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How Do You Solve a Problem Like Algorithmic Price Fixing?

BY KELLIE LERNER AND DAVID ROCHELSON

I. Introduction

Businesses are increasingly relying on algorithms to set prices, including algorithmic models that can monitor and match competitors' prices without any human involvement. If the algorithms set those prices at a supracompetitive level, antitrust law should provide a remedy. But several obstacles in the law suggest it may not.

First, even if competitors are exchanging price information, those exchanges are likely happening in public and via executable prices, which courts will only rarely find anticompetitive.

Second, algorithms may make conspiracies easier to maintain and harder to detect.

Third, because this new technology arguably allows competitors to "agree" with one another to set prices at a supracompetitive level without any human actor "consciously committing" to break the law, there is arguably no violation because the price fixing is carried out by "bots" rather than people.

Despite these obstacles, it may be possible to assert a Sherman Act Section 1 claim for algorithmic price fixing by distinguishing existing case law, provided the court is willing to acknowledge how dramatically algorithms have changed our world — as at least one court already has. This article posits that our existing antitrust laws remain the right framework for addressing the anticompetitive use of algorithms and offers some practical guidance that may help plaintiffs plead cognizable claims in the future.

II. Algorithm Cases: *'Posters'* and *'Uber'*

There is little case law dealing directly with algorithmic price fixing. The Justice Department secured guilty pleas from two indicted co-conspirators in *United States v. Topkins*, 3:15-cr-00201 (N.D. Cal.) and *United States v. Aston and Trod Ltd.*, 3:15-cr-00419 (N.D. Cal.) (together, the "Posters" cases), where competitors in the online market for posters agreed to fix prices and to deploy price-setting algorithms to do it.

> *Kellie Lerner is a partner and David Rochelson is an associate in Robins Kaplan's Antitrust and Trade Regulation Practice Group in the firm's New York office. Ms. Lerner's practice focuses on litigating high stakes antitrust disputes on behalf of both plaintiffs and defendants in federal courts throughout the country. Mr. Rochelson's practice focuses on antitrust litigation with a particular depth of experience in the financial industry.*

As the DOJ described it, the algorithms were "simply the means of effectuating the agreement and the mechanisms through which the collusive prices are set." (*See* note by the United States to the OECD, "Algorithms and Collusion," 21-23 June 2017 ¶ 13.[1].) Because conspirators had entered an "actual agreement" of the sort the antitrust laws have traditionally condemned, that fact pattern is an easy one.

At least one private plaintiff has had success alleging algorithmic price fixing under a hub-and-spoke theory at the pleading stage. In *Meyer v. Kalanick*, the plaintiff contended that the Uber Technologies Inc. smartphone application, which sets a uniform price in a given market, effectively operated as an anticompetitive hub-and-spoke price-fixing conspiracy, in which the app served as the hub and each driver as a spoke. (*See* 174 F. Supp. 3d 817, 821 (S.D.N.Y. 2016) (*rev'd on other grounds*, 868 F.3d 66 (2d Cir. 2017).)

Although drivers using the app don't agree on a fixed price, they abide by the price the app sets. The plaintiff stated a claim under Section 1 because technology had made a price-fixing conspiracy plausible, even among thousands of conspirators, the court found. "The advancement of technological means for the orchestration of large-scale price-fixing conspiracies need not leave antitrust law behind," U.S. District Court for the Southern District of New York Judge Jed Rakoff explained. (The U.S. Court of Appeals for the Second Circuit reversed based on an arbitration clause, not the merits.)

The Posters and Uber cases are important signposts in the nascent law of algorithmic price fixing. But they have little to tell us about a different and perhaps more common scenario. This is where each of two (or more) competitors, acting unilaterally, deploys an algorithm to intentionally set prices and — without employees of the competitors verbally communicating with each other — arrives at the same, supracompetitive price.

In one famous instance, two textbook sellers on Amazon.com set their pricing algorithms at levels that caused an upward spiral, sending the price of a 20-year-old biology textbook soaring to $23 million. (*See* Salil K. Mehra, Antitrust and the Robo-Seller: Competition in the Time of Algorithms, 100 Minn. L. Rev. 1323, 1324 (2016).) The egregious scale of that mistake makes it obvious that something went awry. But more sophisticated competitors might be able to more subtly set prices at a supracompetitive level and avoid detection.

In sum, algorithms make price-fixing conspiracies easier to carry out and harder to rectify.

III. Can Algorithms Enter an Agreement?

The primary obstacle to recovering under a Section 1 theory for conduct by pricing algorithms is the traditional requirement of an "agreement." It is hornbook law that there is only liability under Section 1 if each competitor made a "conscious commitment to a common scheme de-

signed to achieve an unlawful objective.'' (*See Monsanto Co. v. Spray-Rite Serv. Corp.*, 465 U.S. 752, 764 (1984).)

By contrast, ''tacit collusion'' or ''conscious parallelism'' — the process ''by which firms in a concentrated market'' independently decide to set prices based on those of their competitors — is ''not in itself unlawful.'' (*See Brooke Grp. Ltd. V. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993); *see also In re Text Messaging Antitrust Litig.*, 782 F.3d 867 (7th Cir. 2015) (Posner, J.).) Yet a complaint will survive a motion to dismiss if a plaintiff adequately pleads conscious parallelism and ''plus factors.''

There are at least three ways that demonstrating an agreement or plus factors is more difficult if the conspiracy involves pricing algorithms. First, the exchange of information is likely to be in public and have purposes other than entering the agreement, which courts may be reluctant to parse. Second, algorithms make it easier for competitors to enter an agreement and maintain their conspiracy but harder for customers to detect it. Third, the law often requires some indication of ''traditional conspiracy,'' such as human actors meeting in a smoke-filled room, which may be absent if the algorithms are setting the prices.

A. Exchange of Price Information Can Be a Plus Factor
If you see a toy listed on Website 1 for Price #1 and on Website 2 for Price #2, you can probably buy the toy at either price. The retailers are posting those prices to provide you, the customer, with information to guide your purchasing decision. But the retailers may also be posting those prices to signal to one another and collectively drive prices to a supracompetitive equilibrium.

Exchange of price information is a classic, even a ''super,'' plus factor. (*See* Kovacic et al., ''Plus Factors And Agreement In Antitrust Law,'' 110 Mich. L. Rev. 393, 415, 424; *see also* Michal S. Gal, ''Algorithmic-Facilitated Coordination: Market and Legal Solutions,'' Competition Policy International, Spring 2017 (arguing that use of a pricing algorithm can be a plus factor).)

Because conspirators can form an agreement by their conduct, not just their words, ''the exchange of prices itself can be the mechanism for forming the agreement.'' (*See* ''Signaling and Agreement in Antitrust Law,'' William H. Page at 21 n.73.) Even ''[u]nilateral price disclosures can facilitate collusion among competitors [and] violate section 1.'' (*See* note by the United States to the OECD, ''Unilateral Disclosure of Information with Anticompetitive Effects,'' Feb. 8, 2012 ¶ 17 (citing *ATP*, discussed infra).)

Although there is no liability for ''desultory collection of information 'on the street,' '' there should be liability for a ''concerted reciprocal exchange of important pricing and marketing information.'' (*See Jacob Blinder & Sons, Inc. v. Gerber Prods. Co. (In re Baby Food Antitrust Litig.)*, 166 F.3d 112, 135 (3d Cir. 1999); *see also United States v. Container Corp. of America*, 393 U.S. 333, 338 (1969) (finding Section 1 liability where competitors exchanged price information).)

Yet courts are reluctant to find price exchanges anticompetitive if they happen in public. As opposed to secret meetings in the proverbial ''smoke-filled room,'' only if public price ''announcements are, by their context or content, directed principally to rivals and unmistakably invite cooperation are the signals likely to fall within Section 1.'' (*See* Page at 22) .

One key consideration is whether customers can act on the prices. In *United States v. Airline Tariff Publishing Co.*, No. 92-2854 (D.D.C.), the DOJ challenged the use by eight airlines of ATPCO's software platform for publishing fares. Under the consent decree that resolved the case, the DOJ prohibited, among other things, ''making visible or disseminating to any other airline any fare that is intended *solely* to communicate a defendant's planned or contemplated fares or changes to fares.'' (*See* Order At 5 (emphasis added).)

The airlines asked whether the order allowed them to adjust fares on a Friday evening and, based on whether or not competitors went along, adjust them again before Monday morning. Even though few consumers bought tickets on weekends, the DOJ responded that this conduct would not violate the decree because the prices posted over the weekend were ''bona fide fares that are actually available for purchase'' and not ''intended *solely* to communicate'' with competitors. (Emphasis added.)

The DOJ conceded that ''there may be an element of communication inherent in fares that are actually available and intended to be sold'' — i.e., that the airlines were using the weekend fares to signal prices to each other — but found them valid anyway. (As recently as October 2016, a federal district court found that certain airlines' ''ability to monitor other airlines' fare structure and pricing'' via ATPCO contributed to a finding that plaintiffs plausibly alleged a Section 1 conspiracy by those airlines. (*See In re Domestic Airline Travel Antitrust Litigation*, 221 F. Supp. 3d 46, 62 (2016).)

Pricing algorithms make it far more likely that competitors are exchanging price information ''solely'' for the purpose of signaling anticompetitive intent. Competitors publish and revise prices so rapidly that customers may be able to see them but not realistically act on them.

The Organisation for Economic Cooperation and Development describes a scenario where each of two competitors deploys a similar algorithm to signal, monitor, and set prices: ''[e]ach firm continuously sends new signals (for instance, offers to raise prices) and monitors the signals sent by the other competitors. When all players finally reach an agreement by sending the same signal, they fix the agreed price....''

This ''concerted reciprocal exchange'' of price information begins to resemble offer and acceptance and, thus, an agreement in violation of Section 1.

In sum, courts and enforcement authorities have been reluctant to condemn signaling via public prices because they doubt their ability to distinguish signals to customers from signals to competitors. However, this reluctance is misplaced when applied to algorithms in certain circumstances described herein.

B. Algorithms Can Make It Easier to Maintain a Conspiracy
Courts are reluctant to condemn public information disclosures not only because it is difficult to separate the pro-competitive from the anticompetitive effects, but also because the mixed nature of the messages makes it less likely that they are effectively furthering the conspiracy. In public, conspirators must ''rely on uncertain and ambiguous signals to achieve concerted action. The signals are subject to misinterpretation and are a blunt and imprecise means of ensuring smooth cooperation.'' (*See Brooke Grp. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993).)

Yet algorithms make it much easier to create and maintain a conspiracy in public, even in markets that are less concentrated than courts have assumed were necessary. In a traditional cartel, it could take days or weeks for conspirators to notice that one of their numbers has undercut them on price and to retaliate by undercutting the malefactor until he gets the message and comes back to the fold. Policing a cartel is a ''repeat game'' that needs time to play out.

Technology has solved this problem. As the Background Note to the OECD's 2017 forum on the subject explained, ''companies may program pricing algorithms to effectively execute trigger strategies, which consist in setting the agreed price as long as all the rivals do the same, but reverting to a price war as soon as any firm deviates.''

Granted, this makes price-fixing conspiracies carried out via algorithm both easier to execute and harder to detect: ''Naturally, because algorithms are very fast at detecting and punishing deviations, firms do not have any incentive to actually deviate. Hence, unlike traditional cartels, it is very unlikely that price wars between algorithms will be actually observed, except if triggered by algorithmic errors.''

Thus, algorithms make it easier for competitors to use public signals to establish and maintain a price-fixing conspiracy, but harder to detect.

C. The Law Only Punishes People As more pricing happens by algorithm, more price *fixing* is also likely to happen by algorithm. Commentators like Salil Mehra have highlighted the risk that, because algorithms now set prices with decreasing levels of human involvement, there may be no way to show that competitors demonstrated a ''conscious commitment'' to violate the antitrust laws. To be sure, if a court requires evidence of intent that two competitors set a particular price at a supracompetitive level, discovery will go nowhere, because you can't depose an algorithm.

But because human beings still select which algorithms to use and how — even if the algorithms set the prices and employ ''deep learning'' to improve themselves — the standard analysis should apply. A plaintiff may have to reach further back into a decision-making chain, asking not why a company set a certain price but why and how an executive chose the vendor whose algorithm set it.

For instance, Professors Ariel Ezrachi and Maurice Stucke describe a vendor's pitch that its pricing algorithm would not ''blindly match[] prices'' of discount websites like Amazon or Jet, but instead ''develop real-time pricing strategies to compete and grow profits.'' (*See* ''Virtual Competition'' at 48-49.) The authors posit that if a company chose that vendor's algorithm because it knows the vendor will set prices based off not only its data but also its competitors' data, the company may be a spoke in a hub-and-spoke conspiracy.

If competitors knowingly engaged the same vendor with the intent of accessing one another's competitively sensitive information, ''laundered'' through the vendor's database, they may also run afoul of the DOJ and Federal Trade Commission's joint Guidelines on Competitor Collaborations.

The use of software to set prices may not fit neatly into existing case law requiring human agreement, but the intent of human beings to deploy a pricing algo-rithm could nonetheless provide evidence of a conspiracy.

IV. Practical Guidance The cases and commentary offer important lessons for any future claim of algorithmic price fixing. Below we offer some practical guidance for framing such a claim.

Are prices executable only in theory? One assumption in the case law is that even if competitors are using prices as signals, they are also providing customers with a purchase opportunity. In *ATP*, the airlines offered ''bona fide fares'' during a two-day window — a period that now seems like eons, even if few customers actually made purchases then.

But in the algorithm era, competitors may be signaling prices back and forth to one another so quickly that no customer can reasonably execute a transaction at the offered prices. For example, if the algorithms set prices, say, late at night, that may be indicative of anti-competitive signaling via prices that are executable only in theory.

Another example of conduct that may cross the line into an antitrust violation is if retailers frequently change prices at which a customer can execute a purchase, but none do. For example, perhaps Website 1 changes its prices a hundred times in the course of an hour, but customers only execute transactions at a single price point. It may be reasonable to conclude that the other 99 prices functioned solely as signals.

Did competitors use algorithms to police deviations from the conspiracy? Commentary suggests that algorithms make policing a conspiracy so effective that no conspirator will ever deviate, and thus co-conspirators will never retaliate. But if they do, that should be visible, even if it happens quickly.

The ''repeat games'' of deviation and retaliation that once played out over days or weeks and in private negotiations can now happen within seconds and in public view. Plaintiffs could deploy algorithms similar to those that retailers use to scrape one another's prices to build a record of prices over time.

That data may show that one market participant undercut its competitors, only to then face retaliation in the form of its competitors all setting a price just below it, thus using their algorithms to police the conspiracy. Evidence that competitors did so should support the plausibility of a Section 1 claim.

What was the intent in selecting or designing the algorithm? To overcome the fact that the competitors' algorithms — rather than their human employees — fixed the prices, plaintiffs should develop evidence about the human decision-making involved in deploying those algorithms. In the Posters cases, the executives agreed to fix prices and just used the algorithm as the means to that end. Even absent a verbal agreement among competitors, there may be evidence that each competitor unilaterally adopted a pricing algorithm with the knowledge that competitors were doing the same and with the intent of driving prices to a supracompetitive level.

V. Conclusion Asserting a Section 1 claim for algorithmic price fixing faces some obstacles in the case law. They are not insurmountable. The best approach to making such a claim will be identifying evidence that competitors' exchanged prices that were executable only in theory; that conspirators used the algorithms to police their conspiracy; and that the human beings who

set the algorithms in motion did so with the intent of fixing prices.

To contact the editor responsible for this story: Fawn Johnson at fjohnson@bloomberglaw.com