

**Written Testimony of Bill Baer**  
**United States Senate**  
**Committee on the Judiciary**  
**Subcommittee on Competition Policy, Antitrust, and Consumer Rights**  
**Hearing on “The New Invisible Hand? The Impact of Algorithms on Competition and**  
**Consumer Rights”**  
**Wednesday, December 13<sup>th</sup>, 2023 3:00 P.M.**

Chair Klobuchar, Ranking Member Lee, and distinguished members of the Subcommittee, thank you for the opportunity to appear this afternoon and address one of the many challenges we face in harnessing the power and maximizing the potential of artificial intelligence.

The growing use of pricing algorithms presents one such challenge. I am no expert in AI. But from the vantage point of this long-time antitrust enforcer, now just an antitrust worrier, there is good reason for concern that misuse of this tool is growing and puts consumers at risk of paying supracompetitive prices for all sorts of goods and services.<sup>1</sup>

As your October hearing on the rental housing market explored, the potential misuse of pricing algorithms comes in many different forms. My testimony focuses on three collusive uses of AI pricing to harm competition and consumers: (1) head-to-head agreements between competitors to use the same pricing tools to fix prices; (2) hub and spoke agreements where competing firms use the same third party’s pricing algorithm to achieve anticompetitive outcomes; and (3) situations where widespread use of pricing algorithms by competitors may facilitate tacit collusion and cause significant consumer harms.

Enforcers and private plaintiffs already are challenging some of these behaviors. For example, when I headed the DOJ’s Antitrust Division during President Obama’s second term, we uncovered and successfully prosecuted criminally a scheme involving two companies selling poster art on the Amazon Marketplace.<sup>2</sup> These companies apparently grew tired of competing on price in the U.S. online market. So, they met and agreed to adopt the same pricing algorithm for the sale of certain posters. That meant Amazon shoppers always saw identical prices for the same product. The firms coordinated future pricing changes as well. This was old-fashioned price

---

<sup>1</sup> Zach Brown and Alexander MacKay summarize the concerns and evidence associated with this risk: Zach Brown and Alexander MacKay, “Are online prices higher because of pricing algorithms?” *Brookings*, July 7, 2022 <https://www.brookings.edu/articles/are-online-prices-higher-because-of-pricing-algorithms/>; former FTC Acting Chair Maureen Olhausen also spoke thoughtfully on these issues back in 2017: Maureen K. Olhausen, “Should We Fear The Things That Go Beep In the Night? Some Initial Thoughts on the Intersection of Antitrust Law and Algorithmic Pricing,” US Federal Trade Commission, May 23, 2017 [https://www.ftc.gov/system/files/documents/public\\_statements/1220893/ohlhausen\\_-\\_concurrences\\_5-23-17.pdf](https://www.ftc.gov/system/files/documents/public_statements/1220893/ohlhausen_-_concurrences_5-23-17.pdf).

<sup>2</sup> U.S. Department of Justice Office of Public Affairs, “E-Commerce Exec and Online Retailer Charged with Price Fixing Wall Posters,” December 4, 2015 <https://www.justice.gov/opa/pr/e-commerce-exec-and-online-retailer-charged-price-fixing-wall-posters>.

fixing brought to the internet through an agreement on code rather than price. It is per se unlawful and subject to criminal penalties.

The second area of concern with the use of pricing algorithms seems more subtle and harder to detect, but it carries the same risk of consumer harm: Companies avoiding price competition by using the same third-party vendor to collect data on supply and demand and “recommend” pricing or output behaviors that facilitate price coordination. Antitrust jurisprudence describes this behavior as a hub and spoke conspiracy, where competitors use a third party to secure the desired anticompetitive outcome. Again, this is not new. In the 1990’s, the DOJ uncovered and charged airlines in the U.S. with using the Airline Tariff Publishing Company—a jointly owned online booking system which collected and published electronic fare information—to (1) exchange proposals and negotiate fare changes; (2) trade fare changes in certain markets in exchange for fare changes in other markets; and (3) exchange mutual assurances concerning the level, scope, and timing of fare changes.<sup>3</sup> As DOJ explained in a 2017 submission to OECD:

*In 1994 the DOJ settled accusations that six airlines used a jointly owned computerized online booking system, the Airline Tariff Publishing Company (ATP), to communicate and set collusive airline fares. Although ATP provided a means for the airlines to disseminate fare information to the public, it also provided a forum for the airlines to engage in essentially private dialogues on fares. Certain features of the system enabled the airlines to reach overt price-fixing agreements, and “facilitate[d] pervasive coordination of airline fares short of price fixing.”<sup>4</sup>*

Your hearing on October 24th shined light on how these schemes can operate in a 21<sup>st</sup> Century artificial intelligence world: Competitors in the rental housing business across the U.S. allegedly using third party vendors—like RealPage and Yardi—to collect competitively sensitive pricing information from competing property management committees, feed that data through sophisticated algorithms, and recommend unit-by-unit prices so landlords can charge higher rents.<sup>5</sup>

---

<sup>3</sup> United States v. Airline Tariff Publishing Company, Civ. Action No. 92-2854 (SSH) (D.D.C. filed Dec. 12, 1992) <https://www.justice.gov/d9/atr/case-documents/attachments/1992/12/21/4796.pdf>.

<sup>4</sup> OECD Directorate for Financial and Enterprise Affairs Competition Committee, “Algorithms and Collusion – Note by the United States,” May 26, 2017 <https://www.justice.gov/atr/case-document/file/979231/download>.

<sup>5</sup> Sen. Klobuchar (M.N.), Quote from: U.S. Senate, Committee on the Judiciary, Subcommittee on Competition Policy, Antitrust, and Consumer Rights, *Examining Competition and Consumer Rights in Housing Markets*, October 24, 2023 <https://www.judiciary.senate.gov/committee-activity/hearings/examining-competition-and-consumer-rights-in-housing-markets>; Class action lawsuits across the country have alleged that RealPage’s YieldStar algorithm facilitates collusion by landlords, and in April the U.S. Judicial Panel on Multidistrict Litigation consolidated 21 of these actions under the Middle District of Tennessee: Transfer Order, In Re: RealPage Inc., Rental Software Antitrust Litigation (No. II), MDL No. 3071, April 10, 2023 <https://fingfx.thomsonreuters.com/gfx/legaldocs/xmvjklzxp/RealPage%20JPML%20transfer%202023-04-10.pdf>; In November, D.C. Attorney General Brian Schwalb filed a similar lawsuit against RealPage and 14 landlords: Complaint, District of Columbia v. RealPage, Inc. et al. <https://oag.dc.gov/sites/default/files/2023->

Collusion through use of a common vendor that supplies algorithms to suppress competition is not limited to the rental housing market. Other recent private antitrust challenges involve hotel operators in Las Vegas and Atlantic City using the same third party vendor, a company called Cendyn Group, whose subsidiary, Rainmaker, offered a “platform of pricing algorithm products” that allegedly used pricing and occupancy data provided by leading hotels to suggest profit maximizing strategies that increased margins and limited the consumer’s ability to bargain hunt online.<sup>6</sup>

These AI-facilitated hub and spoke conspiracies extend further up the food chain, too. Literally. Just this Fall, the Justice Department and six state attorneys general, including from Utah and Minnesota, charged Agri Stats, Inc. with operating an information exchange that obtained sensitive price and output information from the nation’s largest meat processors, analyzed the data, and then provided detailed data to turkey, chicken, and pork producers that allowed these competitors to reduce output and increase price, with confidence that their competitors, who had access to the same information, would do the same.<sup>7</sup> According to the complaint, the scheme was working:

*Executives at some of the country’s largest meat processors testified that they could not recall any examples in which their companies used Agri Stats information to lower their sales prices to gain market share. An executive at Smithfield, a pork processor, summarized Agri Stats’ consulting advice in four words: “Just raise your price.”<sup>8</sup>*

---

[11/DC%20OAG%20RealPage%20Complaint%20-%20Filed.pdf](#); My talented antitrust colleague Professor Maurice Stucke, in his testimony before this subcommittee on October 24, 2023, describes the concerning behaviors of landlords who use algorithmic price-setting software and the difficulties involved in detecting and challenging those behaviors: Maurice Stucke, “Testimony on Examining Competition and Consumer Rights in Housing Markets before the Senate Committee on the Judiciary, Subcommittee on Competition Policy, Antitrust, and Consumer Rights,” October 24, 2023 [https://www.judiciary.senate.gov/imo/media/doc/2023-10-24 - testimony - stucke.pdf](https://www.judiciary.senate.gov/imo/media/doc/2023-10-24%20-%20testimony%20-%20stucke.pdf).

<sup>6</sup> Order, Richard Gibson, et al. v. MGM Resorts International, et al., Case No. 2:23-cv-00140-MMD-DJA, October 24, 2023 [https://fingfx.thomsonreuters.com/gfx/legaldocs/mypmgymykp/Vegas%20hotels%202023-10-24%20Order%20dckt%20141\\_0.pdf](https://fingfx.thomsonreuters.com/gfx/legaldocs/mypmgymykp/Vegas%20hotels%202023-10-24%20Order%20dckt%20141_0.pdf); Class Action Complaint, Heather Altman and Eliza Wiatroski v. Caesars Entertainment, Inc., Case No. 2:23-cv-02536, May 9, 2023

<https://fingfx.thomsonreuters.com/gfx/legaldocs/jnvwyzenrvw/Altman%20v%20Caesars%20et%20al%20-%20NJ%20-%2020230509.pdf>; Firms with market power may be able to force their competitors to raise price as well. A recent Wall Street Journal report on the FTC’s recent Amazon lawsuit discloses allegations that the company used a secret algorithm codenamed “Project Nessie” to discipline market pricing: “The algorithm helped Amazon improve its profit on items across shopping categories, and because of the power the company has in e-commerce, led competitors to raise their prices and charge customers more, according to people familiar with the allegations in the complaint.” Dana Mattioli, “Amazon Used Secret ‘Project Nessie’ Algorithm to Raise Prices,” *The Wall Street Journal*, October 3, 2023 <https://www.wsj.com/business/retail/amazon-used-secret-project-nessie-algorithm-to-raise-prices-6c593706>.

<sup>7</sup> Second Amended Complaint, US, et al. v. Agri Stats, Inc., No. 0:23-cv-03009-JRT-JFD <https://justice.gov/d9/2023-11/418025.pdf>.

<sup>8</sup> *Ibid*, p. 2 par 4.

These third-party hubs use AI technology to track pricing and output in real time and suggest pricing and supply behaviors that, as noted above, facilitate competitor coordination with resulting anticompetitive outcomes. Again, the basic behavior is not new. But the use of pricing algorithms seems to make coordination easier and quicker. And since the third-party vendor's technology closely tracks pricing behaviors, firms that seek to undercut cartel prices are easily detected and ratted out. Experience teaches that cartels tend to last longer when it is easier to detect and punish cheaters.

The good news is that, as I noted earlier, these hub and spoke conspiracies have traditionally been held to violate the antitrust laws.<sup>9</sup> That is true in the U.S., as DOJ noted in its recent filing in the Real Page Rental Software Litigation, and in many other jurisdictions.<sup>10</sup> The bad news is that algorithmic collusion using third parties seems to be on the increase; detection is not easy; and AI makes it easier to succeed.

But my big worry is whether our current antitrust jurisprudence can handle fact patterns where pricing algorithms “learn” how to collude with little or no human involvement. To prove an unlawful agreement under Section 1 of the Sherman Act, plaintiffs need to show a meeting of the minds between rivals, a conscious commitment to a common scheme. As DOJ argues in its recent Statement of Interest in the RealPage Software Antitrust Litigation, joint use of common algorithms to fix price “must be subject to the same condemnation as other price-fixing schemes...

*It makes no difference that prices are fixed through joint use of an algorithm instead of by a person, just as sharing information through an algorithmic service should be treated the same as sharing information through email, fax machine, or face-to-face conversation. Put another way, whether firms effectuate a price-fixing scheme through a software algorithm or through human-to-human interaction should be of no legal significance. Automating an anticompetitive scheme does not make it less anticompetitive.<sup>11</sup>*

---

<sup>9</sup> In the late 1990's I led an FTC team that successfully charged Toys “R” Us with using its market power to secure agreements from toy manufacturers to withhold popular toys from its discounting rivals: Toys “R” Us, Inc. v. Federal Trade Commission, United States Court of Appeals for the Seventh Circuit, 221 F.3d 928 (2000) <https://casetext.com/case/toys-r-us-inc-v-ftc>.

<sup>10</sup> Memorandum of Law In Support of the Statement of Interest of the United States, In re: RealPage, Rental Software Antitrust Litigation (No. II), Case No. 3:23-MD-3071, November 15, 2023 [https://fingfx.thomsonreuters.com/gfx/legaldocs/byvrrwqozve/DOJ%20RealPage%202023-11-15%20Memorandum%20dckt%20628\\_0.pdf](https://fingfx.thomsonreuters.com/gfx/legaldocs/byvrrwqozve/DOJ%20RealPage%202023-11-15%20Memorandum%20dckt%20628_0.pdf); OECD, *Algorithmic Competition, OECD Competition Policy Roundtable Background Note*, 2023 <https://www.oecd.org/daf/competition/algorithmic-competition-2023.pdf>; Antonio Capobianco, “The Impact of Algorithms on Competition and Competition Law,” *Promarket*, May 23, 2023 <https://www.promarket.org/2023/05/23/the-impact-of-algorithms-on-competition-and-competition-law/>.

<sup>11</sup> Statement of Interest of the United States, In re: RealPage, Rental Software Antitrust Litigation (No. II), Case No. 3:23-MD-3071, November 15, 2023 <https://www.justice.gov/d9/2023-11/418053.pdf>

DOJ has it right. But, at the same time, the courts have long held that proof of conscious parallelism, sometimes called tacit collusion, is not enough. As Professor Stucke noted in his recent testimony, the Supreme Court made this point succinctly in its 1993 Brooke Group decision:

*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.*<sup>12</sup>

To show an unlawful agreement under Section 1, courts require evidence of some sort of meeting of the minds. These evidentiary “plus factors” allow the court to conclude that something more than unilateral action was afoot.

*Plus factors are economic actions and outcomes, above and beyond parallel conduct by oligopolistic firms, that are largely inconsistent with unilateral conduct but largely consistent with explicitly coordinated action.*<sup>13</sup>

But what if competitors individually develop pricing algorithms that set profit maximization as the goal and machine learning leads to pricing outcomes that result in widespread oligopolistic pricing in markets where price competition previously had been the norm?

The analogy that comes to mind is the 1983 movie *War Games*. There, a young computer nerd played by Matthew Broderick unwittingly ends up hacking into the supercomputer controlling the US military’s nuclear arsenal and activates a game called Global Thermonuclear War. He thinks it's just a game, but the computer (the WOPR) treats it as the real thing and takes actions that trigger escalating responses from the then-Soviet Union. We are on the brink of thermonuclear war until Broderick directs the computer to play Tic Tac Toe. In seconds the WOPR runs every series of possible moves, “learns” that the game is unwinnable and stops the nuclear escalation.

The algorithmic pricing scenario I worry about is where companies individually write code that simply instructs the machine to maximize profits; it gathers publicly available pricing information about its competitors; and “learns” in nanoseconds that price competition does not get you there, stops discounting, and stabilizes prices—even in markets where the number of firms previously would have made oligopolistic pricing—tacit collusion—unsustainable. In short, do the machines learning on their own that competing on price is the road leading to

---

<sup>12</sup> See Stucke testimony, *supra* fn. 5, citing: *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993) <https://supreme.justia.com/cases/federal/us/509/209/>.

<sup>13</sup> William E. Kovacic, Robert C. Marshall, Leslie M. Marx & Halbert L. White, Plus Factors and Agreement in Antitrust Law, 110 MICH. L. REV. 393 (2011) <https://repository.law.umich.edu/mlr/vol110/iss3/1/>.

mutually assured destruction? And, can the industry-wide implementation of pricing algorithms that predictably lead to such a result—even without direct communication between competitors—constitute an illegal agreement under Section 1? If it does not, we are in a world of hurt.

I know both the Justice Department and the Federal Trade Commission worry about these scenarios. And I commend their efforts to expand their talent pool to include AI specialists—like my co-panelist Sarah Myers West—who can help the enforcers keep pace with these breath-taking changes in how competition is affected by the widespread use of pricing algorithms.

What more needs to be done? Some thoughts:

- In merger investigations the enforcers need to determine whether my competition “doomsday scenario” is a real-world concern. That can be done, in part, by using Second Requests to examine the pricing algorithms employed by the merging parties to see how they react to each other’s pricing decisions and putting companies on notice in the revised Merger Guidelines that this will be a focus;
- Independent of merger investigations, the Federal Trade Commission should employ its investigatory powers under Section 6(b) of the FTC Act to do a deep dive into selected industries to better understand the prevalence and real-world impact of pricing by algorithm.
- The enforcers should use those results to persuade the courts that an illegal agreement under Section 1 can be inferred where widespread adoption of pricing algorithms by competing firms results in or is likely to result in anticompetitive outcomes;
- At the same time, the FTC should consider using its “unfair methods of competition” authority under Section 5 empowers it to challenge use of AI that results in anticompetitive outcomes—even if the evidence does not establish an agreement in violation of Section 1;
- The enforcers should redouble their efforts to remind companies that they are responsible for monitoring the pricing behavior of their machines—just as they are responsible for the actions of their employees that lead to anticompetitive outcomes.
- Finally, Congress should consider legislation that addresses the growing risks to competition posed by misuse of algorithmic pricing – either as part of broader efforts to set guardrails for the use of AI, or antitrust-specific legislation that holds competitors responsible for the use of pricing algorithms that they know or should have known results in tacit collusion and reduced competition.

As noted at the outset, I recognize the many positives AI brings to the table. But I also see the risks to competition and consumers from misuse of algorithmic pricing. The risks are real. They cannot be taken lightly.