenon in which firms convey information relevant to competition, such as pricing, to their competitors indirectly, via media or third parties.[167] The main difficulty with the use of indirect means of communications for establishing illicit behavior is "how far may we move away from direct, detailed, and reciprocal exchanges of assurances on a common course of action and yet remain within the statutory and conceptual boundaries of an agreement."[168]

We dedicate a separate discussion to the issue of information-sharing and signaling, because—as elaborated in further detail below—we argue that some types of vertical information-exchange may and should constitute a *plus factor* and should be considered as such in order to prove the existence of concerted action. However, before delving into the details of our argument, a few paragraphs should be devoted

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[161] The likeliness of collusion may depend on the number of sellers; the entry barriers; the nature of the product (homogeneous or not); number and type of the buyers' community; and the frequency of transactions. Hay, *supra* note 8, at 465; Clark, *supra* note 8, at 894-9. In fact, certain industry structures, firm histories, and market environments are conducive to collusion. POSNER (2001), *supra* note 8.

[162] Relevant performance factors include such elements as the stability of market shares over time and high profit margins. Kovacic, *supra* note 3, at 54; *see also* Estate of Le Baron v. Rohm & Haas Co., 441 F.2d 575, 578 (9th Cir. 1971) ("[E]vidence of high profit margins is probative of the existence of a conspiracy.").

[163] *See In re* Plywood Antitrust Litig., 655 F.2d 627, 634 (5th Cir. 1981) (noting parallel pricing, accompanied by direct evidence of communication regarding pricing between high-level personnel is sufficient to infer conspiracy under Section 1).

[164] ABA SECTION OF ANTITRUST LAW, *supra* note 39, at 12; Kovacic et al., *supra* note 23, at 406.

[165] Kovacic, *supra* note 3, at 49.

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

[167] For instance, in *Williamson Oil Co. V. Philip Morris USA*, 346 F.3d 1287, 1305 (11th Cir. 2003), the Court described 'signaling' as follows: "[A]ppelants identify several "signals" that allegedly were transmitted among . . . [defendants] as to their pricing intentions. The class claims that these signals were the means by which appellees' price fixing conspiracy was carried out . . . by indirectly communicating with each other through media outlets and other public announcements."

[168] PHILLIP E. AREEDA, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION (Little, Brown and Company: Boston, 2d ed. 1986).

to a term related to the concept of a *plus factor*, albeit one that has caused—and continues to cause—much confusion among the antitrust scholars, namely: *facilitating practices*.

2. Facilitating Practices

Facilitating practices are mechanisms designed to assist competing firms in achieving supra-competitive prices and to enforce price and output decisions.[169] This practice is an activity that makes it easier for parties to coordinate pricing or other anticompetitive behaviors.[170] "The danger of a facilitating practice is that it may, under certain circumstances, increase the likelihood of tacit collusion."[171]

The theory of facilitating practices was articulated as a response to the growing view of the inadequacy of the traditional antitrust approaches to combat anticompetitive practices employed by firms in oligopolic markets.[172] This response arose as a result of the attempt by the antitrust enforcement agencies to develop new methods to address firms' conduct that restricts competition.[173] "[T]he modern concept of facilitating practices reflects an effort to bring within the reach of the antitrust laws some conduct which has the effect of making coordination easier and more effective yet which does not resemble the traditional Section 1 agreement."[174]

Indeed, the economic literature has identified various ways in which firms can coordinate their behavior implicitly, i.e., without resorting to express agreements or communications.[175] Tools developed in game theory and collusion have provided antitrust enforcement agencies with new methods of examining strategies by which firms seek to coordinate behavior, while avoiding conduct that clearly could be

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169 Salop, *supra* note 43, at 265–290.

170 Facilitating practice is not a "plus factor," because it would be difficult to establish causation in fact between the activity and the alleged conspiracy. Holiday Wholesale Grocery Co. v. Philip Morris, Inc., 231 F. Supp. 2d 1253, 1272, 1274-5 (N.D. Ga. 2002).

171 DeSanti & Nagata, *supra* note 41, at 94.

172 George A. Hay, *Facilitating Practices* (ABA Competition Law and Policy, Cornell Legal Studies Research Paper, No. 05-029), http://ssrn.com/abstract=811404.

173 *See, e.g.*, Blechman, *supra* note 8, at 889. The antitrust enforcement authorities incorporated insights made by economic literature into the enforcement schemes. For instance, in *United States v. Gen. Motors Corp*., [1974-2] Trade Cas. 75,253 (E.D. Mich. 1974), the Justice Department invoked the theory that, in certain instances, public price announcements may act as "signals" by which firms in oligopoly communicate with one another, producing an agreement on uniform prices. In that particular case, this theory was rejected. In *United States v. Gen. Elec. Co. & Westinghouse Elec. Corp.* (*United States v. Westinghouse Elec. Corp.*, [1977-2] Trade Case 61,661 (E.D. Pa. 1977)), the Justice Department took the position that although the theory was "novel," a court could establish the fact of conspiracy in restraint of trade based on evidence of signaling, relying—in addition to interdependence—upon the companies' conduct being against self-interest and inconsistent with normal commercial practice, and the parties' intent to exchange assurances to stabilize prices. For an extensive discussion, see Lionel Kestenbaum, *What Is "Price Signalling" and Does It Violate the Law?*, 49 ANTITRUST L.J. 911, 916-7 (1980).

174 Hay, *supra* note 173.

175 Baker (1993), *supra* note 6.

characterized as an illegal agreement.[176] In fact, some of these schemes that advance collusion have encouraged government antitrust agencies to revisit enforcement approaches.[177]

While neither the idea nor the term *facilitating practice* is novel, much confusion still exists within and across various streams of the literature with respect to its precise definition and the relationship between a *facilitating practice* and a *plus factor*. While the scholars of economics often use the two terms interchangeably, the terms are not synonymous. Legal scholarship defines plus factors as the elements that help a jury determine whether the competitors' conduct is independent or a result of collusive action,[178] whereas the term *facilitating practice* is applied to an action "taken by firms to make coordination easier or more effective without the need for an explicit agreement."[179]

Similarly, there is no clear indication of the relative evidentiary value of *facilitating practices* as opposed to plus factors; generally, the role that facilitating practices might play in the inference of a Section 1 agreement is ambiguous.[180] For instance, some scholars argue that employing one or more *facilitating practices* "may provide the 'plus factor' needed to elevate consciously parallel behavior to the level of agreement . . . ."[181] A facilitating practice represents affirmative voluntary conduct, therefore, there appears to be "no inherent reason why it should not be sanctioned if it is likely to lead to competitive harm."[182] Courts have traditionally recognized that, under the law, *facilitating devices* are not necessarily equivalent to a *plus factor*.[183] Nevertheless, various facilitating practices have been deemed to be unlawful under particular circumstances.[184]

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176 Kovacic, *supra* note 3, at 13. Also, Yao & DeSanti, who explored ways to apply game-theoretical tools to advance the enforcement of antitrust law, argue that "[G]ame theory raises interesting issues about the legal tests for tacit collusion, and may provide some useful insights . . . which can at least indicate when conduct is worth further scrutiny." Yao & DeSanti, *supra* note 100, at 140.

177 Kovacic, *supra* note 3, at 13.

178 Hay, *supra* note 173, at 11.

179 *Id.* at 13.

180 Page, *supra* note 58, at 28.

181 Clark, *supra* note 8, at 913-4.

182 DeSanti & Nagata, *supra* note 41, at 95.

183 Holiday Wholesale Grocery Co. v. Philip Morris Inc., 231 F. Supp. 2d 1253, 1274–5 (N.D. Ga. 2002), *aff'd sub nom,* Williamson Oil Co., Inc. v. Philip Morris USA, 346 F.3d 1287 (11th Cir. 2003).

184 *See, e.g.*, FTC v. Cement Inst., 333 U.S. 683 (1948) (agreement to use basing point system); Nat'l Macaroni Mfrs. Ass'n v. FTC, 45 F.2d 42 (7th Cir. 1965) (agreement to standardize content of macaroni). Use of a facilitating practice, whether or not pursuant to an agreement, can also be evidence from which price-fixing can be inferred. *See, e.g.*, *In re* Coordinated Pretrial Proceedings in Petroleum Prods. Antitrust Litig., 906 F.2d 432, 446-48 (9th Cir. 1990), *cert. denied,* 500 U.S. 959 (1991). In *Petroleum Products*, announcements of wholesale price changes were not alleged to be an independent basis for violation, but the jury was permitted to use such evidence as a basis for inferring an agreement to fix prices.

A facilitating practice is a scheme that is designed to assist otherwise competing firms to coordinate their price and output strategies without resorting to direct collusion;[185] it is an action that makes coordination easier or more effective.[186] These mechanisms allow the participating firms to acquire and maintain some degree of collective market power over time, resulting in supra-competitive pricing.

Facilitating practices help firms solve the problems that accompany cartel formation, namely, reaching an agreement, detecting cheating rapidly, and ensuring effective punishment for deviations.[187] In fact, with respect to the negative implications of the outcome, there is no fundamental difference between the tacit collusion achieved through facilitating practices and an express agreement of competitors to act in consort. "Under the facilitating practices theory, the communication or exchange of information . . . might lead, through coordinated or oligopolistic interdependence, to the same results the parties sought to achieve through their proposed formal agreement."[188]

However, the effect of facilitating practices on competition is not necessarily detrimental; facilitating practices may have positive as well as negative consequences for market efficiency and the level of competition.[189] In fact, "determining whether the use of a given practice violates the antitrust laws therefore typically requires comparing its probable anticompetitive effects with its probable positive effects upon competition and efficiency."[190]

Indeed, different acts of firms may be viewed as constituting facilitating practices. Some examples include actions such as participating in price reporting systems,[191] incorporating most favored customer clauses,[192] meeting competition clauses,[193] and establishing delivered or basing-point pricing.[194] Interestingly, while there is no

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[185] *See generally* Salop, *supra* note 43, at 265–90.

[186] Hay, *supra* note 173, at 13.

[187] Baker (1993), *supra* note 6, at 144; Salop, *supra* note 43, at 266. For a general overview of the theory, see TIROLE, *supra* note 43, at ch. 6; MARTIN, *supra* note 43, at ch. 10.

[188] DeSanti & Nagata, *supra* note 41, at 121.

[189] Clark, *supra* note 8, at 888, 903-4 (discussing the fact that facilitating practices are not "inherently anticompetitive"). In certain instances, product standardization may increase industry-wide competitive pricing, because product standardization may facilitate consumers' ability to compare products on the basis of quality. *Id.*

[190] *Id.*; *see also id.* at 904-06 (for a discussion of the ways to determine whether the use of a given facilitating practice injures competition by evaluating its positive and negative effects upon competition and efficiency).

[191] Leslie, *supra* note 77, at 575-76.

[192] *See generally* David Besanko & Tomas P. Lyon, *Equilibrium Incentives for Most-Favored Customer Clauses in an Oligopolistic Industry*, 11 INT'L J. INDUS. ORG. 347 (1993); Thomas E. Cooper, *Most- Favored-Customer Pricing and Tacit Collusion*, 17 RAND J. ECON. 377 (1986).

[193] Salop, *supra* note 43, at 279-82.

[194] *See generally* Dennis W. Carlton, *A Reexamination of Delivered Pricing Systems*, 26 J.L. & ECON. 51 (1983); David D. Haddock, *Basing-Point Pricing: Competitive vs. Collusive Theories*, 72 AM. ECON. REV.289, 289-306 (1982); POSNER, *supra* note 77, at 91-93; George J.

hierarchical relationship among the different practices, some observers view the exchange of private information among competitors—whether direct or through trade associations[195]—as the most significant facilitating practice in collusion cases.[196] Information-exchange may consist of the transmittal of data concerning pre-sale prices,[197] pricing formulas,[198] the expected demand in the market, sales quantities,[199] or recent price quotations.[200]

3. Information-Sharing and Signaling as a Mechanism Enabling Cartel Formation

As mentioned, direct communications and information-sharing are perhaps the most effective means that may allow competitors to create and to maintain a cartel, as "communication is a central part of the operation of a cartel."[201] However, due to the risk involved in the fact that establishing and maintaining direct communications constitute circumstantial proof of an agreement to fix prices and a plus factor, firms resort to other—perhaps less effective, but also less dangerous—means to facilitate collusion.

Contrary to horizontal agreements—in which "an adverse impact on competition is presumed, and therefore . . . the plaintiff is spared the burden of proving such an impact"[202]— information-exchange may advance, as well as disrupt, competition. The instances of the positive effect of information-sharing on the level of competition include the firms acquiring more complete information about market conditions,[203]

Stigler, *A Theory of Delivered Price Systems*, *in* THE ORGANIZATION OF INDUSTRY 147–64 (The Univ. of Chicago Press 1968).

[195] Levenstein & Suslow, *supra* note 64, at 69-70 (discussing how industry associations or states' governments may facilitate collusion by collecting and disseminating information).

[196] Kovacic, *supra* note 3, at 49.

[197] United States v. Container Corp., 393 U.S. 333, 337 (1969). It should be noted that the structure of the market plays an important role with respect to the competitive significance of information-exchanges. "Price information exchanged in some markets may have no effect on a truly competitive price . . . . The exchange of price data tends toward price uniformity" in oligopolistic markets. *Id.*; Charles A. Holt & David T. Scheffman, *Facilitating Practices: The Effects of Advance Notice and Best- Price Policies*, 18 RAND J. ECON. 187 (1987); Kestenbaum, *supra* note 174; Kattan, *supra* note 18.

[198] Kovacic, *supra* note 3, at 50-51(quoting United States v. Gen. Elec. Co., 1977 Trade Cas. (CCH) 61,659 (E.D. Pa. 1976). *Cf.* Hay, *supra* note 8, at 462-63 (arguing that the agreement to use a uniform pricing formula does not, in itself, necessarily adversely affects competition, because it does not prevent firms from cheating its partners in collusion agreement; but it simplifies the process of establishing consensus price).

[199] Hay, *supra* note 8, at 463.

[200] *Id.* For a general discussion of the types of information-exchanges that may facilitate collusion, see HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE (West Pub. Co. 4th ed. 2011).

[201] Kovacic et al., *supra* note 23, at 423.

[202] Hay, *supra* note 3, at 877.

[203] Richard Posner, *Information and Antitrust: Reflections on the Gypsum and Engineers Discussions*, 67 GEO. L. J. 1187, 1193-97 (1979).

consumers obtaining the possibility of comparing prices,[204] or in particular industries.[205] In light of the fact that in certain instances, information-sharing may have potential beneficial consequences for social welfare, scholars argue that the sweeping prohibition of the exchange of data between competing firms is unwise and counterproductive.[206] Generally, the courts have signaled a similar outlook, refusing to deem all types of information-sharing among competing firms to be illegal *per se*.[207]

Nevertheless, while some types of information-sharing can advance market competition—e.g., by providing consumers with more extensive information[208]—other data exchange can promote concerted action and decrease competition by facilitating tacit collusion among competitors.[209] Not surprisingly, advances in

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204 Piraino, *supra* note 65, at 55. For instance, advance notice of price changes may benefit consumers, allowing them to plan their purchases.

205 Clark, *supra* note 8, at 927. For instance, Clark asserted that the crucial determinant of whether the procompetitive effects outweigh the anticompetitive effects in a particular information-exchange instance "will ordinarily be a function of the industry's structure and basic operating conditions." *Id; see also* Dennis W. Carlton & J. Mark Klamer, *The Need for Coordination Among Firms, With Special Reference to Network Industries*, 50 U. CHI. L. REV. 446, 457 (1983) (pointing out the efficiency of coordination among competitors in certain industries); Douglas Lichtman, *Property Rights in Emerging Platform Technologies*, 29 J. LEG. STUD. 615, 620-21 (2000) (discussing how coordination between a platform manufacturer and an application manufacturer has positive externalities).

206 Hay, *supra* note 8, at 463. Some scholars have argued that antitrust law is excessively suspicious of what may plausibly be perceived as an efficiency-enhancing collaboration. *See also* Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1 (1984) (arguing that antitrust law disproportionately attributes anticompetitive goals to behavior that has a plausible non-collusive justification); Xavier Vives, *Trade Association Disclosure Rules, Incentives to Share Information, and Welfare*, 21(3) RAND J. ECON. 409 (1990).

207 *See* United States v. United States Gypsum Co., 438 U.S. 42 (1978) (holding that "[t]he exchange of price data and other information among competitors does not invariably have anticompetitive effects;" therefore, it is not a *per se* violation). In an earlier decision, *Am. Column & Lumber Co. v. United States*, 257 U.S. 377, 412 (1921) (Holmes, J., dissenting), Justice Holmes stated that "I should have thought that the ideal of commerce was an intelligent interchange made with full knowledge of the facts as a basis for a forecast of the future on both sides. A combination of such knowledge, notwithstanding its tendency to equalize, not necessarily to raise, is very far from a combination in unreasonable restraint of trade." In a more recent decision, the Supreme Court stated that "antitrust law permits . . . discussions [among competitors] even when they relate to pricing, because the 'dissemination of price information is not itself a per se violation of the Sherman Act.'" Holiday Wholesale Grocery Co. v. Philip Morris, Inc., 231 F. Supp. 2d 1253, 1276 (N.D. Ga. 2002), *aff 'd sub nom,* Williamson Oil Co., Inc. v. Philip Morris USA, 346 F.3d 1287 (11th Cir. 2003) (quoting United States v. Citizens & So. Nat'l Bank, 422 U.S. 86, 113 (1975)).

208 *See* Jonathan B. Baker, *Identifying Horizontal Price Fixing in the Electronic Marketplace*, 65 ANTITRUST L.J. 41, 44 (1997) ("[I]n the familiar economic model of perfect competition, information is an unqualified good. This observation suggests that more information, available faster and at lower cost, can make markets more transparent, enhance buyer choices, help firms make better and cheaper products, and improve competition.").

209 *See, e.g.*, Richard N. Clarke, *Collusion and the Incentives for Information Sharing*, 14 BELL J. ECON. 383, 383, 392 (1983) (explaining that in an uncertain economic landscape, all firms do not have an incentive to share information unless they are engaged in a cartel); Larry M. DeBrock & James L. Smith, *Joint Bidding, Information Pooling and the Performance of*

technology facilitate such information-exchange between competitors.[210] As a result, commentators argue that in oligopoly markets, information-exchange "should now be an even greater concern to antitrust regulators."[211]

The incentives of otherwise competing firms to engage in information-exchange have been extensively studied by economics scholars.[212] Since Novshek and Sonnenschein—who pioneered the research on the economics of information-sharing in an oligopoly in 1982[213]—much scholarly work concentrated on the issue of competing firms' incentives to share their private information with competitors in an oligopolic market, i.e., *horizontal* information-sharing among competitors.[214] More recently, the focus of the economic research shifted to the incentives to share private information among firms in *vertical* settings, such as in a supply chain; it is the *vertical* setting that motivated this article.

It is well known that the risk of being exposed to antitrust investigations and the probability of being convicted and sanctioned for antitrust violations induces competing firms to avoid revealing their private information directly. Nevertheless, due to the financial benefits that accompany information-exchange, firms continuously search for alternative routes to provide and obtain such information. In the following pages, we will argue that the scheme of the information-exchange in *vertical* settings has significant implications for the antitrust legal scholarship and public policy; nevertheless, its negative consequences for the competition have yet to be recognized and addressed. However, before delving into the detailed argument, Section III is dedicated to discussing the literature that examined information-sharing among firms in *vertical* settings.

Petroleum Lease Auctions, 14 BELL J. ECON. 395, 395–96, 404 (1983) (explaining how pooling cost and value estimates on oil tracts can reduce uncertainty and allow firms to bid more accurately in government auctions). The general perspective of economists has usually been that information-sharing maximizes total welfare only when firms share information in an effort to act competitively. *See also* Michael Raith, *A General Model of Information Sharing in Oligopoly*, 71 J. ECON. THEORY 260-88, 293 (1995) (contending that only rarely does information-exchange promote both firms' profits and consumers' surplus); Baker, *supra* note 209, at 44 (arguing that rapid information-exchange among sellers can facilitate coordination and lead to supra-competitive prices by reducing coordination difficulties and concealing the conversations from consumers and antitrust agencies, and may also facilitate coordination by reducing firms' incentive to deviate from the collusive price).

210 Carlton et al., *supra* note 58, at 423 (asserting that "businesses are often able, at low cost, to make information available to consumers and investors and, either advertently or inadvertently, to competitors as well."); *see also* Baker, *supra* note 209.

211 Piraino, *supra* note 65, at 57.

212 *E.g.*, Raith, *supra* note 210.

213 *See generally* William Novshek & Hugo Sonnenschein, *Fulfilled Expectations Cournot Duopoly With Information Acquisition and Release*, 13 BELL J. ECON. 214 (1982).

214 *See generally* Clarke, *supra* note 210; Xavier Vives, *Duopoly Information Equilibrium: Cournot and Bertrand*, 34 J. ECON. THEORY 71 (1984); Esther Gal-Or, *Information Sharing in Oligopoly*, 53(2) ECONOMETRICA 329 (1985); Lode Li, *Cournot Oligopoly with Information Sharing*, 16(4) RAND J. OF ECON 521 (1985); Carl Shapiro, *Exchange of Cost Information in Oligopoly*, 52 REV. ECON STUD. 433 (1984); Raith, *supra* note 210.

III. VERTICAL INFORMATION-SHARING

In general, much research has focused on vertical information-sharing—i.e., the exchange of information between firms that operate at different economic levels, such as the transmission of private information between a retailer and a manufacturer. The efficiency of a supply-chain depends on the way its members are able to coordinate their decisions; one of the principal ways to achieve this coordination is by exchanging information. As a result, scholars of operations management devoted much research effort to the study of the effects of information-exchanges on the efficiency of the supply-chain. This work developed into several streams of research.[215]

The first line of research to study information-exchange in supply-chains adopted the view of a central planner, who is able to determine decisions and actions of the different firms in the supply-chain. In general, as more information is exchanged, the more the performance of the supply-chain benefits; this effect occurs due to better decision-making on capacity investment and allocation.[216] Therefore, from the perspective of the supply-chain as a whole, researchers find a correlation between the quality of information and the overall performance of the supply-chain.

Whereas the first stream of research focused on the effects of information-exchange on the performance of the supply-chain as a whole, a second stream of research examined the problem through the prism of an individual firm. More precisely, it investigated the firm's incentives to share its private information with other players in the supply-chain. Although information benefits the supply-chain overall, when firms operate independently, each firm must make the decision to share or to withhold its private information. As a result, a firm would divulge such information only if it believes it would be better-off sharing information than concealing it. Therefore, the second stream of research focused on the *ex-ante* incentives of competing firms to share information and the effect of the type of private information on the *ex-ante* incentives of the firms to share information.[217]

In addition to examining the *ex-ante* incentives of firms to share information, researchers also looked at the *ex-post* incentives to *truthfully* reveal private information. In this case, the underlying question is whether firms have incentives to manipulate the information they share with other firms in the supply-chain. Scholars

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[215] Also, see Fangruo Chen, *Information Sharing and Supply Chain Coordination*, *in* MANAGEMENT SCIENCE: SUPPLY CHAIN MANAGEMENT: DESIGN, COORDINATION AND OPERATION (Stephen C. Graves & A.G. De Kok eds., Elsevier, Amsterdam 2003) for a thorough review of the research that studied the effects of information-exchanges on the efficiency of the supply-chain.

[216] *See, e.g.*, Yossi Aviv, *A Time Series Framework for Supply Chain Inventory Management*, 51(2) OPERATIONS RESEARCH 210 (2003); Özalp Ozer, *Replenishment Strategies for Distribution Systems under Advance Demand Information*, 49(3) MANAGEMENT SCIENCE 255 (2003); Toktay, L.Beril & Lawrence M. Wein, *Analysis of a Forecasting-Production-Inventory System with Stationary Demand*, 47(9) MGMT. SCI. 1268 (2001).

[217] Vives, *supra* note 215; Gal-Or, *supra* note 215; Li, *supra* note 215; Esther Gal-Or, *Information Transmission-Cournot and Bertrand Equilibria*, 53(1) REV. ECON. STUD. 85 (1986); Shapiro, *supra* note 215; Raith, *supra* note 210; Lode Li, *Information Sharing in a Supply Chain with Horizontal Competition*, 48(9) MGMT. SCI. 1196 (2002); Hongtao Zhang, *Vertical Information Exchange in a Supply Chain with Duopoly Retailers*, 11(4) PROD. & OPERATIONS MGMT. 531 (2002) (using a similar method to examine whether firms in a vertical relationship have *ex-ante* incentives to share information).

provide both empirical evidence[218] and a theoretical basis[219] for the occurrence of information manipulation.[220]

In addition to the extensive study of the effects of and incentives for information-exchange in a simple vertical relationship that consists of only one retailer and his manufacturer, another important stream of research examined the incentives for information-exchanges between a retailer and his manufacturer, in an environment in which there are several competing retailers. In such instances—i.e., when the market is characterized by competition between the retailers— there are weaker incentives to share information with the manufacturer.[221] This phenomenon stems from the fact that in addition to the *direct effect* of information-sharing—i.e., the outcome for the immediate parties engaged in information-sharing, such as the retailer and the manufacturer—information-exchange in the presence of competition may have an *indirect effect*, sometimes termed *information leakage*, which is the ability of a competing firm to infer the private information shared between the retailer and the manufacturer. Information leakage occurs when the actions of a firm that acquires information and acts upon it are observable by other market players; this could lead to spillover effect of information-sharing, when the otherwise confidential information

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[218] *E.g.*, Morris A. Cohen, Teck H. Ho, Z. Justin Ren & Christian Terwiesch, *Measuring Imputed Cost in the Semiconductor Equipment Supply Chain*, 49(12) MGMT. SCI. 1653 (2003) (documenting several examples of overly optimistic forecasts that were provided by a manufacturer to its supplier in several industries; and empirically quantifying the cost of the lack of credible information-sharing for a semiconductor equipment supply chain).

[219] *E.g.*, Özalp Ozer & Wei Wei, *Strategic Commitments for an Optimal Capacity Decision Under Asymmetric Forecast Information*, 52(8) Mgmt. Sci. 1238 (2006) (demonstrating that the popular simple wholesale price contract results in information manipulation, which leads to no information-sharing).

[220] To overcome the information manipulation problem, researchers suggest the use of sophisticated contracts, which align the incentives of the firms to truthfully share information. For example, in a screening model, the uninformed firm can offer a menu of contracts to induce the informed firm to reveal its private information by choosing a specific contract from this well-designed menu of contracts. Principal works in this area include: DREW FUDENBERG & JEAN TIROLE, GAME THEORY (Cambridge, Mass.: MIT Press 1991); Evan L. Porteus & Seungjin Whang, *Supply Chain Contracting: Non-recurring Engineering Charge, Minimum Order Quantity, and Boilerplate Contracts* (Stanford Univ. Graduate Sch. of Bus., Working Paper No. 1589, 1999); Gerard Cachon & Martin Lariviere, *Contracting to Assure Supply: How to Share Demand Forecasts in a Supply Chain*, 47(5) MGMT. SCI. 629 (2001); Charles J. Corbett & Xavier De Groote, *A Supplier's Optimal Quantity Discount Policy Under Asymmetric Information*, 46(3) MGMT. SCI. 444 (2000); Albert Y. Ha, *Supplier-buyer Contracting: Asymmetric Cost Information and Cutoff Level Policy for Buyer Participation*, 48(1) NAVAL RES. LOGISTICS 41 (2001). Another way to resolve the problem of information manipulation is the use of *signaling*; in this case, the firm possessing superior information in the supply chain takes a costly action first, which conveys information to the uninformed party. The advance purchase contract in which the manufacturer offers a commitment contract to the supplier belongs to this literature as well. *See, e.g.*, Gerard Cachon & Martin Lariviere, *Contracting to Assure Supply: How to Share Demand Forecasts in a Supply Chain*, 47(5) MGMT. SCI. 629 (2001); Ozer & Wei, *supra* note 220, at 214.

[221] Li, *supra* note 218; Zhang, *supra* note 218; Lode Li & Hongtao Zhang, *Confidentiality and Information Sharing in Supply Chain Coordination*, 54(8) MGMT. SCI. 1467 (2008).

becomes transparent.[222] Due to the focus of this paper, which concerns information-sharing in the absence of direct communications between the competing firms, the following discussion concentrates on the second effect—i.e., the *information leakage*.

In the cases of information leakage, the private information of one retailer, which is shared with the manufacturer, can be leaked unintentionally to the retailer's competition through the pricing mechanism.[223] Moreover, when the manufacturer determines the price based on the private information he receives from the retailer, a competing retailer can observe this price and infer the private information of the competitor from this price; since the price of the manufacturer is a function of the private information of the retailer, observing the manufacturer's price can be equivalent to observing the private information itself.[224]

In general, studies that have focused on the incentives for information-exchange in the presence of competition between the retailers conclude that the effect of competition lowers the incentives of competing firms to exchange information vertically (i.e., with their manufacturer). This outcome results from a retailer's concern that his private information could be leaked—either indirectly through the manufacturer's pricing mechanism, or deliberately by the manufacturer—to his competitors; this concern impedes a retailer from sharing his information.

In contrast to the models that emphasize the negative effects of information leakage on the incentives of firms to share information in supply chains,[225] Shamir

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[222] For example, retailers who know that the manufacturer receives some information from one retailer may respond by altering their own strategies; this response may have an effect—in terms of additional gains or losses—on the parties directly engaged in information-sharing.

[223] *See supra* note 222.

[224] *Id.* (arguing that since each retailer anticipates that the information he shares with the manufacturer could be leaked to the competitor, this information will not be shared with the manufacturer – an outcome that harms the performance of the supply-chain as a whole). Krishnan S. Anand & Manu Goyal, *Strategic Information Management Under Leakage in a Supply Chain*, 55(3) MGMT. SCI. 438 (2009) (demonstrating that if a retailer shares his private information with the manufacturer, the latter may have an incentive to deliberately leak this information to the competing retailer, due to the intensified competition between the retailers—an outcome that benefits the manufacturer, who is able to increase his sold quantity). The authors conclude that due to the possibility of information leakage, the retailer will choose not to share his information with the manufacturer. In contrast to Lee and Zhang, *supra* note 221—who assume that information is leaked indirectly through the pricing mechanism—Anand and Goyal assume that information is leaked deliberately and directly by the manufacturer. i.e., the manufacturer shares the value of the private information of the retailer with the competing retailer. The problem of intentional information leakage can be mitigated by revenue sharing contracts. Guangwen Kong, et. al., *Revenue Sharing and Information Leakage in a Supply Chain*, 59(3) MGMT. SCI. 556 (2013).

[225] For instance, Grossman and Stiglitz—who model the incentives for traders to acquire information under perfect competition—demonstrate that there is no pure strategy equilibrium with information acquisition when the clearing price conveys information from informed traders to uninformed traders. S.J. Grossman & J.E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70(3) AM. ECON. REV. 393 (1980); T. Singer, *Sharer Beware: Are You Giving Too Much Information About Your Business*, INC. (Mar. 1999), http://www.inc.com/magazine/19990301/4559.html (describing a case of information-exchange in the music industry). Sales data from Newbury Comics, a 20-store chain that sells records, were transmitted to SoundScan, a private company that tracks record sales and reports them to record labels, promoters and managers. These data were later leaked to stores like Wal-Mart and Kmart.

recently demonstrated that the retailers' incentives to share their demand information with the manufacturer are driven by their *expectation* that their private information *would be leaked* to their competitors—thus, enabling them to coordinate on the monopoly price.[226] In his model, the primary goal of the retailers is to share information at the horizontal level. However, when the option of horizontal cooperation is not available—e.g., due to the risk of being exposed to antitrust investigation and prosecution—the competing retailers choose to share their private information with the manufacturer, expecting this information to later reach their competitors. Although the direct effect of information-sharing results in increased cost to the retailers—because by using the retailers' private data, the manufacturer is able set the wholesale price consistently with the realized demand—Shamir highlighted a new motivation for information-sharing with the manufacturer: by sharing information with the manufacturer, the retailers are able to signal their private information and thus establish a cartel.

IV. Discussion

Information-sharing constitutes one of the *plus factors* that may give rise to an inference of concerted action among competing firms. Currently, the antitrust authorities focus their enforcement efforts on detecting and establishing the instances of communications that take place among firms operating on the same economic level, i.e., the *horizontal* exchange of information. This focus of antitrust enforcement is not surprising; it is well known that horizontal communications may facilitate cartel formation, which—in turn—generates welfare loss due to a decreased competition level.

On the other hand, the antitrust authorities have traditionally ignored the instances of another type of information-sharing—one that occurs between firms operating on different economic levels in a supply chain, namely, the *vertical* exchange of information. In fact, scholars of economics and operations have generally considered this type of information-exchange to be beneficial, maintaining that such vertical communications enhance the overall efficiency of the supply-chain.[227]

In the following discussion, we provide a novel perspective on these issues. Specifically, contrary to the common antitrust practice of concentrating on *horizontal* communications, we argue that some types of *vertical* information-sharing may facilitate consort action, leading to similarly negative consequences for the social welfare as direct horizontal communications. In fact, as will be elaborated below, it is plausible that in some instances, the effect of vertical exchange of private information may be even graver from the welfare perspective, because such a practice is more detrimental to the competition. The reasons for this outcome are threefold: this collusion scheme is harder to detect, and, thus, it can be sustained for longer period of

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Id; Constance L. Hays, *What Wal-Mart Knows About Customers' Habits*, N.Y. TIMES (Nov. 14, 2004), http://www.nytimes.com/2004/11/14/business/yourmoney/14wal.html?_r=0 (reporting that Wal-Mart announced that it would no longer share its sales data with outside companies, such as Information Resources Inc. and ACNielsen, after these data were sold to other retailers); Anand & Goyal, *supra* note 225 (analyzing the incentives of an incumbent retailer, facing possible entry to his market, to acquire new demand information when this information could be leaked to an entrant by the mutual manufacturer).

226 Shamir, *supra* note 51.

227 For a general review of relevant literature, see Chen, *supra* note 216.

time; the manufacturer can set a higher wholesale price, which—in turn—harms the consumers; and, the retailers are able to solve the cartel's coordination problem, which results in a more stable cartel. As a result, we propose that *vertical* information-sharing between firms in a supply chain should be included in the antitrust agencies' agenda and scrutinized through the prism of antitrust law and precedents.

It is important to mention, that the assumption that many firms in the market source the product from a small group of manufacturers is not necessarily artificial. For example, Delphi Automotive is a global vehicle component manufacturer, and its customers include the twenty-five automotive original equipment manufacturers in the world.[228] In commercial aviation, every major airline buys equipment from the same vendors: Boeing and Airbus for large planes; Saab, Embraer and Bombardier for regional jets; General Electric, Rolls-Royce and Pratt & Whitney for engines.[229]

Along with the scope of our proposed strategy, it is important to emphasize what we do *not* include in our suggestions. First, we do not suggest that every type of vertical communication in a supply chain is undesirable and, therefore, should be precluded. In fact, it is plausible that, in certain instances and under certain conditions the benefits of such vertical exchange of certain types of private information by a retailer with his manufacturer outweigh the negative outcomes.

Consequently, we do not suggest applying a *per se* rule to the instances of vertical information-sharing in the presence of competition. Traditionally, courts apply *the rule of reason* as the appropriate legal standard to judge the flow of information among competing firms.[230] We propose applying the same analysis to vertical information-sharing, analyzing how this type of communication facilitates collusion and price-fixing in a particular market segment.

Finally, before delving into the details of the proposed scheme, let us begin with an example of a hypothetical information-sharing situation between vertically-related firms. As will be elaborated further, under our proposal such a setting should fall under the scrutiny of the antitrust enforcement agencies.

A. Example

As mentioned, Shamir recently demonstrated that under certain conditions, vertical information-exchange in a supply chain may indeed produce collusive outcomes. An example of such a setting is as follows. Consider a market with two competing retailers, denoted by Retailer A and Retailer B. Both retailers serve a market with an unknown demand, and they source their product from a mutual manufacturer,[231] who sets the wholesale price to maximize his expected profits.

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[228] *Delphi Automotive*, FORBES (2015), http://www.forbes.com/companies/delphi-automotive/.

[229] STEVEN J. SPEAR, CHASING THE RABBIT (Tata McGraw-Hill Educ. 2008).

[230] For instance, see Carlton et al., *supra* note 58, at 424-25; *see also* DeSanti & Nagata, *supra* note 41.

[231] The assumption that many firms in the market source the product from a small group of manufacturers is not as restrictive. For example, Delphi Automotive is a global vehicle component manufacturer whose customers include the 25 automotive original equipment manufacturers in the world (http://www.forbes.com/companies/delphi-automotive/). In commercial aviation, every major airline buys equipment from the same vendors: Boeing and Airbus for large planes; Saab, Embraer and Bombardier for regional jets; General Electric, Rolls-Royce and Pratt & Whitney for engines. STEVEN J. SPEAR, THE HIGH-VELOCITY EDGE:

At the beginning of each selling season, each retailer can observe a signal that provides an assessment of the expected demand. However, the signal merely provides an estimate for the expected demand, and it is not accurate. As a result, although the market demand is high, it is possible for a retailer to observe a signal that predicts low demand and vice versa. Since the signal is not accurate, when the retailers attempt to establish a cartel, the issue of coordination is crucial.

Both Retailer A and Retailer B would benefit from selling their merchandise at a certain, supra-competitive price. In the absence of antitrust regulations, the firms would openly communicate and set the price at the desired level. Even the exchange of information other than the future price—such as their private estimates of the future market demand—can have anticompetitive consequences by enabling the firms to elevate the prices above the competitive level. Therefore, in this case, the retailers would exchange information horizontally and would set the price at a level that is higher than the competitive price.

Furthermore, when horizontal communications are allowed, the retailers would choose *not* to share their private information with their mutual manufacturer. The main reason for sharing private information is to coordinate on a collusive price that would allow the retailers to charge a higher price from the consumers compared with the competitive outcome; the retailers are able to reach this goal by exchanging information horizontally without sharing their information with the manufacturer. Sharing information with the manufacturer allows the latter to have a more accurate estimate of the future demand, thus, setting the wholesale price aggressively, i.e., charging the retailers a higher wholesale price. Hence, in this case, information is shared only between the retailers, and the manufacturer is not exposed to the shared information.

However, in our scenario—when the direct communications between the firms A and B are precluded by the antitrust regulations, reinforced by heavy sanctions—while the firms realize the potential benefits of consort action—i.e., higher profit margins—they also recognize the risk associated with the exposure to a possible antitrust investigation. The firms realize that mere communications between them could subject them to the scrutiny of the antitrust authorities. The firms' options are either to 'give up' on the idea of colluding to increase the price, or to search for alternative mechanisms of coordinating the cartel. In other words, the firms need to find schemes for exchanging their private information that do not entail the risk of antitrust scrutiny.

The first scheme that should be considered is the ability of the retailers—Firms A and B—to collude without any information-exchange. In this case, although the retailers are endowed with some private information about the future market demand, they attempt to reach coordination without exchanging any information. Two options are available for the retailers to reach a collusive outcome without any information-exchange; the first option is called *responsive pricing*, and the second is referred to as *price rigidity*. In the *responsive pricing* option, each retailer determines the cartel price based only on his private information—i.e., the retail price is responsive to the private information that each retailer has observed. In this option, when setting the price, each retailer is not exposed to the private information observed by the other members in the cartel. This option raises a moral hazard problem, which can result in the collapse of the cartel. When neither retailer can observe the private information of the other cartel

HOW MARKET LEADERS LEVERAGE OPERATIONAL EXCELLENCE TO BEAT THE COMPETITION (McGraw-Hill, 2d ed. 2009).

member, it is impossible to distinguish whether a low price set by the competitor is a consequence of observing a low signal, or, alternatively, a consequence of deviating from the cartel's plan in order to secure a higher market share. It is possible that a retailer will choose to set a lower price, in order to increase his market share, although he observed a signal that should result in setting a higher price—a price that is associated with a risk of losing market share to the other retailer. When information is shared between the retailers, each retailer must set the price based on his observed information. As a result, when information is not shared between the retailers and they attempt to set the price based only on their private information, they might face severe coordination problems, which can jeopardize the existence of the cartel.

In order to avoid the moral hazard problem, a second option available to the retailers is to adopt a *price rigidity* strategy. In this case, during each selling season, the retailers set the same price, regardless of the private information available to them. In this scenario, the retailers sacrifice the value information they have, in order to avoid the moral hazard problem discussed above. Under the rigid pricing strategy, the retailers set the same price during each selling season, and any deviation from this price is immediately interpreted as a deviation from the cartel's scheme and, thus, can be punished harshly. In the *responsive pricing* strategy, when observing a low price, the retailer cannot distinguish whether this is a legitimate price, a consequence of observing a low signal about the future market demand, or, alternatively, a deviation from the cartel's plan. As a result, in a responsive pricing scheme, it is not clear whether a low price should be punished. This—in turn—tempts the members of the cartel to indeed deviate from the cartel's plan hoping not to be punished. In contrast, in the rigid pricing strategy a low price is immediately interpreted as being a deviation from the cartel's plan; thus, the retailer who sets the low price is immediately punished in the subsequent selling periods. In the rigid pricing scheme, anticipating the fact that setting a low price would result in a harsh punishment lowers the incentives to deviate from the cartel's plan.

A third option available to the retailers, which is the focus of this article, is to try to solve the problem of coordination by using their private information indirectly. More specifically, rather than sharing information directly—that raises the suspicions of the antitrust authorities—the retailers can coordinate on the collusive price by sharing information with a third party. The retailers thereby achieve their goal to share information, which enables them to form the cartel, while avoiding the risks associated with the scrutiny of an antitrust investigation.

In our scenario, Firm A and Firm B share their private information with their mutual manufacturer. As discussed, while vertical information-exchange is considered to be paramount in achieving coordination among supply-chain partners and increasing the overall efficiency of the supply-chain, the retailers do not have any incentive to share this information with their manufacturer if they can communicate directly. However, when the retailers cannot share information directly due to the scrutiny of the antitrust authorities, they can use the vertical channel, which is not considered to be related to anticompetitive behavior in the market.

More specifically, if direct communications are precluded, Firm A and Firm B would each, separately, share their private information with the manufacturer. Equipped with this information, the manufacturer sets the wholesale price based on the information received. When the retailers observe the wholesale price, they understand that this price was determined based on the private information that their competitor sent to the manufacturer. Shamir has shown that the wholesale price encapsulates all of the information that each retailer needs to infer the information of the competitor. Thus, upon observing the wholesale price, Firm A can infer the private information of Firm B, and vice versa. In this way, observing the wholesale price serves as a coordination device for the retailers. That is, the wholesale price provides the retailers with the information that they need in order to coordinate on the collusive price; the outcome of this scheme is analogous to the result that would have been reached had they shared the information directly horizontally.

The immediate question to be answered is: what is the incentive of the manufacturer to accept the private information that the retailers share with him? Being rational, the manufacturer understands that receiving the private information from the retailers and posting a wholesale price based on this information will allow the retailers to form a cartel. This cartel results in a lower quantity being sold in the market, compared with the competitive outcome. Therefore, it appears that the interest of the manufacturer would be to try to preclude cartel formation by the retailers by rejecting their private information. However, in this case, the manufacturer is left uninformed about the future market demand; thus, he cannot set the wholesale price efficiently. Therefore, the manufacturer faces the following dilemma: to enable cartel formation by accepting the retailers' private information and setting the wholesale price based on this information, or to refuse this information and set the wholesale price based on his own partial information about the market. Therefore, when the market is characterized by high volatility, gaining additional information about the future market demand is crucial to the manufacturer, and he might be willing to facilitate the formation of the cartel in exchange for this information. From the perspective of the retailers, this information-exchange can also be beneficial since, although they provide the manufacturer with additional knowledge to set the wholesale price more aggressively, they gain the ability to coordinate the cartel's price based on the observed wholesale price. In this case, the retailers allow the manufacturer to set a more aggressive price in exchange for resolving the coordination problem of the cartel.

B. Collusion, Vertical Information-Exchange and the Welfare Loss

The primary economic concern raised by the practice of collusion is that it may reduce consumer welfare; this outcome results from cartels restricting output and destroying the surplus value consumers place on lost production.[232] Usually, economists consider the deadweight social welfare losses that are generated when, due to supra-competitive prices, wealth is transferred from consumers to producers.[233]

Contrary to the earlier research that emphasized the advantages of vertical information-sharing in a supply chain, Shamir demonstrated that when retailers communicate their private information with respect to market demand to the mutual manufacturer, such a practice may entail negative consequences. Specifically, in Shamir's model, such vertical information-sharing allows the retailers to coordinate on a monopoly outcome by restricting output or fixing price at a desired—supra-competitive—level. Due to the fact that such result adversely affects competition, this

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[232] BORK, *supra* note 66, at 263.

[233] *Id. But cf.* Lande, *supra* note 4. Furthermore, Posner argued that the social loss from collusion may be higher if firms engage in socially wasteful non-price competition or costly exclusionary activities. Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807 (1975).

scheme has significant implications for the antitrust regulation and enforcement strategies.

While different from the perspective of the antitrust enforcement policies—which traditionally concentrate on horizontal information-sharing—there is neither analytical foundation nor economic justification for discriminating between the horizontal and the vertical information-exchange. In other words, the instances in which a collusive outcome results following a direct exchange of private information between competing firms are not qualitatively different from those occurrences in which such an outcome is generated as a result of each firm sharing its information with a third party—the manufacturer—but the collusion became possible due to the *leakage effect*.

In fact, from the perspective of social welfare, the anticompetitive outcome in the setting when private information is revealed to other competing retailers due to the leakage of information through the manufacturer is even less desirable than direct collusion to fix prices, e.g., when the firms divulge their information directly to one another, while the manufacturer remains ignorant of its contents. This result is attributed to the fact that in addition to the profit margins that are gained by the firms following the exchange of information, when the manufacturer obtains the information, he also sets a higher wholesale price, which results in a further reduction in the consumers' welfare.[234]

There is another reason to suggest that the welfare loss in the case of vertical information-exchange is, in fact, *greater* than the loss resulting from direct collusion; this result can be attributed to the existing antitrust policy and practice. Because the retailers share their information with the manufacturer rather than directly with each other, under the current antitrust enforcement regime, they avoid the risk of becoming exposed to investigation and potential sanctions by the antitrust agencies. As a result of the fact that the antitrust authorities currently concentrate their enforcement efforts on horizontal—rather than vertical—information-sharing, collusion between the retailers can persist over significant periods of time, virtually undetected and undeterred.

It is, therefore, evident that vertical information-sharing may produce significant losses from the perspective of social welfare. In fact, such losses may even be *greater* than those caused by direct collusion. Therefore, from the public policy perspective, it would be beneficial if the antitrust authorities included the instances of communications in vertical relationships in their enforcement efforts. However, because vertical information-exchange may well have beneficial effects on the supply chain, they should not be prohibited categorically, as is elaborated further below. We now turn to consider whether the current regulations and case law present the antitrust authorities with a sufficient basis to establish collusive action in such cases of vertical information-exchanges.

C. Addressing Vertical Information-Sharing Under the Current Antitrust Regime

Much academic criticism has been directed at the formalistic approach to the phenomenon of collusion that has, thus far, characterized the attitude of the antitrust enforcement agencies and the courts. This approach focuses on the existence of communications in order to establish the fact of collusive action and illegal price-fixing. Hence, in the following discussion we refrain from repeating these anti-

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[234] Shamir, *supra* note 51.

formalistic considerations, nor do we suggest novel alternative methods for detecting and evaluating collusive behavior.[235] Instead, we focus on the current antitrust regime with respect to the legal definition of collusion—i.e., communication-based prohibition.

We argue that under the existing statutes and case law that regulate competition and antitrust, some instances of *vertical* information-sharing should be scrutinized and may, in some cases, be deemed to constitute a *plus factor* that helps to establish a collusive outcome. Naturally, our approach does not exclude the possibility that findings of future research might suggest creating new, separate standards to be applied in the instances of vertical information-sharing. Instead, we suggest that vertical information-sharing may—combined with other factors—be applied as supporting evidence to determine the fact of consort action. Following the Supreme Court's recent decision in the case of *Leegin*—which abandoned the *per se* illegality of resale price maintenance—in the instance of *vertical* information-exchange in a supply chain, we suggest that such a practice is "useful evidence for a plaintiff attempting to prove the existence of a horizontal cartel"[236] and "should be subject to more careful scrutiny . . . ."[237]

In cases of alleged conspiracy, courts must determine whether certain observed outcomes resulted from an agreement to collude between the competing firms, or whether they are the consequences of parallel unilateral conduct. Courts do so by drawing a fine distinction between the firms' commitments to a common goal of restricting trade or raising prices and an independent rational behavior that simply takes the actions of other market players into account. However, while at first glance this distinction between collusive behaviors and conscious parallelism does not appear to be ambiguous, the standards applied by the courts to establish illegal collusion remain regrettably equivocal. Nevertheless, we can outline a number of parameters that have been found to bear significance in the judicial findings of illicit collusion.

First, as discussed, it has been established that *conscious parallelism* is not—by itself—illegal; in the absence of other supporting evidence, conscious parallelism does not engender an inference of an anticompetitive conspiracy by the firms. Because direct evidence of an agreement to establish a cartel—such as the testimony of one of the conspirators or documents that constitute an agreement—is rarely available, the courts have ruled that the existence of an agreement under Section 1 may be established based on circumstantial evidence. In such a case, the fact-finder must provide some further facts that plausibly point to the conclusion that the competing firms were engaged in something more than mere conscious parallelism. These additional elements have been referred to as *plus factors*.

While the courts have established that the presence of *plus factors* may provide a sufficient basis for the finding of conspiracy to collude, they have not provided clear parameters that define the practices that would fall under this definition. In fact, much of the criticism of the current antitrust case law is based on the fact that while courts

[235] For instance, one such alternative approach is suggested by Kaplow, who argues that a "direct approach that encompasses all coordinated price elevations that can be detected and sanctioned effectively" is preferable to a formalistic focus on the existence of communications. Kaplow, *supra* note 11.

[236] Leegin Creative Leather Prods., Inc. v. PSKS, Inc., 127 S. Ct. 2705, 2717 (2007).

[237] *Id.* at 2719.

may find collusion based on circumstantial evidence, the precise nature of the evidence required—i.e., what sort of evidence amounts to a *plus factor*—remains ambiguous. Some observers argue that this uncertainty "is attributable mainly to the vacuity of the Supreme Court's definitions of agreement and the absence of a coherent economic definition that might fill the void."[238]

Second, similar to *Matsushita's* standard of sufficiency of the evidence needed to raise a jury question, under the more recent *Twombly* standard of pleading, the plaintiff must "produce evidence that tends to exclude the possibility of conscious parallelism."[239] While the *Twombly* decision has imposed a more challenging standard of plausibility for alleging agreement under Section 1, scholars criticize the majority opinion as being "regrettably vague and even misleading about what sorts of allegations will be sufficient to meet the standard."[240]

Third, it should be noted that the size of the market share may not serve as a defense against the alleged collusion. Therefore, the antitrust enforcement agencies may establish liability in horizontal collaboration involving direct rivals without regard to the firms' collective market power. In fact, under Section 1 of the Sherman Act, actions may be brought even if the participants in a horizontal price-fixing arrangement "had little genuine prospect of affecting price through their joint efforts to restrict output."[241]

Finally, recognizing the inherent difficulty of detecting direct conspiracy, the courts permitted the inference of antitrust conspiracies from acts falling short of explicit communication of an unlawful agreement. That is to say, more often than not, antitrust conspiracies fall short of the paradigm cartel case, in which the firms' representatives hold a secret meeting and plot price-elevations or output restrictions. Therefore, it is possible to prove antitrust agreements using other evidence. In addition to the existence of a rational motive to conspire, the parallel adoption of a facilitating practice, and an anticompetitive benefit to be derived from that conduct, the actions that are contrary to the firm's independent self-interest—unless pursued as part of a common scheme—are, by far, the most important to courts in finding circumstantial evidence of conspiracy.[242]

1. Conduct Contrary to a Firm's Independent Self-Interest

The idea behind this *plus factor* is quite straightforward: if a firm, acting in its own best interest in response to market stimuli would not rationally take the course of action in question unless it expected others to take a similar action to further the conspiracy, such action constitutes a *plus factor*—circumstantial evidence—that may be employed to establish the fact of consort action. In fact, courts noted that behavior

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[238] Page, *supra* note 58, at 28.

[239] Page, *supra* note 83, at 449.

[240] *Id.* at 468; *see also* Herbert J. Hovenkamp, *The Pleading Problem in Antitrust Cases and Beyond*, 95 IOWA L. REV. BULL. 55 (2010) (arguing that the Court in *Twombly* should have focused more on the nature of proof required to establish antitrust conspiracies).

[241] Kovacic, *supra* note 3, at 6.

[242] Dibadj, *supra* note 131, at 405 ("This is likely because the emphasis in plus factors analysis has been toward trying to find circumstantial evidence of agreement or conspiracy, and motive and self-interest purportedly can serve to screen for this."); *see also* Blechman, *supra* note 8, at 885.

contradictory to an individual firm's economic self-interest is "perhaps the strongest plus factor indicative of a conspiracy"[243] and that this plus factor may be sufficient to raise an inference of conspiracy.[244]

In our scenario, retailers—Firm A and Firm B—may increase their profit margins if they cooperate successfully and fix prices at a supra-competitive level. Naturally, each firm refrains from sharing its information directly with its opponent; it also avoids communicating its intent to convey this information to the manufacturer. This avoidance of any form of direct communication is consistent with the rational behavior of competing firms, because the existence of direct communications can stimulate the interest of the antitrust authorities, with subsequent investigations and potential sanctions.

Nevertheless, while refraining from any type of *direct* communications between them, both firms share their private estimates of the future market demand with the manufacturer. From the perspective of competitive markets, such communications are irrational, because divulging such information to the manufacturer leaves each firm worse off. This result is due to the fact that the manufacturer can use that information to extract higher profit margins at the expense of the retailers.

This case is qualitatively different from the instances in which firms act in a manner that is consistent with their *independent* self-interest, e.g., when sharing their private information is in their self-interest, irrespective of whether their competitors provide such information as well. Thus, it should not be difficult for courts to identify such *vertical* information-sharing as being *contrary to a firm's independent self-interest*.[245]

Following the Supreme Court's decision in *Twombly*, collusive action would not be inferred when an independent justification for the action exists; in addition to parallel conduct, some plausible ground for thinking that the parallel conduct is the result of a conspiracy must be demonstrated. The significance of this criterion lies in the fact that it precludes inferring agreement in cases in which a firm's actions are in its individual self-interest, regardless of whether its competitors act in the same way.

In our scenario, each retailer's actions are not in his individual self-interest, unless other retailers act in the same manner and provide the manufacturer with their private information, which would later be leaked to their competitors through the wholesale price set by the latter. In fact, the evidence is consistent only with the conclusion of collusive action, because the retailers lack an independent economic justification for sharing their private information with the manufacturer, other than the hope that this sharing would lead to information leakage and price coordination. As a unilateral action, such information-sharing is contrary to each firm's economic interest.

Just as a firm can directly invite competitors to collude in order to limit output or to obtain supra-competitive pricing, a firm can communicate its private information concerning the future market demand to the manufacturer, expecting its competing retailer to response in a similar manner. This conduct is expected to result in coordinated pricing.

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[243] Merck-Medco Managed Care v. Rite Aid Corp., No. 98-2847, 1999 WL 691840, at *10 (4th Cir. Sept. 7, 1999).

[244] *In re* High Fructose Corn Syrup Antitrust Litigation, 295 F.3d 651 (7th Cir. 2002).

[245] Scholars noted that acting against their self-interest includes such practices as the disclosure of confidential information. Piraino, *supra* note 65, at 15.

Therefore, in this case of *vertical* information-sharing—where the parallel conduct is contrary to the independent economic self-interest of the firms engaging in this practice—a strong inference of illicit conspiracy is engendered. Firms anticipate collusive action when they take an action—i.e., communicate their private information to the manufacturer—which is in each firm's rational best interest only if it results in coordinated pricing. Under these circumstances, an illegal agreement to restrict competition may be inferred.

2. Absence of a Plausible, Legitimate Business Rationale for Conduct

The absence of a plausible, legitimate business rationale for suspicious conduct—such as certain communications with rivals—is considered to be one of the plus factors that may be employed to establish illegal collusion. While in the current case law, there is no hierarchy of plus factors according to their evidentiary value, some observers consider the absence of a plausible business rationale for conduct to be one of the "chief plus factors."[246]

In the case of the vertical information-sharing described above, the retailer reveals his private information—such as the expected market demand—to the manufacturer. Under certain assumptions employed in the model described in this article, this action makes economic sense only as a means of furthering a tacit agreement to raise prices above the price that would prevail in the absence of collusion. More specifically, there is no plausible, legitimate business rationale for such information-exchange to occur, because, as discussed, each retailer would be worse-off divulging his private information to the manufacturer; such communications are in each retailer's best interests only if he believed that this conduct would subsequently lead to coordinated pricing.

Thus, *vertical* information-sharing between an individual retailer and the manufacturer—when the retailer divulges his private estimates of the future market demand to the latter—cannot be explained rationally as part of the legitimate course of business. Rather, such conduct can be explained solely as a strategy that promotes collusion.

3. Parallel Adoption of the Facilitating Practice

In our scenario, competing Firms A and B each adopted the same facilitating practice, namely, information-exchange with a mutual manufacturer. However, this action was conducted without any express agreement between the firms. The question that arises under these circumstances is whether parallel pricing together with parallel adoption of facilitating practices—namely, vertical information-exchange—could allow a court to infer the requisite agreement?

The parallel adoption of a facilitating practice requires a conscious choice on the part of competing firms. Therefore, in the case of the parallel adoption of a facilitating practice that permits noncompetitive pricing, the problem of remedy—which was one of the points disputed by Turner and Posner—is mitigated.[247] After all, to enjoin the restriction on competition, in such a case, the court would not have to command the firm to act irrationally. In fact, the competing firms are no longer independent rational players in the market, but rather make a conscious decision to circumvent the antitrust controls and act in a manner that facilitates restrictions on market competition.

[246] Kovacic et al., *supra* note 23, at 405-06.

[247] POSNER, *supra* note 77, 98-9; Turner, *supra* note 8, at 675-6.

Therefore, one can argue that whenever uncompetitive market behavior is enabled by facilitating practices, courts may characterize the practices as circumstantial evidence that supports the finding of an unlawful agreement to restrict trade.

Although the Court ruled that "'facilitating devices' are not necessarily sufficient under the law to constitute a 'plus factor,'"[248] we can argue that in the case of vertical information-sharing, the fact that both retailers engaged in the facilitating practice—sharing their private information with the manufacturer—in itself constitutes a plus factor that could be sufficient to establish illicit collusion.

Finally, there is often an independent justification for a firm to adopt a practice that might constitute a facilitating practice that enables price coordination.[249] Thus, under the *Matsushita* standard, the parallel adoption of a facilitating practice does not necessarily exclude the possibility that the rivals were acting independently.

However, in our scenario it may be successfully argued that under the *Matsushita* standard, the parallel adoption of a facilitating practice—i.e., divulging private information to a mutual manufacturer— in certain instances, excludes the possibility that the rival firms were acting independently. The courts may permit the inference of a horizontal agreement under *Matsushita*, because each firm lacks a legitimate rational reason for adopting the practice. Since in our scenario the facilitating practice has an anticompetitive effect—since it facilitates noncompetitive oligopolistic behavior without inducing retailers to provide consumers with some beneficial services—the court may declare it to be illegal under the rule of reason.

4. Applying the Rule of Reason to the Instances of Vertical Information-Sharing

It is widely accepted among economists, as well as the scholars of antitrust law, that horizontal information-sharing can benefit—as well as harm—consumers. [250] Therefore, as part of their decision on the nature of particular information-exchanges, whether it does or does not suffice to constitute circumstantial proof of illegal collusion, the courts apply *the rule of reason*, weighing the likely anticompetitive and pro-competitive effects thereof.[251] The *rule of reason* requires an analysis of the consequences of particular practices in order to determine whether they unreasonably restrain trade.[252]

In fact, although it has been suggested that the *rule of reason* is "one of the most amorphous . . . one of the most important . . . [and] one of the most misunderstood

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[248] Holiday Wholesale Grocery Co. v. Philip Morris Inc., 231 F. Supp. 2d 1253, 1274–5 (N.D. Ga 2002), *aff 'd sub nom,* Williamson Oil Co., Inc. v. Philip Morris USA, 346 F.3d 1287 (11th Cir. 2003).

[249] *See, e.g.*, HYLTON, *supra* note 63, at 33 (discussing the example of Ethyl, where "the court refused to condemn industry-wide use of advance notification of price changes, price protection clauses, and delivered pricing, even though they facilitated price uniformity, because the practices had been adopted when there was only a single seller in the market and thus evidently served non- collusive purposes that consumers wanted.").

[250] *See* Page, *supra* note 58, at 32.

[251] Clark, *supra* note 8, at 888; Page, *supra* note 58, at 32. For a general discussion of the rule of reason and its applications, see Carrier, *supra* note 54.

[252] *E.g.*, Nat'l Soc'y of Prof'l Eng'rs v. United States, 435 U.S. 679, 688-9 (1978); United States v. Realty Multi-List, Inc., 629 F.2d 1351 (5th Cir. 1980).

rules in antitrust,"[253] it appears that the application thereof has been on the rise, as part of the trend of shifting the analysis away from *per se* rule by the Supreme Court.[254] We suggest that a similar *rule of reason* analysis should be applied to the instances of *vertical* information-sharing in supply-chains. More specifically, we argue that in the absence of direct evidence that the retailers have conspired to fix prices—which is illegal *per se*, and thus, a fact finder need not establish its anticompetitive effects—*the rule of reason* is the appropriate legal standard by which to judge the flow of information between competing retailers and their mutual manufacturer. Under this proposition, in assessing the nature of a restraint of trade, the antitrust authorities and the courts should examine how vertical communications affected prices in a specific market segment, focusing on the detrimental effects to competition.[255]

Applying the rule of reason to evaluate communications recognizes the fact that competing firms may have valid reasons for disclosing their private information. In fact, such information-exchanges may have a pro-competitive effect and be beneficial to the consumers. However, it is usually agreed that in order to be deemed beneficial, the exchange of information among competitors should be publicly available.[256] We emphasize again that, in general, a vertical information-exchange can increase the efficiency of a supply-chain, and thus have positive and pro-competitive effects. However, in our setting, there is no incentive for the retailers to divulge their information to the manufacturer, other than their desire to coordinate on a collusive supra-competitive price.

When applying the rule of reason, a number of factors should be taken into account. First, the fact-finder must demonstrate a significant anticompetitive effect of the practice in question.[257] Thus, in the case of vertical information-sharing, the likely consequences thereof should be taken into account. If the disclosure of information by the retailers to their mutual manufacturer is beneficial to the competition and the consumers, it should not be prohibited or discouraged. However, when, the

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[253] Michael A. Carrier, *The Rule of Reason: An Empirical Update for the 21st Century*, 16(4) GEO MASON L. REV. 827, 827 (2009).

[254] *Id.* at 828.

[255] Flegel v. Christian Hosp., Northeast-Northwest, 4 F.3d 682, 687 (8th Cir. 1993).

[256] *E.g.*, Carlton et al., *supra* note 58, at 433 (consumers may benefit from obtaining information about prices that would allow them to compare) (arguing that "[C]onsumers who can find out about competitor's [sic] prices, product selection, and delivery and service policies, are more likely to make an informed choice . . . . This is exactly how competition is supposed to work.").

[257] Carrier, *supra note* 54, at 1268 (It appears that instead of directly balancing the anticompetitive and the pro-competitive effects of a practice in question, the courts have engaged in burden-shifting, "typically dismissing the case at any one of three stages that precedes the ultimate balancing"). The burden-shifting approach that has been offered by the courts in the overwhelming percentage of cases works as follows: The plaintiff initially "must demonstrate that the practice it challenges has had 'an actual adverse effect on competition as a whole in the relevant market.'" CDC Techs., Inc. v. IDEXX Labs. Inc., 186 F.3d 74, 80 (2d Cir. 1999) (quoting K.M.B. Warehouse Distribs., Inc. v. Walker Mfg. Co., 61 F.3d 123, 127 (2d Cir. 1995)) (emphasis omitted), If the plaintiff makes this showing, "the defendant must establish the 'pro-competitive redeeming virtues' of the practice." *Id.* If the defendant demonstrates this, "the plaintiff must then demonstrate 'that the same pro-competitive effect could be achieved through an alternative means that is less restrictive of competition.'" *Id.*

anticompetitive effects of such an information-exchange outweigh its potential pro-competitive justification, such a practice should be considered to violate the antitrust regulations.

In the case of a vertical information-exchange of the kind considered by this article, this practice may well be deemed to be anticompetitive and illegal under the rule of reason, because such practice brings about the noncompetitive oligopolistic behavior without inducing retailers to provide beneficial services. More specifically, observing the wholesale price that is set by the manufacturer based on the separate private estimates of future demand, competing retailers obtain valuable information about the market and about their competitors' private information. This information restricts competition since it enables the retailers to set their prices at a supra-competitive level.

In fact, similar to an express agreement to adhere to announced prices, providing the manufacturer with private information about the expected market demand greatly reduces the complexity of coordinating prices among the retailers, because the wholesale price that is set by the former reflects the combined estimate of the market demand. Thereby, the retailers are able to solve the problem of monitoring the cartel price.

On the other hand, it appears that vertical information-exchange incorporates no pro-competitive benefits, because consumers do not acquire any valuable information. To the contrary, the consumers are worse off due to the fact that as a result of the information-sharing, the retailers are able to coordinate on a supra-competitive price. Therefore, it appears that in such a scenario, when a particular information-exchange is bound to generate collusion that harms consumers without any offsetting economic benefit, the courts may—and should—infer illegal collusion.

Naturally, not each and every instance of vertical information-exchange need be discouraged or prohibited; we have already discussed the social welfare benefits that a coordinated supply-chain can offer. Applying the rule of reason would take the positive, as well as the detrimental, consequences thereof into account. In addition to the likely effects of specific instances of information-exchange on the desired level of competition, the desirability of the practice of vertical information-sharing would also depend on the substance of the private information transmitted.

Finally, the retailers in our setting took specific measures to promote collusive outcomes—i.e., shared their private information with the manufacturer—in the hope that their competitors would replicate this step. Since this exchange of private information with the mutual manufacturer has an anticompetitive effect on the market (because the information is reflected in the price set by the manufacturer), it has the effect of chilling the vigor of price competition; thus, the lack of culpability, which may prevent establishing liability in some instances, does not apply to this case because the firms' actions were clearly avoidable. Therefore, collusion may be inferred according to the rule of reason.

5. Consistency with the Statutory Definition

It appears that two legal theories could support a case challenging the practice of *vertical* information-sharing that, on balance, injures competition. First, while traditionally, to be considered a facilitating practice, information-exchange had to occur between competing firms—i.e., *horizontally*—we argue that this is no longer necessary. In our case, the action of the competing retailers—supplying private information to their mutual manufacturer—falls short of the 'traditional' *horizontal* information-exchange; nevertheless, we argue that the flow of information that takes place between the competing firms and their mutual manufacturer—i.e., *vertical* information-exchange —may similarly constitute a facilitating practice.

Conveying this private information to the manufacturer would not result in profit for an individual retailer, unless others act in a similar manner. In fact, as discussed above, such conduct is contrary to the retailer's individual self-interest. Thus, it is clear that the information is shared as part of a scheme to obtain a signal that would allow the competing firms to set supra-competitive prices.

The second way to attack the particular types of *vertical* information-sharing in a supply-chain under the antitrust doctrine involves Section 1 of the Sherman Act. Such actions could be challenged on the ground that—in conjunction with other circumstances in the case—its use by competing retailers constitutes an agreement to fix prices, or to restrain trade unreasonably in some other fashion. In fact, scholars argue that the language of the Sherman Act is broad enough to allow the courts to find illegal conspiracies when oligopolic firms engage in mutual conduct against their independent self-interest; the meeting of the minds that exists in such cases is similar to that which exists under express cartels. [258]

In fact, actions by retailer firms—who share their private information with a mutual manufacturer in anticipation of similar action on the part of their competitors and expecting to receive signals about the market from the manufacturer—are a type of affirmative conduct that may be construed as an implicit form of agreement by the participating firms. Such an approach can be justified as constituting the "'meeting of the minds,' whereby competitors recognize that it is in their collective best interests to set price or quantity equal to the collusive level."[259]

Moreover, the risk of investigation and persecution under Section 1 instigated firms to take precautions to avoid detection by establishing a common course of action without resorting to traditional communications, so that no evidence of 'conspiracy' is available.[260] Therefore, restricting the scope of behavior covered by Section 1 to explicit agreements would severely curtail the antitrust enforcement and appears to no longer be relevant in the contemporary market environment. On the other hand, "deemphasizing the conspiracy requirement has the added the benefit of bolstering antitrust enforcement in a world in which defendants have learned not to leave evidence of agreement behind."[261]

Restraints on trade—whether those that occur as a result of 'traditional' conspiracy, or those that take the form of a signal received following a vertical exchange of information—can and should be deemed to be violations of the Sherman Act.[262]

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[258] George A. Hay, *Oligopoly Shared Monopoly and Antitrust Law*, 67 CORNELL L. REV. 439, 457 (1981) (asserting that "[N]o less a meeting of the minds exists when duopolists . . . select the identical list price and recognize the folly of price cutting, than when twenty manufacturers . . . 'agree' in a hotel room to charge an identical price.").

[259] Devlin, *supra* note 66, at 1112-3; *see also* DON E. WALDMAN & ELIZABETH J. JENSEN, INDUSTRIAL ORGANIZATION: THEORY AND PRACTICE (4th ed. 2013).

[260] Kovacic, *supra* note 3, at 17.

[261] Dibadj, *supra* note 131, at 603.

[262] Simonetti, *supra* note 69, at 1229 ("[the] focus of the Sherman Act thus must be shifted from a preoccupation with conspiratorial behavior to a greater concern for harm to the public and injury to competition.").

V. CONCLUSIONS AND RECOMMENDATIONS

Despite the long history of the antitrust legislation and case-law, the debate about its ultimate goal is ongoing; some scholars emphasize enhancing economic efficiency as being the primary concern of the antitrust policies, others contend that the primary purpose of the antitrust legislation is consumer protection, i.e., preventing competing firms from charging consumers supra-competitive prices.[263] While in some situations the choice among antitrust goals could make a significant difference,[264] the case of *vertical information-sharing*—as many other situations of antitrust concern, such as routine horizontal price-fixing[265]—is one of the cases that "give rise to both allocative inefficiency and a transfer of wealth from purchasers to the cartel."[266]

In light of the negative consequences that accompany restricted competition, the antitrust agencies work to detect, prosecute and sanction collusion. Central to these enforcement efforts is the definition and proof of *concerted action*. However, scholars argue that despite the crucial role of the concept of collective action, the design of evidentiary standards to determine the basis of parallel conduct—whether it stems from illegal collective or from legitimate unilateral decision-making—modern antitrust analysis remains perplexing and vague.[267] This lack of satisfying standards is a "remarkable ambiguity at the heart of antitrust law."[268]

Traditionally, to establish collusion, the courts demanded the proof of the existence of agreement between the cartel members. However, recognizing the fact that more often than not direct evidence in cases of collusion is unavailable,[269] gradually the courts moved away from a formalistic approach, recognizing that alternative mechanisms and circumstantial evidence may suffice in order to establish collusion.[270]

The courts have held that in addition to conscious parallelism, the antitrust agencies must provide some other evidence that supports the allegations of consorted action, 'plus factors.'[271] While the antitrust enforcement agencies struggle to develop evidentiary standards for identifying collusion, the competing firms in an oligopolistic

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[263] John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 191 (2008); Dibadj, *supra* note 131.

[264] Kirkwood & Lande, *supra* note 264. For instance, some horizontal mergers that "lead to both market power and cost savings would be handled differently under the efficiency and the consumer protection standards." *Id.* at 241.

[265] *Id.* at 240-1.

[266] *Id.* at 241; William F. Baxter & Daniel P. Kessler, *Toward a Consistent Theory of the Welfare Analysis of Agreements*, 47 STAN. L. REV. 615, 621-6 (1995).

[267] Kovacic et al., *supra* note 23.

[268] Page, *supra* note 21, at 417.

[269] Kovacic, *supra* note 3.

[270] For instance, in *Text Messaging Antitrust Litigation*, No. 10-8037, 2010 U.S. App. LEXIS 26299, at *16 (7th Cir. Dec. 29, 2010), Judge Richard Posner observed, "Direct evidence of conspiracy is not a sine qua non . . . . Circumstantial evidence can establish an antitrust conspiracy." Kovacic et al., *supra* note 23, at 395 n.7.

[271] ABA SECTION OF ANTITRUST LAW, *supra* note 39, at 11-16.

industry realize that they are players in a repeated game, and act accordingly, devising measures to evade authorities' scrutiny and avoid behavior that may constitute *plus factors*. In fact, it appears that the antitrust authorities and the firms are locked in a continuous struggle; improvement in detection measures and anti-collusion programs implemented by the antitrust authorities encourage firms to take countermeasures and achieve agreements through more subtle techniques.[272]

In such an environment, extra-legal fields—e.g., such as industrial organization and game theory[273]—play a significant role in providing antitrust enforcement with novel tools and directions to discover collusion strategies. It appears that *vertical information-sharing in a supply chain*, is one such strategy, because it allows otherwise competing firms to coordinate behavior and set prices above competitive level, while escaping the scrutiny of the antitrust authorities.

Information-exchange has "the same effect on market outcomes regardless of whether it is by agreement or spontaneous as under tacit collusion."[274] The case of vertical information-sharing discussed in this article clearly falls under the latter category.

While parallel conduct alone does not engender an inference of agreement, it may do so when it cannot be explained as an interdependent action. The post-*Twombly* cases show that while it is difficult, it is not impossible to establish the existence of an agreement even without alleging communications. However, in the scenario explored by this article, the communications indeed take place. The novelty of our approach lies in the fact that these communications occur in a vertical relationship between retailers and the manufacturer, rather than horizontally between the competitors. Including such forms of communication in the list of facilitating practices that can be employed to establish the fact of illegal consorted action would allow the antitrust authorities to investigate—and, potentially, sanction—firms in instances that hitherto have eluded antitrust scrutiny.

It has been argued that it is "desirable for an efficient competition policy to intervene to some extent in information-sharing as to make explicit or tacit collusion between firms harder."[275] Due to the anticompetitive outcomes of vertical information-sharing in a supply chain, we suggest that antitrust authorities should scrutinize this type of conduct.

The insights of this paper have numerous legal and policy applications. For one, the antitrust enforcement should update its formulations of the existing rules to include some forms of *vertical* information-sharing in a supply chain as supplementary evidence for collusive behavior, or declare it to be a restriction of competition in itself due to its being a facilitating practice, i.e., because it creates market conditions under which collusion becomes likely, without firms having to resort to explicit agreements.

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272 Kovacic, *supra* note 22.

273 Kovacic, *supra* note 3, at 13 ("Recent industrial organization learning about game theory and collusion has provided new tools with which antitrust enforcement officials can examine strategies by which firms seek to coordinate behavior while avoiding conduct that clearly could be characterized as an illegal agreement."); *see also* Dibadj, *supra* note 131.

274 Kühn & Vives, *supra* note 33, at 112; *see also* Hay, *supra* note 3, at 892 (arguing that "[W]e know that consumers are hurt just as much as if there were an explicit cartel and the parties are acting just as they would have if they had entered into an explicit agreement.").

275 Kühn & Vives, *supra* note 33, at 112.

Hovenkamp suggests that rather than focusing on the issue of whether a "meeting of the minds" existed, the antitrust enforcement should concentrate on the question of whether a particular type of behavior should be suppressed by the law.[276] He argues that "in the presence of interdependence . . . communications among rivals about planned output changes increase the danger of collusion."[277] Along the same line, we argue that communications among rivals are not qualitatively different from communications between the retailers and manufacturer, when they induce the same outcome, namely, collusion. Absent pro-competitive justifications, such vertical communications should be considered to constitute an illegal agreement to collude according to the Sherman Act.

Finally, we leave it for future scholarship to ponder whether the instances of vertical information-sharing should be judged according to the same economic principles that govern horizontal information-sharing, or whether novel analytic tools should be developed.

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[276] Hovenkamp, s*upra* note 241, at 62.

[277] *Id.*