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Amazon's Algorithmic Rents: The economics of information on Amazon

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ABSTRACT

Amazon's maturing e-commerce platform has seen its business strategy evolve from growth at any cost to a "quest for profit", underpinned by its burgeoning $37.7bn advertising business. Through advertising, Amazon compels its captive third-party merchant ecosystem to pay for one of its most valuable assets – customer attention. Advertising leverages Amazon's unique position as a discovery platform. Discovery is governed by Amazon's algorithms — the nerve centre of its conduct and a critical guide to market structure. Algorithms are the principal market institution coordinating exchange online, yet often escape market investigations.

Prevailing doctrine assumes that platform rent extraction, via algorithmic allocations to lower quality sponsored output, cannot persist since "competition is just a click away": optimizing users, facing negligible search costs, will seek out higher quality results.

We show that antitrust's benchmark model of competition, premised on perfect information and consumer rationality, is unable to dissect platform power today, grounded in algorithms exploiting the highly uncertain and informationally abundant decision-making environment. Users, reliant on a platform's algorithms for decision-making, may continue to click on inferior quality advertising information when prioritized by the platform. This allows

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Amazon to extract pecuniary rents from its ecosystem and impair fair competition by making product visibility conditional on payment.

We explore antitrust and consumer protection paradigms for limiting platform exploitation through advertising. We focus on the relationship between the level of information and the level of competition in a market. Dominance is when a platform can disregard the full information content of its ecosystem and still profit.

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"What the eye doesn't see, the heart doesn't grieve over."

– Origin of the english saying "out of sight, out of mind"

I. INTRODUCTION

Amazon's $37.7 billion dollar advertising business has arisen on the back of its booming third-party marketplace.[1] Amazon's revenues from third-party seller services (excluding advertising) grew 118% between 2020 and 2022, far outpacing growth in its original "first party" ecommerce business model.[2] Amazon's third-party marketplace accounted for 25% of e-commerce sales in the U.S. in 2022,[3] making merchants'[4] reliance on Amazon – and its advertising service – largely unavoidable.[5] Amazon's share of total U.S. e-commerce sales, including both first-party and third-party sales, was 40% that same year.[6]

Yet, beneath the surface, Amazon has been slowing. Online sales were flat between 2022 and 2023,[7] masked by phenomenal growth in advertising profits.[8] Advertising reinforces this stagnationist tendency. Amazon's search advertising is a price-like[9] substitute for users, but is collected on both sides of the market: users pay with their time and through inferior product quality, and merchants pay through higher effective listing fees.

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1. Advertising is technically not reported as revenue from "third-party seller services" in Amazon's 10-K, but as a separate business line.

2. Amazon.com Inc (0R1O.L) (LSEG Data & Analytics).

3. *Amazon Marketplace is 25% of US E-Commerce*, MARKETPLACE PULSE (Feb. 1, 2022), https://www.marketplacepulse.com/articles/amazon-marketplace-is-25-of-us-e-commerce.

4. We use the term merchant even though many firms selling on Amazon may be manufacturers and others are simply resellers. In addition, both Target and Walmart can accurately be described as merchants, since in commercial terms, a merchant is an individual or company that sells goods or services.

5. Sara Lebow, *Amazon Will Capture Nearly 40% of the US Ecommerce Market*, EMARKETER (Mar. 23, 2022), https://www.insiderintelligence.com/content/amazon-us-ecommerce-market. (In total, Amazon accounts for $2 in $5 spent in U.S. ecommerce in 2022, more than five times the digital sales of its closest rival, Walmart.).

6. *Id*.

7. Amazon.com Inc (0R1O.L) (LSEG Data & Analytics).

8. Advertising profits are not disclosed, only sales. Ben Thompson, *Amazon Earnings, The Logistics Virtuous Cycle, Amazon Aggregator* Ads, STRATECHERY (Oct. 31, 2023) ("If that is true [assume 80% margin on advertising] then that means Amazon's advertising business produced $9.6 billion in profit last quarter. That significantly outpaces AWS's $7.0 billion in profit, and is roughly equivalent to Amazon's overall profit of $9.8 billion. In other words, even if you removed AWS from the equation, Amazon would still be profitable thanks to advertising.").

9. Erik Hovenkamp, *Platform Antitrust,* 44 J. CORP. L. 713, 725 (2019) (Focusing on double-sidedness [emphasis added]: "the sole impetus for the platform's two-sidedness is not necessarily to solve a chicken-and-egg problem. Instead, its motivation may be to utilize **advertising as a price alternative**. In principle, the platform could eschew advertisements altogether, and accrue all revenues by charging prices to consumers.").

Advertising marks a departure from Amazon's original flywheel, premised on more products from an ecosystem of merchants bringing in more users, and more users bringing in more merchants, as sales grew. Resulting revenue and profits were to be re-invested in an ever-better user experience and in growth.[10] Lina Khan described this strategy as a "willingness to forego profits."[11] It was cutthroat, but consumers benefited from time savings, great product variety, low prices, and being shown the best available products. Sellers benefited from competitive access to customers.

Amidst slowing growth in retail sales[12] Bezos shifted gears,[13] coercing third-party firms to pay for advertising to achieve visibility in Amazon's product search results instead of achieving it competitively. This required Amazon to replace relevant and personalized "organic"[14] results with inferior advertising results from the highest bidder, and still get users to click on them. And users did. Amazon's net margin increased nearly sixfold between 2017 to 2021[15] and return on capital threefold.[16]

Amazon's turn towards advertising capitalizes on its status not only as a diversified retailer and cloud services provider but as an "aggregator"[17] selling discovery.[18] Amazon offers consumers the convenience of discovering a wide range of products, while providing firms with access to a vast customer base. What distinguishes Amazon from an offline retailer is,

10. Jeff Wilkes, *Flywheel*, YOUTUBE (Aug. 1, 2012), https://www.youtube.com/watch?v=5jcDIGn-tZA, (Jeff Bezos is said to have drawn the flywheel on a napkin around 2001. Amazon VP Jeff Wilkes translated the napkin sketch to a PowerPoint slide.).

11. Lina M. Khan, *Amazon's Antitrust* Paradox, 126 YALE L.J., 710, 747 (2016).

12. *Amazon Paid Units Growth: 2003-2023*, MARKETPLACE PULSE (2003), https://www.marketplacepulse.com/stats/amazon/amazon-paid-units-growth-160.

13. BRAD STONE, AMAZON UNBOUND: JEFF BEZOS AND THE INVENTION OF A GLOBAL EMPIRE (2022).

14. *See Ranking for Research,* GOOGLE PRESENTATION (Nov. 16, 2018), https://www.justice.gov/d9/2023-09/416694.pdf. Google calls "organic" search results those that have been algorithmically selected based on quality to a user query – which includes relevance, freshness, popularity, behavioural features (i.e. other people's clicks), localization, and centrality – as opposed to paid advertising results. We generalize this term to refer to any search result, social media feed output, or recommendation output that is optimized for user benefit.

15. Amazon.com Inc (0R1O.L) (LSEG Data & Analytics). Net margin is 1.2% in 2017, increasing to 7.1% in 2021 (at 5.5% in 2020), before falling to -0.5% in 2022, driven by a write-down in its stake in Rivian, but also higher expenses and a decline in international earnings.

16. Refinitiv Desktop. Accessed Nov. 2, 2023. "Amazon". Return on capital invested was 6.3% in 2017, 16.9% in 2020, and 18.7% in 2021. No value for 2022.

17. Ben Thompson, *Platforms vs. Aggregator,* STRATECHERY (2019), https://stratechery.com/concept/aggregation-theory/platforms-vs-aggregators/ ; *Amazon.com, Inc. (Amazon eCommerce),* FED. TRADE COMM'N (Nov. 2023), No. 2:23-cv-01495, (W.D. Wash. Nov. 13, 2023), https://www.ftc.gov/system/files/ftc_gov/pdf/1910134amazonecommercecomplaintrevisedredactions.pdf.

18. *Id.* at 122.

therefore, not just the wealth of data it collects on its users and merchants, but its ability to wholly engineer product visibility and significantly influence consumer choices.

Recognizing the enormous informational advantages it has over customers, Amazon has long used its algorithm to shape user behaviour. When Amazon included "Amazon's Choice" badges on its algorithmically curated recommendations, sales of those products increased 25%.[19] Products with a "Best Seller" badge saw page views increase by 45%.[20] When Amazon's algorithm picks winners, they win, because users, overwhelmed by choice and the multiplicity of similar products, rely on its algorithms for decision-making. 32% of shoppers always or frequently bought the first product in Amazon's search results in 2022.[21] Advertising on Amazon exploits this informationally complex environment. In a companion empirical paper,[22] we found that Amazon can persistently degrade results quality by showing inferior advertising results and still get users to click on them, especially when in the prime screen position spots.[23]

Amazon's market power – its *conduct* – manifests algorithmically[24] since its "organic"[25] algorithm serves as the institution that makes competitive market-like allocations, from user attention to product information.[26] These algorithmic allocations reflect the broader competitive market *structure* within which Amazon competes, since Amazon's ability to *profitably*

19. Sandy Skrovan, *The Impact of Amazon Badges on Traffic and Conversion*, PROFTERO (Nov. 1, 2018), https://www.profitero.com/2018/11/the-impact-of-amazon-badges-on-traffic-and-conversion.

20. Michael Waters, '*They Don't Have as Much Value': How Amazon's Choice Lost Some of Its Luster*, MODERNRETAIL (Feb. 3, 2021), https://www.modernretail.co/retailers/they-dont-have-as-much-value-how-amazons-choice-lost-some-of-its-luster/.

21. *The 2022 Amazon Consumer Behavior Report*, FEEDVISOR (2022), https://fv.feedvisor.com/rs/656-BMZ-780/images/2022-Amazon-Consumer-Behavior-Report.pdf?_ga=2.50606319.773111755.1680260337-766936932.1680095145 (Though this seems to be strongly influenced by demographics).

22. The first product slot has an 80% chance of being an advert on Amazon in 2023, yet it still has a 26% chance of holding a top-3 most clicked product for a given query. *See* Rufus Rock et al., *Behind the Clicks: Can Amazon Allocate User Attention as it Pleases?*, UCL INST. FOR INNOVATION AND PUB. PURPOSE (2023), https://www.ucl.ac.uk/bartlett/public-purpose/ wp2023-11.

23. We do not adjust for users not making any purchase at all in response to advertising results.

24. For overview of algorithms and competition: UK CMA, *Algorithms: How They Can Reduce Competition and Harm Consumers* (2021), https://assets.publishing.service.gov.uk/media/60085ff4d3bf7f2aa8d9704c/Algorithms_++.pdf.

25. *See supra* note 14 for our definition of "organic".

26. Alvin E. Roth, *Marketplaces, Markets, and Market Design,* 108(7) AM. ECON. REV. 1609, 1609-1658 (2018) ("marketplaces – which consist of infrastructure, rules, and customs through which information is exchanged and transactions are made – can be relatively small parts of large markets.").

deteriorate allocations through paid advertising requires a degree of market power, otherwise suppliers in particular would switch platforms or sell independently (such as through Shopify). Finally, algorithmic allocations in Amazon's third-party marketplace provide a guide to the market's *performance* (welfare outcomes), since they help us understand the actual market transactions facilitated relative to those that could have been undertaken, if based on the optimal information content available within the platform's ecosystem – or elsewhere on the internet.

Drawing on Herbert Simon,[27] this paper elaborates on two conditions for *native* advertising[28] – seamlessly integrated sponsored product results that are directly clickable substitutes for "organic" results – to be exploitative. The first is the complex informational characteristics of the online market, around which institutions must evolve to help users efficiently manage their attention. The second is the boundedly rational behaviour of users. A degree of supplier lock-in is also vital for a platform to charge suppliers consistently higher fees without offering something of equivalent value.

Our case study in competitive dynamics within Amazon Marketplace highlights that for a dominant platform with market power over its suppliers,[29] its algorithmic attention allocations are used to exert market power and profitably extract rents from its ecosystem. Dominance here reflects a platform's ability to undertake attention allocations that are independent of information relevance within its ecosystem (and on competing platforms), consumer preferences, or explicit search inputs.[30] We emphasize the strong interrelationship between the level of information and the level of competition in a market, such that more competitive markets online are compelled to provide their users with more relevant and complete information.

This paper contributes to the growing behavioural emphasis on how platforms of all sizes can exploit users[31] through their choice architecture.[32]

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27. Herbert A. Simon, *Rationality as Process and as Product of Thought*, 68(2) AM. ECON. REV. 1, 1-16 (1978).

28. Since in this context ads and organic results are substitutes. This may or may not be behaviourally targeted.

29. *See* John Newman, *Antitrust in Zero-Price Markets: Applications*, 94(1) WASH. U. L. REV. 49, 71-73 (2016); Mark R. Patterson, *Google and Search-Engine Market Power,* HARV. J. L. AND TECH., (July 2013); Mark R. Patterson, *Product Definition, Product Information, and Market Power: Kodak in Perspective*, 73(1) NORTH CAROLINA L. REV. 185 (1994).

30. RICHARD WHISH & DAVID BAILEY, COMPETITION LAW (7th ed. 2012). This draws on the EU approach dominance (*See* United Brands Company and United Brands Continental BV v. Commission of the European Communities).

31. Mike Walker, *Behavioural Economics: The Lessons for* Regulators, 13(1) EUR. COMPETITION J. 1, 1-27 (2017).

32. *Research and Analysis Evidence Review of Online Choice Architecture and Consumer and Competition Harm,* COMPETITION & MARKETS AUTH. (Apr. 5, 2022), https://www.gov.uk/government/publications/online-choice-architecture-how-digital-design-can-

But we place this power within a multi-sided platform context, in which information abundance is used to condition user behaviour in order to exploit the ecosystem.

According to the Chicago School, Amazon's ability to extract advertising rents from its merchants should be fleeting, since users will avoid lower quality ads by searching more within the platform's results, or by going to another platform or website, making such a strategy ultimately unprofitable. This assumes a high degree of consumer rationality acting on the basis of complete information, which creates low search costs and high search benefits. In other words, the Chicago School assumes away the very behavioural contours along which dominant platforms today tend to exert their dominance.[33]

The other major paradigm used to understand platform behaviour is *Surveillance Capitalism*.[34] This focuses on a platform's exploitation of user data and privacy, including by enhancing personalized advertising.[35] Our approach adds another layer to this analysis by emphasizing the consequences of algorithmic allocations in a multi-sided context. Every data-driven[36] algorithmic recommendation impacts not just users but the platform's ecosystem. In addition, algorithmic recommendations shape user behaviour not just because of data but because of the uniquely complex decision-making environment online. Data works powerfully in the background but is largely beyond the scope of this paper.

Section 2 details how advertising affects market concentration and exploitation differently in Chicago School, New Institutional Economics (NIE), and institutional economics schools on the basis of their different assumptions about market information and user rationality. Advertising can only be considered useful when information is incomplete. We highlight the unique features of advertising online that make it potentially harmful to users by actually reducing the information content of results. Section 3 applies an institutional approach to advertising on Amazon, premised on users

harm-competition-and-consumers/evidence-review-of-online-choice-architecture-and-consumer-and-competition-harm.

33. *United States of America v. Google LLC*. 2020. No. 1:20-cv-03010-APM (E.D. Va. Sept. 18, 2023) https://cdn.arstechnica.net/wp-content/uploads/2023/09/US-v-Google-DOJ-Pre-Trial-Brief-9-8-2023.pdf; John M. Newman, *Antitrust in Zero-Price Markets: Applications,* 94(1) WASH. UNIV. L. REV. 49, 72 (2016). ("Similarly, in zero-price markets, relatively more of the competitive action surrounds customer information and attention-at least as compared to price.").

34. SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER (2019).

35. Andrea Prat & Tommaso Valletti, *Attention Oligopoly*, 14(3) AM. ECON. J.: MICROECONOMICS 530 (Aug. 2022).

36. Nicola Agius, *Google Search Antitrust Trial Updates: Everything you need to know (so far),* SEARCH ENGINE LAND (Nov. 9, 2023), https://searchengineland.com/google-search-antirust-trial-hearing-updates-431977.

"satisficing," and highlighting the importance of user click behaviour being guided by algorithmic results in order for advertising to extract persistent rents from its ecosystem of suppliers. Section 4 provides a case study that applies these concepts to advertising on Amazon's third-party marketplace. Section 5 looks at how antitrust conceptions of market power can be shaped by looking at platforms as attention markets. Section 6 looks at consumer policies to protect a platform's algorithms from exploiting user behavioural biases.

II. THE CHICAGO SCHOOL'S INCORPORATION OF INFORMATION AND INSTITUTIONS

This section reviews historical debates on the impact that imperfect or incomplete information[37] – and advertising in particular – can have on rents and firms' market power, focusing on the "Chicago School."[38] This discussion highlights the centrality of assuming user rationality (an ability to "optimize") to the proposition that advertising and incomplete information cannot harm consumers. The power and autonomy of the individual limits the need for antitrust and consumer protection to interrogate the actual market institutions coordinating economic activity and allocating resources. This means that algorithms, the central market institution online, fall largely outside the scope of the market. As one scholar of perfect competition notes: "The convenience of the perfect-information postulate precluded the need [for neoclassical economics] to dissect the nexus of social institutions through which knowledge is discovered and employed to facilitate the coordination of human action."[39] Following the New Institutional Economics (NIE), to which Chicago School scholars contributed, institutions that reduce

37. *See* ERIC RASMUSEN, GAMES AND INFORMATION: AN INTRODUCTION TO GAME THEORY 50 (4th ed., 50 (2007); for "incomplete information" *see* Robert Aumann, "Game Theory". *See* STEVEN DURLAUF & LAWRENCE E, BLUME, THE NEW PALGRAVE DICTIONARY OF ECONOMICS 5035-5036 (2016). Terminology ("incomplete information", "asymmetric information", and "imperfect information") can be confusing. We use the terms largely interchangeably. Imperfect information is used outside of game theory to refer largely to situations of asymmetric information. *See generally* ANDREU MAS-COLELL ET AL., MICROECONOMIC THEORY (1995). Within game theory, incomplete information, asymmetric information, and imperfect information have different meanings: "A game with incomplete information also has imperfect information . . . Many games of incomplete information are games of asymmetric information, but the two concepts are not equivalent."

38. *The History of Economic Thought*, THE CHICAGO SCH., https://www.hetwebsite.net/het/schools/chicago.htm (last visited Oct. 2, 2023). Even though Thorstein Veblen, a key progenitor of institutional economics, was based at the University of Chicago for much of his career. The Chicago School only really begins in the 1920s and "was initially set up as a bastion of counter-institutionalism."

39. FRANK MACHOVEC, PERFECT COMPETITION AND THE TRANSFORMATION OF ECONOMICS 309 (1st ed 1995).

transaction costs are within the scope of contemporary antitrust analysis[40] – but the application of NIE to zero-priced frictionless transactions online remains unclear.[41]

Although the Chicago School argued that the amount of information in a market largely does not impact the market's *structure* (how concentrated and competitive the market is, including barriers to entry), or the *market's performance* (welfare outcomes), they do not ignore the role of information in markets. George Stigler of the Chicago School was credited with creating "information economics"[42] when he published *The Economics of Information* in 1961.[43]

The early Chicago school view on information and advertising is the direct antecedent to today's view that, on digital platforms, "competition is just a click away." Even if information is not perfectly known in advance, and must be sought out by users, rents are unlikely to persist in digital markets – especially what we call in a companion paper user "attention rents."[44] This is because optimizing users can always engage in a relatively costless search for better alternatives – for more information easily processed and organized. Informational deficits were also addressed through the New Institutional Economics theorizing institutions – and contracts – as arising to minimize informational and transaction costs.[45]

In Section 3, we contrast the Chicago School's optimization view of agents – which implies that imperfect information cannot harm – with an *institutionalist economics*[46] *approach*. Drawing on Herbert Simon's *information processin*g paradigm,[47] we propose that in an informationally complex environment online, the organizational form that users rely on for

40. Herbert Hovenkamp, *Harvard, Chicago, and Transaction Cost Economics in Antitrust Analysis,* 55 THE ANTITRUST BULL. 613 (Nov. 10 2010).

41. *See generally* Frank Nagle et al., *Transaction Cost Economics in the Digital Economy: A Research Agenda* (Harvard Business School Strategy Unit Working Paper No. 21-009, July 2020).

42. MILTON FRIEDMAN, GEORGE JOSEPH STIGLER: A BIOGRAPHICAL MEMOIR BY MILTON FRIEDMAN (1999).

43. George J. Stigler, *The Economics of Information*, 69(3) J. OF POL. ECON. 213, 213 (1961) ("One should hardly have to tell academicians that information is a valuable resource: knowledge is power. And yet it occupies a slum dwelling in the town of economics.").

44. *See* Tim O'Reilly et al., *Algorithmic Attention Rents: A theory of digital platform market power* (UCL Institute for Innovation and Public Purpose (IIPP) Working Paper Series: IIPP WP 2023-10, 2023), https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett_public_purpose/files/algorithmic_attention_rents-_a_theory_of_digital_platform_market_power_final.pdf.

45. *See* BEN FINE & DIMITRIS MILONAKIS, FROM ECONOMICS IMPERIALISM TO FREAKONOMICS: THE SHIFTING BOUNDARIES BETWEEN ECONOMICS AND OTHER SOCIAL SCIENCES, at ch.5 (2009); *see* Oliver E. Williamson, *Transaction Cost Economics: The Natural* Progression, 100(3) AM. ECON. REV., 673, 673-690 (2010).

46. *See generally* Herbert Hovenkamp, *Coase, Institutionalism, and the Origins of Law and Economics,* 86 IND. L.J., 499 (2011).

47. O'Reilly et al., *supra* note 44.

information processing is the algorithmic curation, ranking, and recommendation of information. These algorithms – in combination with how the results are displayed (the choice architecture) – helps users allocate their scarce attention efficiently in the market. Because users must rely on institutional mechanisms like algorithms to process information for decision-making in online "aggregator" platforms,[48] imperfect information can harm users when these institutional mechanisms are distorted. In an institutional approach, to protect against persistent consumer harms and exploitation of a dominant platform's ecosystem, interrogation of algorithmic allocations and systems is essential. Just as a monopolist can subvert the competitive functioning of the price mechanism through the exercise of market power, so too can a dominant platform subvert the optimal, competitive, allocations that its algorithms have access to (by way of the information content of its ecosystem) in order to increase its dominance and profits.

A. The Chicago School on rationality and institutions

The Chicago School emphasis on the efficiency of "free," unregulated, markets heralded a shift away from *economic structuralism* – the idea that more concentrated markets are likely to be less competitive.[49] That markets, when left to their own devices, would allocate resources efficiently relied on the notion of rational actors. Influential Chicago School legal scholar Robert Bork[50] used Milton Friedman's famous argument that outcomes only had to accord with rational behaviour, not their actual thought processes, to justify the assumption of rationality.

Economic institutionalism,[51] the notion that institutions arise within the market to coordinate behaviour and allocate resources, had to be co-opted

48. Ben Thompson's "aggregation theory" makes a distinction between what he calls aggregators, which collect and manage information and access to a marketplace, with true platforms, which provide capabilities that provide a foundation that third parties can build on. For example, Apple's iPhone App Store is an aggregator, while its iOS operating system is a platform. Amazon's e-commerce marketplace is an aggregator, but Amazon Web Services is a platform. Fulfilment by Amazon, Amazon's suite of services for third-party merchants can also be considered a platform, but the Marketplace itself is an aggregator. Google Maps is a platform, while Google search is an aggregator. While this is an exceedingly useful distinction, the term "platform" is so widely used in the literature that we have adopted it here. *See* Ben Thompson, *A Framework for Regulating Competition on the Internet*, STRATECHERY, (2019), https://stratechery.com/2019/a-framework-for-regulating-competition-on-the-internet/.

49. Lina Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, 9(3) J. OF EUR. COMPETITION L. AND PRAC. 131, 131-132 (2018).

50. Robert H. Bork, *The Antitrust Paradox: A Policy at War with* Itself, 13(2) VALPARAISO U. L. REV. 403, 407, 413, 421 (1979).

51. *See* John R. Commons, *Institutional Economics*, 21 THE AM. ECON. REV. 648, 648-657 (Dec. 1931). *See* THORSTEIN VEBLEN, THE THEORY OF THE LEISURE CLASS: AN ECONOMIC STUDY OF INSTITUTIONS 87-97 (1899). ("The institutions are, in substance, prevalent habits of thought with respect to particular relations and particular functions of the individual and of the

and incorporated within the Chicago School's optimizing, price-theoretic, framework for it to maintain this *laissez-faire* position.[52] Otherwise, institutions could shape behaviour, including in irrational ways. But the rational optimizing consumer would become a central plank to the antitrust argument that platform power is ephemeral, since optimization ultimately implies that consumers have the ability to overcome any informational issues in the market, while actual market institutions and mechanisms have little bearing on decision-making.[53]

For Bork, the implications of rational behaviour begins with the firm. Rational firm behaviour created optimal welfare outcomes for consumers.[54] Anti-competitive behaviour by a monopolist was simply irrational and the "irrational [. . .] is unlikely actually to occur."[55] If a profit-maximizing monopolist did engage in irrational behavior – such as predatory pricing, leveraging, or foreclosure – then it must be efficient by definition.

The rationality assumption underpins the Chicago view of advertising – an injection of information into a market – as being pro-competitive. In the Chicago framework, a rational user with fixed and ordered preferences, but facing a shortage of information, always benefits from more information,[56] since it advances rational choice. Richard Posner summarizes this view, and contrasts it with the opposite Harvard view of the time:[57]

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community; and the scheme of life, which is made up of the aggregate of institutions in force at a given time or at a given point in the development of any society.").

52. Armen A. Alchian & Harold Demsetz, *Production, Information Costs, and Economic Organization*, 62(5) THE AM. ECON. REV., 777, 777, 782 (1972); Douglass North, *The new institutional economics*. Journal of Institutional and Theoretical Economics (jite)/Zeitschrift für die gesamte Staatswissenschaft 142.1 230-237 (1986). Rudolf Richter*, The New Institutional Economics: Its Start, Its Meaning, Its Prospects*, 6 EUR. BUS. ORG. L. REV. 161, 161–200 (2005).

53. Diane Bartz, *Google gives a glimpse of its defense in once-in-a-generation antitrust trial*, REUTERS (Sept. 14, 2023), https://www.reuters.com/legal/us-alleges-google-got-rich-because-people-stick-with-search-defaults-2023-09-14/.

54. *See* Bork, *supra* note 50 at 117. ("There is no body of knowledge other than conventional price theory that can serve as a guide to the effects of business behavior upon consumer welfare."). ("There is no body of knowledge other than conventional price theory that can serve as a guide to the effects of business behavior upon consumer welfare.").

55. *See* Jonathan B. Baker, *Predatory Pricing After Brooke Group: An Economic Perspective*, 62 ANTITRUST L. J., 585, 586 (1994). On vertical integration *see also* Khan, *supra* note 11 at 727; Posner, supra note 130. On predatory pricing *see* John S. McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 THE J. OF L. AND ECON. 137, 169 (1958). For a commentary, *see* Basil S. Yamey, *Predatory Price Cutting: Notes and Comments,* 15(1) J. OF L. AND ECON.129, 142 (1972). *See also* Oliver E. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87(2) YALE L.J. 284, 286 (1977).

56. THE LIMITS OF RATIONALITY (Cook, K. S., and Levi, M. eds., Univ. of Chi. Press, 2008).

57. Phillip Nelson, *Advertising as information*, 82(4) J. OF POL. ECON., JSTOR 729, 730 (1974) ("If the advertised properties of the product differ from the actual properties, the consumer will know about that difference prior to purchase in the case of search qualities." Also noting that incumbents would also have to pay for advertising costs, and so did not meet the definition of a "barrier to entry").

> "The underlying assumption [of the Harvard view of advertising] is that consumers are irrational and manipulable, and the Chicago theorist rejects this assumption as inconsistent with the premises of price theory. The rational consumer will pay for advertising (in the form of a higher price for the advertised brand) only to the extent that advertising reduces his costs of search."[58]

The rationality premise in the Chicago School implies that users operate largely independently of a platform's market institutions and mechanisms. Under rationality, online defaults, switching and search costs, and low quality algorithmic results and recommendations, are all relatively harmless and easily overcome informational conditions. Within this tradition, Herbert Hovenkamp argues that online, user behaviour more closely approximates optimization. Online, more information is better since it is easily processed by the user, user behaviour is not sticky, and users are not reliant on institutional forms for processing information and allocating attention:[59]

> "Reduced information costs [online] also make it easier for businesses to provide and customers to seek out alternatives [. . .] Searching and switching are both easier and broader in online markets than on conventional markets. Customers can travel from one site to another with a mouse click. As a result, depending on a consumer's location, the variety of sellers that are available online can be much greater than the variety that the brick-and-mortar world realistically permits. **Price and product comparison can often be accomplished at little cost and almost instantly**. [. . .] **Monopoly is not realistically possible if buyers can costly**[60] [lessly] **and quickly substitute to a different product**. Switching costs are specific to the product [. . .] the fact that someone purchased dish detergent last month from a large online seller very likely has little or no bearing on where he will purchase it today."

The rationality hypothesis would be modified under New Institutional Economics (NIE), but the results would remain largely the same. In this framework, institutions minimize *transaction costs*, defined as the "resource losses due to a lack of information."[61] Transaction costs fundamentally reflect deficits of information – though not too much information, or an inability to process information, as with Herbert Simon. Notes Hovenkamp,

58. Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 930 (1978) ("advertising" is mentioned 33 times in this 25 page discussion of the Chicago School of Antitrust).

59. Herbert Hovenkamp, *Gatekeeper Competition Policy*, MICH. TECH. L. REV. 1, 8 (2023).

60. The author intends "costlessly" it seems.

61. Carl J. Dahlman, *The Problem of Externality*, 22(1) J. OF L. AND ECON. 141, 148 (1979) (A "first approximation to a workable concept of transaction costs: search information costs, bargaining and decision costs, policing and enforcement costs. [. . .] this functional taxonomy […] reduce to [. . .] **resource losses due to lack of information**.")

monopoly was just as *rarely* seen as harmful in this approach since "transaction costs and other resource movement costs provide benign explanations for many practices that the [Harvard] hostility tradition condemned, [although] they can occasionally have the opposite effect."[62]

Bounded rationality was introduced by Oliver E. Williamson – a student of Herbert Simon – into NIE, to explain the need to contract,[63] after which rational maximizing behaviour could take over.[64] Institutions may arise to support contracts, which "economize on bounded rationality"[65] and limit opportunism by firms. Consideration of institutions within law followed this narrow focus on the boundaries and behaviour of the firm, driven not by production costs – reflecting productive efficiencies and profit margins – but coordination costs. The firm was reduced to a transacting entity.[66] More traditional conceptions of institutions, such as a collective shaping individual behaviour, were downplayed. (In practice, the Chicago School and NIE often existed apart,[67] with the Chicago School sticking to a "stricter neoclassical approach."[68])

Still, the bounded rationality assumption in New Institutional Economics arguably helped to introduce greater realism into market structure, which now had to consider informational and contractual issues. But this expanded theorizing tended to come down in support of Stigler and existing Chicago theory. For example, in price discrimination by a monopolist, traditional theory assumes that the monopolist knows the preferences (willingness to pay) of each customer even though this information may not be readily available. Acquiring this information involved "transaction costs,"[69] potentially limiting its use in practice. Another important application concerned vertical integration. For the Harvard structuralist tradition, technological or physical complementarity would incentivize vertical integration.[70] For George

62. Herbert Hovenkamp, *Harvard, Chicago, and Transaction Cost Economics in Antitrust* Analysis, 57(3) THE ANTITRUST BULL. 613, 625 (2010).

63. Oliver E. Williamson, *Transaction Cost Economics: The Natural* Progression, 100(3) THE AM. ECON. REV. 673, 675, 677, 678 (2009) (noting his work in which he "described cognition in terms of bounded rationality, on which account all complex contracts are incomplete"); s*ee* OLIVER E. WILLIAMSON, MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS (2019).

64. Oliver E. Williamson, *Transaction Cost Economics: How it works; where it is headed,* 146 DE ECONOMIST 23, 30-31 (1989).

65. Williamson, *supra* note 63 at 10.

66. North, *supra* note 51; Hovenkamp, *supra* note 62.

67. Hovenkamp, *supra* note 62.

68. *Id*. at 659.

69. Williamson, *supra* note 63 at 11-13.

70. Oliver E. Williamson, *The Vertical Integration of Production: Market failure considerations*, 61(2) AM. ECON. REV. 112 (1971).

Stigler, setup costs made vertical integration unlikely.[71] But for Williamson and NIE, all "phenomena [had to] be reformulated in contracting terms."[72] Under this paradigm, failure of a dominant firm to "administratively coordinate" between firms would lead to greater use of the market,[73] thereby limiting vertical integration.[74] Contracting took precedence over technology, since the firm was portrayed ultimately as a coordinator not a producer.[75]

New Institutional Economics would come to define the "new center" in antitrust law,[76] significantly shaping the dominant Areeda and Hovenkamp textbook. In fact "certain positions that we instinctively associate with the Chicago school [. . .] are in fact a form of transaction cost analysis."[77] Yet its narrow approach to institutions, with the "transaction" as the basic unit of analysis, meant that it ignored, or was unable to specify, the impact of transaction costs online, which are near zero.[78]

B. Advertising and Information in the Chicago School

George Stigler introduced advertising into Neoclassical economics and antitrust through a partial relaxation of the perfect information postulate, on which models of perfect competition rely.[79] For Stigler, the assumption of consumer optimization, grounded in perfect rationality, meant that "even a lack of market information is rationally and deliberately chosen"[80] by the consumer. Consequently, the "standard results of economics"[81] remain and no government intervention is needed to improve welfare outcomes under imperfect information.[82]

Consumers' internal "search" algorithm takes centre stage in acquiring missing information about price and sellers. Search is not costless though,

71. Williamson, *supra* note 63 at 18.

72. Williamson, *supra* note 63 at 461.

73. Williamson *supra* note 70.

74. Williamson, *supra* note 63 at 18.

75. Williamson *supra* note 70 at 112; Williamson *supra* note 63.

76. Hovenkamp, *supra* note 62.

77. *Id*. at 622.

78. *See also* Yussef H. Akbar & Andrea Tracogna, *The digital economy and the growth dynamics of sharing platforms: A transaction cost economics assessment*, 1(3) J. OF DIGIT. ECON. 209 (2022).

79. If the world is perfectly knowable – instantly and costlessly – then advertising is unnecessary, since advertising changes the information a consumer is exposed to.

80. George J. Stigler, *Press Release*, THE NOBEL PRIZE (Oct. 20, 1982), https://www.nobelprize.org/prizes/economic-sciences/1982/press-release/.

81. Joseph Stiglitz, *Information and the Change in the Paradigm in Economics*, 48(1) THE AM. ECON. REV. 460, 477 (2001) (stating that "the standard results of economics would still hold. Information was just a transaction cost").

82. Stigler, *supra* note 80.

since it involves *time* for Stigler[83] – a recurring theme in this literature.[84] For the Chicago School and Stigler, advertising enters as a means to save the consumer (search) costs by effectively introducing more information into the market, now paid for by firms. Advertising hastens information discovery.[85] However, more expensive sellers will advertise more if there is less search in the model, proposed Stigler.[86]

In Stigler's view, imperfect information does not prevent perfectly competitive market outcomes from arising, ultimately because consumers' internal search algorithm remains perfectly rational. They can find the information needed, as the marginal costs and benefits to search are known by the consumer in advance.[87] In addition, consumers know what they don't know, such that even if a monopolist did arise, it could never exploit this lack of knowledge.[88] In such a framework, rents are small: rational consumer search behavior largely ensures prices and profits are the same in competing marketplaces ("dealers"), which in turn minimizes their opportunities for extracting rent from any uninformed consumers.[89]

Stigler admitted that[90] information imperfections could create opportunities for some firms to extract rents from consumers *if the informational environment was too complex and dynamic*. This was not just because consumer search involves costs (even for optimizers), but ultimately because in highly dynamic markets "knowledge becomes obsolete"[91] quickly leading to price dispersion, and in turn the ability to rip-off consumers. If the market is "wholly new", such that the consumer has "no idea of the dispersion of prices and hence no idea of the rational amount of search he should make,"[92] rents can arise. In particular, when "both dollars and number of traders" grows, and when many new buyers and sellers constantly enter and exit the market,

83. George Stigler, *The Economics of Information*, 69(3) J. OF POL. ECON. 213, 216 (1961) (noting "the chief cost is time").

84. Phillip Nelson, *Information and Consumer Behavior*, 78(2) J. OF POL. ECON. 311, 312 ("A consumer trying on a dress [to assess quality] differ from a consumer determining the price of a dress only because the time required to try on a dress is longer.").

85. Stigler, *supra* note 83 at 224 ("The effect of advertising prices, then, is equivalent to that of the introduction of a very large amount of search by a large portion of the potential buyers"); *See also* Stigler, *supra* note 83 at 220 (for advertising identifying sellers).

86. *Id*. at 223 (the model's conclusion is oddly that with more firms there should be less advertising – which is quite the opposite of what we see in online digital markets).

87. More precisely, all probability distributions from which search costs and returns (benefits) are known in advance to the consumer.

88. *Id*. ("the monopolist will not (cannot) exploit ignorance as he exploits desire").

89. *Compare with* Peter A. Diamond, *A Model of Price Adjustment*, 3(2) J. OF ECON. THEORY 156, 167 (1971) (where profits achieved are "very similar to that of monopolistic competition").

90. Stigler, *supra* note 83 at 223.

91. *Id*. at 220.

92. *Id*. at 219.

consumer ignorance grows.[93] In making this argument, Stigler foreshadows the informational context of online markets, in which consumer search may be overwhelmed by new information.

Following Stigler, two influential studies by his student Phillip Nelson[94] emphasized the characteristics of products – rather than the informational conditions of markets as such – in shaping advertising's impact on market structure and consumer search costs.[95] This would spawn a voluminous literature on how product characteristics shape search and inspection cost.[96] Nelson focused on information availability about product *quality* (i.e., utility to the user), rather than price. He distinguished between two types of goods: those that could be inspected in advance of purchase (so called "search goods"), which were the majority, such as clothing. Other goods, such as restaurants, can only be evaluated after experiencing them and so he called them "experience goods." As a result, "the consumer has quite incomplete information" on them[97] until purchased.

For Nelson, several factors limited user search to acquire product information. If the cost of experience is close to zero, then the amount of search consumers engage in to find the best deal might be negligible, even if search costs are low.[98] This is relevant for today's free returns and free monthly trials offered by platforms, which encourage minimal user search online. Similarly, if the price of a good was low enough (another key factor in the cost of experience), then Nelson notes "even moderately expensive search procedures would be ruled out."[99] Amazon structures its experience costs ("the upper limit on search" for Nelson)[100] to be as close to zero as possible, which likely limits user search behaviour in Nelson's view.

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93. *Id*. at 220.

94. Phillip Nelson, *Advertising as Information*, 82(4) J. OF POL. ECON. 729, 730 (1974) (while Stigler was at Columbia University); *see* Phillip Nelson, *Information and Consumer Behavior*, 78(2) J. OF POL. ECON. 311, 312 (1970); *see* Phillip Nelson, *Migration, Real Income and Information 1*, 1(2) J. OF REG'L SCI., 43, 43-74 (1959).

95. Nelson, *supra* note 84 at 312 ("We define search somewhat more narrowly than Stigler's use of the same concept (Stigler 1961, 1962). We assume that consumers already know where they can obtain each of the options open to them. Their information problem is to evaluate the utility of each option.").

96. Ariel Ezrachi & Maurice E. Stucke, *The Curious Case of Competition and Quality*, 3(2) J. OF ANTITRUST ENF'T, 227 (2015); Ariel Ezrachi & Maurice E. Stucke, *When competition fails to optimize quality: A look at search engines*, 18 YALE J. L. & TECH. 70 (2016).

97. Nelson, *supra* note 94.

98. *Id*. at 317 ("For any good, the consumer has a choice between searching or experimenting to obtain information about the good's qualities").

99. Nelson, *supra* note 94 at 312.

100. *Id*. at 317 ("The cost of experimenting sets an upper limit to the cost of search that a person is willing to undergo.").

In Nelson, advertising can reduce costly inspection of "search goods."[101] But for experience goods, advertising can only provide imperfect information,[102] playing more of a signalling role to the consumer. Perhaps most importantly for our argument, Nelson alludes to the fact that if users do not have perfectly formed preferences on every good, then advertising may not help in decision-making: "He [the user] would like to be able to rank stomach remedies [or any other experience product] by their utility to him. Advertising provides no direct information that will help him do that job."[103] A person-specific utility ranking mechanism for all "products" would only come later, with the rise of Google's "10 blue links," cost-per-click advertising, and Amazon's search and product recommendation algorithms.

C. Imperfect information and search costs bite back

Working within an imperfect information paradigm, a wave of models from Joseph Stiglitz,[104] Steve Salop, and others sought to undermine many of the Chicago School's conclusions by showing that "the presence of imperfect information gives firms market power,"[105] at least in the short-run. Noted Salop in summary in 1976: "if information is costly [for consumers], each small firm obtains market power, and the equilibrium (if one exists) is characterized by prices above competitive levels and sometimes price dispersion as well. The relevant market structure with imperfect information is not perfect competition but rather monopolistic competition [and monopolistically competitive prices]."[106] Such markets are inefficient.[107] Advertising[108] within these models has complex and unclear impacts, especially under product heterogeneity.[109]

A key conclusion of these models is that more competition may not improve consumer welfare, and in fact could make things worse, since: "with

101. Nelson, *supra* note 94 at 312. ("even when experience [buying the good] is expensive. Search can be even more expensive. In purchasing most appliances, consumers are confronted with this problem. Determining by inspection the time stream of services from alternative brands of an appliance is an exceedingly difficult job.").

102. Nelson, *supra* note 94.

103. Nelson, *supra* note 94 at 731.

104. Joseph E. Stiglitz, *Equilibrium in Product Markets with Imperfect Information*, 69(2) THE AM. ECON. REV. 339 (1979).

105. Steve Salop, *Information and Monopolistic competition*, 66(2) THE AM. ECON. REV. 240 (1976).

106. *Id*. at 240; *see also* Diamond, *supra* note 89.

107. Stiglitz, *supra* note 81 at 505 ("since asymmetries of information give rise to market power, and perfect competition is required if markets are to be efficient, it is perhaps not surprising that markets with information asymmetries and other information imperfections are far from efficient.").

108. *Id*. (advertising is not mentioned once in Stiglitz's 69 page 2001 Nobel prize lecture).

109. Stiglitz, *supra* note 104.

costly search, competition may take the form of attempting to find better ways of exploiting the small but finite degree of monopoly power associated with costly search and information."[110] In particular, more competition could be counterproductive if it meant more goods for consumers to search between.[111]

A second wave of these papers explored how "markets [endogenously] create information problems, partly in an attempt to exploit market power."[112] Firms could exploit their existing market power through differentiating[113] between consumers with different search costs.[114] In fact, any uncertainty from the consumer with regard to either the overall price or quality of a product could create market power exploitable by the seller of that product.[115]

The impact of these models on antitrust's conception of market power was at its zenith with the 1992 Supreme Court decision in Eastman Kodak v. Image Technical Services, citing several of the above papers.[116] The decision of the court, however, had little subsequent impact on the importance of informational power to market outcomes.[117] We return to *Eastman Kodak* later when discussing platform market power.

By relying so much on high search and information costs for their conclusions, imperfect information models tended to ignore the importance of consumer rationality and the informational context within which decisions were made. If consumers are not fully rational, for example, they could be harmed by an abundance of products even amidst low search costs. [118]

110. Steven Salop & Jospeh E. Stiglitz, *The Theory of Sales: A simple model of equilibrium price dispersion with identical agents*, 72(5) THE AM. ECON. REV. 1121, 1129 (1982).

111. Salop, *supra* note 105 at 244.

112. Stiglitz, *supra* note 81.

113. Salop, *supra* note 105 at 244 ("When consumers differ in their valuations as well, monopolistic competition will generate price discrimination against consumers . . . the high cost consumers will search less and hence pay higher effective prices on average. If these customers have more inelastic demand, then price dispersion acts as a price discriminating tie-in of search (a 'bad').").

114. For models, *see* Salop, *supra* note 105; *see also Stiglitiz*, *supra* note 80; Steven Salop, *The Noisy Monopolist Imperfect Information, Price Dispersion and Price Discrimination*, 44 REV. ECON. STUD. 393, 403 (1977) (illustrating a monopolist discriminating between consumers with different efficiencies in search).

115. Salop, *supra* note 105.

116. *See* Howard Beales, Richard Craswell, and Steve Salop, *The Efficient Regulation of Consumer Information*, 24 J. OF L. AND ECON. 491 (1981); *see also* Steve Salop & Joseph Stiglitz, *Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion*, 44 REV. ECON. STUD. 493 (1977); Salop, *supra* note 104; Stigler, *supra* note 42.

117. HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION (Harvard Univ. Press 2008).

118. Yi-Cheng Zhang, *Supply and Demand Law under Limited Information*, 350 PHYSICA A: STATISTICAL MECHANICS AND ITS APPLICATIONS 500 (2005).

Without interrogating the validity of these assumptions, an understanding of why institutions arise to shape decision-making is difficult to construct.[119]

III. AN INSTITUTIONAL APPROACH TO PLATFORM MARKET POWER

> "The response that goes to make up human conduct takes place under institutional norms and only under stimuli that have an institutional bearing; for the situation that provokes and inhibits action in any given case is itself in great part of institutional cultural derivation."
>
> – Thorstein Veblen, Founder Of American Institutionalism, 1909[120]

> "Social patterns are not the logical consequents of individual acts; individuals, and all their actions, are the logical consequents of social patterns."
>
> – Clarence Ayres, 1951[121]

By assuming rationality of users, and thereby ignoring the institutional arrangements that have arisen to help imperfect users make decisions online, antitrust orthodoxy is able to state that information quality on a platform – its quantity, complexity, relative presentation, and availability – cannot harm users and extract rents from its firms, since competition from optimizing consumers is just a click away. In reality, dominant platforms can use the informational environment to extract rents and misallocate resources through their algorithms and related mechanisms. As we explore later, contemporary antitrust theory[122] does recognize that degraded information quality can harm consumers through increasing search costs and making it difficult for consumers to determine their willingness to pay, which in turn can lead to significant allocative inefficiencies. However, for platforms, information

119. HERBERT SIMON, ADMINISTRATIVE BEHAVIOR 20 (The Free Press 4th ed.) ("[Neoclassical optimization] does not ask how the actors acquire the information required for these decisions, how they make the necessary calculations, or even, and this is the crux of the matter — whether they are capable of making the kinds of decisions postulated by utility-maximizing or profit-maximizing theory.") (1997).

120. Thorstein Veblen, *The Limitations of Marginal Utility*, 17 J. POL. ECON. 629. *See also* Fine et. al, *supra* note 45 at 161 (citing Veblen here).

121. Clarence Ayres, *The Coordinates of Institutionalism*, 41 THE AM. ECON. REV. 47, 49 (1951); *see also* Fine et. al, *supra* note 45 at 161 (citing Veblen here).

122. PHILLIP AREEDA AND HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶2023 (Online ed., Wolters Kluwer 1978) (2024).

quality comes out "the barrel of an algorithm,"[123] implying a greater need for regulators to interrogate these institutions when considering if market power is being used to degrade quality unfairly or excessively.

It is ironic, perhaps, that Robert Bork's[124] initial rationale for the consumer welfare standard,[125] a cornerstone of modern antitrust, inadvertently highlights the importance of scrutinizing institutions – especially the way platforms use algorithms to direct user attention to various information outputs. Bork's belief in market efficiency was motivated not by the "concomitants" of low prices and high output *per se*, but by resources ultimately being allocated efficiently (such that "social costs and social desires"[126] were aligned).[127] Such inefficiency is inherent to the benchmark model of monopoly which, through its deadweight loss of reduced production, forces "inferior choices"[128] on some consumers who must substitute the unavailable output with less preferred alternatives – thereby increasing economy-wide misallocation.[129] Similarly, when consumer attention gets misallocated online to an inferior quality informational output (e.g., a website, Amazon merchant, Spotify song, YouTube video, etc.),[130] the ultimate impact is for the platform to send an incorrect market signal, such that a business that

123. Cory Doctorow, *Big Tech's "attention rents" Enshittification comes out of the barrel of an algorithm,* MEDIUM (Nov. 3, 2023), https://doctorow.medium.com/big-techs-attention-rents-fe97ba3fad90.

124. Bork, *supra* note 50 at 100-101 ("The evil of monopoly, then, is not higher prices or smaller production (though these are its concomitants) but misallocated resources, or allocation inefficiency.")

125. Bork's "consumer welfare standard" was really a "total welfare standard" since it included producer profits. Areeda et. al, *supra* note 122 at 651b1 (discussing "[o]utput-driven tests; "total welfare," "consumer welfare," and the welfare "tradeoff.").

126. Bork, *supra* note 50 at 101.

127. *Id*. at 91 ("The whole task of antitrust can be summed up as the effort to improve allocative efficiency without impairing productive efficiency so greatly as to produce either no gain or a net loss in consumer welfare."). Drawing on Frank Knight, Bork defines allocative efficiency as resources going to output which users value the most, and productive efficiency refers to the effective use of resources within firms.

128. In the standard illustration of monopoly, the monopoly "deadweight" loss consists of unmade sales and harms consumers by forcing inferior choices. Because the deadweight loss triangle is a loss to consumers too, aggregate consumer losses exceed the monopolist's gains. Areeda et. al, *supra* note 122 at 403.

129. AREEDA, P. E., KAPLOW, L., EDLIN, A. S., AND HEMPHILL, C. S., ANTITRUST ANALYSIS: PROBLEMS, TEXT, AND CASES 11 (Wolters Kluwer 7. ed, 2013). ("Instead [consumers] spend their funds elsewhere, and thus induce increased production of other commodities – commodities that such consumers would not want under competitive pricing conditions. Imperfect competition thus diverts productive energies to less-valued undertakings, preventing the economy from efficiently catering to consumer tastes.").

130. Perhaps, most productively viewed through models of product differentiation ("monopolistic competition"). For brief discussion, *see* Timothy B. Leary, *The Significance of Variety in Antitrust Analysis*, FED. TRADE COMM'N (May 18, 2000) https://www.ftc.gov/news-events/news/speeches/significance-variety-antitrust-analysis.

consumers favour less is instead encouraged to produce more. Allocative efficiency is impaired.

A. Institutions arise in response to an informational environment and behavioural context

American Institutional economics, which rose to prominence in the 1920s and continued to have outsized influence until being displaced by the Chicago School, argued that user behaviour and economic activity rests on institutions.[131] Institutions[132] allocate resources and power.[133] Market institutions and their mechanisms underpin coordination, allocation, and production.[134] (This contrasts with transactional behaviour explaining the formation of institutions, as in New Institutional Economics.) For Thorstein Veblen, institutions are also an important part of social control –a recurring theme in the Surveillance Capitalism approach of Zuboff.[135] Our institutional approach draws on Herbert Simon.

Simon differs from behavioural economists and psychologists by studying decision-making within an informational context, which he argued would become characterized chiefly by an explosion of information.[136] Simon's paradigm is explicitly an informational one: humans are highly imperfect and constrained *information processors*. Decision-making responds to informational challenges through heuristics – informational shortcuts and strategies[137] designed to conserve cognitive resources and time by satisficing.[138] Institutions and organizations are means of helping humans with information processing and in turn decision-making. For Simon, the limits of human cognition and the need for institutions become activated[139] in

131. Fine et. al, *supra* note 45 at 160.

132. *See* Hovenkamp, supra note 46 at 522, 528; *see also* Veblen, *supra* note 51 (commenting on institutions).

133. Hovenkamp, *supra* note 46 at 501 ("This first generation of institutionalists emphasized the importance of human-created institutions that serve to allocate power or resources, the rules that these institutions develop and employ, and their effect in the overall economy.").

134. *Id.* at 524 (Emphasizing allocation [in line with Coasian approaches]: "One characteristic of institutionalism, both new and old, is that by broadening the reach of economic analysis beyond traditional markets, it is able to capture a more complete set of the mechanisms by which resources are moved from one place to another.").

135. SHOSHANA ZUBOFF, *SURVEILLANCE CAPITALISM* (1st ed., PublicAffairs 2019).

136. Simon, *supra* note 119 ("information and its speed of diffusion constantly increase"). *See also* ERNESTO SCREPANTI AND STEFANO ZAMAGNI, AN OUTLINE OF THE HISTORY OF ECONOMIC THOUGHT 419 (OUP Oxford 2005) (citing Simon here).

137. Esther-Mirjam Sent, *Bounded Rationality*, *in* Durlauf et. al, *supra* note 37.

138. Sen Amartya, *Rational Behaviour, in* Durlauf et. al, *supra* note 37 (arguing that satisficing is "a target level of achievement". But can be interpreted as optimizing- see also citations of relevant contemporary literature here.).

139. Simon, *supra* note 27 at 12.

complex informational environments, when information is overwhelmingly abundant.

In focusing on cognition and information abundance, Simon marks a significant departure from the models we have explored above. Common to these models – from Stigler to Stiglitz – is that "information is relatively scarce"[140] and so "information costs"[141] such as "search costs" arise as consumers try to increase their rationality. But for Simon, even when information is easily obtained (a click or scroll away), such that search costs are low, information can harm since the processing of the information is highly constrained and costly. More information can create distractions and time costs, thereby impeding effective decision-making.[142]

This is an appropriate framework for the informationally abundant environment platform aggregators manage online. Platforms, as aggregators,[143] help algorithmically curate an overwhelmingly vast supply of information from their ecosystem of third-party firms. For Amazon, this is an ecosystem of merchants selling millions of competing products which the user must try to decide between. The platform must first build up a sufficient stock of suppliers to attract users. The process of aggregating and pooling suppliers reduces the power of these now commoditized sellers and makes them dependent on the fairness of the algorithmic rankings provided by the platform.

For Simon, information abundance impacts decision-making by generating attention scarcity. This makes the allocation of a consumer or worker's attention a major determinant of choice,[144] since "The limit is not information but our capacity to attend to it."[145] Platforms arise to fill this need by managing user attention algorithmically. They provide the trusted[146] "stimuli and attention-directors"[147] that help shape individual behaviour.[148]

Simon's link between information abundance and attention scarcity is consistent with the system 1 (heuristic – quick and approximate) and system

140. *Id.* at 13

141. Cook et. al, *supra* note 55 at 5.

142. Herbert A. Simon, *Reason in Human Affairs* 21 (1st ed., Stanford Univ. Press 1990).

143. Ben Thompson, *Economic Power in the Age of Abundance*, STRATECHERY (2014), https://stratechery.com/2014/economic-power-age-abundance/; Ben Thompson, *Commoditizing Suppliers*, STRATECHERY, https://stratechery.com/concept/%20aggregation-theory/commoditizing-suppliers/.

144. Herbert A. Simon, *Designing organizations for an information-rich world,* COMPUTERS, COMMUNICATIONS, AND THE PUBLIC INTEREST 37, 72 (1971).

145. Simon, *supra* note 119 (containing comments by Herbert Simon at the end of Chapter 8).

146. Maeve O'Brien, and Mark T. Keane, *Modeling result-list searching in the World Wide Web: The role of relevance topologies and trust bias*, 28 PROCEEDINGS OF THE 28TH ANNUAL CONFERENCE OF THE COGNITIVE SCIENCE SOCIETY 1881-1886 (2006); Keane et. al, *Are People Biased in their Use of Search Engines?*, 51(2) COMMUNICATIONS OF THE ACM 49-42 (2008).

147. Simon, *supra* note 119.

148. *Id.*

2 (slow and deliberate) thinking of Daniel Kahneman and Amos Tversky.[149] Control of attention is shared between these two systems.[150] But it is system 2 that is required for a user to decide between competing search results: "System 2 is the only one that can follow rules, compare objects on several attributes, and make deliberate choices between options." Otherwise users are at the mercy of the platform's algorithmic ranking and recommendations.

Platforms do their best to construct a frictionless and familiar decision-making interface to the highly complex informational environment. This deactivates users' deliberate system 2 thinking and engages their heuristic system 1 thinking. Things like Amazon Choice badges and a product's relative screen position – its search rank[151] – are the key mechanisms by which algorithmic results are evaluated by the user. Such a highly constructed decision-making environment is something that an in-person market could never emulate. The results are striking. Customers complete 28% of Amazon purchases in three minutes or less.[152] Like in a speeding car, every bump in the road is amplified. And so all frictions to a user's deliberate choice are removed from the platform in order to reinforce heuristic, algorithmically driven decision-making.

Users are shown only what the platform's algorithms choose to show them in a smartphone screenful or two, but still designed to foster an "illusion of completeness."[153] Decision-making at the margins can be highly influenced by how results are presented to the user. This has seen competition and consumer regulators shift focus to a platform's "choice architecture."[154]

149. DANIEL KAHNEMAN. *THINKING, FAST AND SLOW* (1st ed., Macmillan 2011); Tversky et. al, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCI. 1124–1131 (1974); Tversky et. al, *The Framing of Decisions and the Psychology of Choice*, 211 SCI. 453 (1981).

150. Kahneman, supra note 150 ("Orienting to a loud sound is normally an involuntary operation of System 1 [fast and intuitive], which immediately mobilizes the voluntary attention of System 2 [deliberate and slow]. You may be able to resist turning toward the source of a loud and offensive comment at a crowded party, but even if your head does not move, your attention is initially directed to it, at least for a while. However, attention can be moved away from an unwanted focus, primarily by focusing intently on another target. **The highly diverse operations of System 2 have one feature in common: they require attention and are disrupted when attention is drawn away**.") (emphasis added).

151. Udo Kannengiesser and John S. Gero, *Fast and Slow: A framework for Kahneman's dual-system theory in design*. 5 DESIGN SCI. 1 (2019); Rock, *supra* note 22.

152. Daisy Quaker, *Amazon selling stats*, AMAZON (Oct. 10, 2023), https://sell.amazon.com/blog/amazon-stats.

153. Kim Salazar, *The Illusion of Completeness: What It Is and How to Avoid It,* NIELSON NORMAN GROUP (2016), https://www.nngroup.com/articles/illusion-of-completeness/.

154. Stefan Hunt, *The Technology-Led Transformation of Competition and Consumer Agencies: The Competition and Markets Authority's experience* 1, 30 (unpublished discussion paper) (2022), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085931/The_technology_led_transformation_of_competition_and_consumer_agencies.pdf. *See also* Furman et al., *Unlocking digital competition: Report of the Digital*

In 2022 Google ran over 800,000 experiments in its Search product.[155] However, the pure psychologism[156] of a platform's A/B experiments – mirrored in the largely correct insights of behavioural economics[157] – tends to be devoid of institutional understanding, and so may fail to foresee long-run impacts[158] or shifts in user behaviour as the informational context evolves.

B. Algorithms shape efficient market allocations

"Antitrust is about the effects of business behaviour on consumers,"[159] wrote Bork in *The Antitrust Paradox*. If this is the case, then the primary structure online shaping the behaviour of millions of businesses (such as merchants on Amazon) and determining consumer welfare is the platform's algorithms and associated visual screen mechanisms. This stands in sharp contrast to the atomistic benchmark competition model used by the Chicago School, which assumes that consumer welfare benefits will not be tied to an online marketplace's institutions. They are instead felt directly as millions of individual firms' optimize, connected only through the decentralized price mechanism and the independent preferences of consumers.[160]

In online platforms, algorithms are the key market *institution* shaping market behaviour and facilitating exchange. Algorithms are generally not considered institutions, like a school, government, or legal system, but instead a set of rules for solving problems. Online this involves using software to translate outputs from a set of data inputs on the basis of these rules.[161] When embedded within a platform's online multi-sided market to facilitate exchange (between or within sides), algorithmic rules and processes become

Competition Expert Panel. ("the Furman Report") (2019); Stigler Center, Committee for the Study of Digital Platforms: Market Structure and Antitrust Subcommittee Report (2019).

155. *Improving Search with Rigorous Testing*, GOOGLE, https://www.google.com/search/howsearchworks/how-search-works/rigorous-testing/ (last visited Mar. 21, 2024).

156. Margaret Rutherford, *Thorstein Veblen and the Processes of Institutional Change*. 16(3) HIST. OF POL. ECON. 331 (1984).

157. Oliver E. Williamson, *The Theory of the Firm as Governance Structure: from choice to contract*. 16 J. OF ECON. PERSP. 171 (arguing that it also has its origins in Simon's institutional economics- "The recent and growing interest in behavioral economics—which deals more with the theory of consumer behavior than with the theory of the firm—can be interpreted as a delayed response to the lessons of the 'Carnegie school' associated with Cyert, March and Simon.").

158. Analytics Team at Meta, *Estimating the long-run value we give to our users through experiment meta-analysis*, MEDIUM (Feb, 16, 2022), https://medium.com/meta-analytics/estimating-the-long-run-value-we-give-to-our-users-through-experiment-meta-analysis-6ddb9073b29b.

159. Bork, *supra* note 50. Although Bork makes the price mechanism central, he adopts an explicitly evolutionary approach to how markets and competition occurs. He also notes the importance of quality and non-price factors.

160. Hovenkamp, *supra* note 46 at 518.

161. DAVID G. ROBINSON, VOICES IN THE CODE: A STORY ABOUT PEOPLE, THEIR VALUES, AND THE ALGORITHM THEY MADE (Russell Sage Foundation 2022).

the central market institution allocating resources. They do so through their software encoded rules or optimization approach, which processes information from within a given ecosystem (of websites, advertisers, merchants, etc), in conjunction with user preferences (inputs, data, and observed behaviour)[162] in order to coordinate an efficient exchange of attention. Algorithmic standards determine what behavioural and intrinsic indicators count towards measuring the quality and relevance of a result. This is much like a traditional institution, which uses formal rules, standards, and even compliance mechanisms to govern transactions.

Within this informational environment, a user's choice is, by necessity, shaped by the institutional framework of the platform. This includes everything that supports the highly dynamic and personalized collection, curation, display, and recommendation of vast amounts of information from the platform's ecosystem of third-party producers (such as websites, content producers, app developers, merchants, or even other users). The algorithms, combined with the screen design, are the central institutional mechanisms that drive the relatively stable and recurring patterns of user behaviour we see online,[163] characterized by fairly limited search behaviour,[164] positional driven clicks, and regular visits and transactions on the same limited number of platforms. This stable behaviour is driven in the first place by the valuable service of aggregator platforms: helping users navigate through an abundance of information to make theoretically optimal choices.

Amazon's market power – its own *conduct* – manifests in an algorithmic form, since its algorithm effectively internalizes the market mechanism when it makes allocations, from user attention to a merchant's product information. Amazon's algorithmic allocations, compared to its available supply (the information contained in its ecosystem of firms) and its users demands (user preferences – data and intent), allow us to take the competitive temperature within its platform – and is also arguably the best guide to how competitive the market *structure* for e-commerce is as a whole.[165] Algorithmic market institutions shape market conduct – the behaviour of firms – by determining how firms compete to achieve user visibility, including how much

162. *Google 2016 Q4 Search All Hands. Trial Exhibit-UPX0203: U.S. and Plaintiff States v. Google LLC* (2016), https://www.justice.gov/d9/2023-11/417516.pdf.

163. Therese Fessenden, *Scrolling and Attention*, NIELSEN NORMAN GROUP (2018), https://www.nngroup.com/articles/scrolling-and-attention/.

164. Joshua Porter, *Testing the Three-Click Rule*, CTR. (showing a limit of 25 clicks), https://articles.centercentre.com/three_click_rule/ (last visited Mar. 21 2024).

165. O'Reilly, *supra* note 44 ("Algorithmic allocations of user attention drives value allocations.").

advertising they should spend to be competitive, and how they should price their products.

Position-driven clicks. Algorithmic trust and authority, stemming from their ability to deliver superior results to human computation, underpin the platform's results and recommendations being effectively adopted by users.[166] This ensures "how little the individual participants need to know in order to be able to take the right action"[167] and is what platforms can exploit to extract attention rents from their ecosystem.[168]

Given information abundance and limited attention, screen position fosters remarkably stable and concentrated click patterns in the first few algorithmic results shown near the top left of the screen. This position driven click behaviour is called positional-bias and can be exploited by the platform to get users to click on inferior quality advertising information.[169] A 2018 eye-tracking study from Nielsen Norman Group[170] found that 57% of a user's page viewing time was spent "above the fold," that is, on the first screenful seen by the user, and 74% of the viewing time on the first two screenfuls.[171] The same is true on Amazon. 2018 Jumpshot data on actual user behaviour found that 36% of all product views on Amazon come from the first two rows of product results, with the most views going to the first ranked product (9.1%), followed by the fourth ranked product (7%).[172] Our own research detailed in a separate paper[173] found that the top three most clicked product listings for any given search query on Amazon tend to be located in the fifth result spot followed by the first slot. The fifth result slot (first slot in the second row) has a 35% probability of containing a top three most clicked product.

166. O'Brien et. al, *supra* note 146; Keane et. al, *supra* note 146.

167. Friedrich Hayek, *The Use of Knowledge in Society*, 35(4) AM. ECON. REV. 519 (September 1945), https://www.kysq.org/docs/Hayek_45.pdf.

168. O'Reilly et al, *supra* note 44.

169. Thorsten Joachims, Adith Swaminathan, and Tobias Schnabel, *Unbiased Learning-to-Rank with Biased Feedback,* PROCEEDINGS OF THE TENTH ACM INTERNATIONAL CONFERENCE ON WEB SEARCH AND DATA MINING 781 (2017).

170. *See* Ziv Epstein, Hause Lin, Gordon Pennycook, and David Rand, *Quantifying attention via dwell time and engagement in a social media browsing environment, arXiv:2209.10464* (2022). Viewing time arguably captures general attention more keenly than clicks. Looking at dwell time and clicks as part of an integrated attention framework.

171. Therese Fessenden, *supra* note 163.

172. *See The Competitive State of eCommerce Marketplaces: Data Report Q2 2018*, JUMPSHOT, INC. (2018). It is somewhat unclear if they are talking about views or clicks, and at times use the words interchangeably.

173. *See* Rock et al., *supra* note 22. The first product slot has an 80% chance of being an advert on Amazon in 2023, yet it still has a 26% chance of holding a top-3 most clicked product for a given query.

Misallocation, exploitation, and the positional mechanism. When a platform promotes inferior quality advertising results to the top of the screen, integrating them into search results (so-called "native advertising"), misallocation occurs if consumer clicks continue – as the above evidence suggests it will. This misallocation follows from the role that (relative) screen position plays in bringing consumer demand and firm supply into balance with one another online – in a manner not too dissimilar to how price adjusts in every day markets to bring demand into balance with supply.[174] In textbook markets, when prices are persistently higher than justified by consumer preferences (the ratio of their marginal utilities)[175] and cannot adjust downwards, then exploitation and misallocation occurs. Similarly, when a product's rank on Amazon is higher than justified by consumer preferences and product quality, then misallocation occurs. Exploitation will also occur if it is Amazon that largely benefits from the higher than justified product rank, as can be the case when advertising-driven ranking crowding out organic-driven ranking.

Like the market's *price mechanism* that automatically adjusts to facilitate balanced exchange,[176] the algorithm's *positional mechanism* signals a product's relative importance to both the user and firm based on screen position, promoting balanced and efficient market transactions. This follows from the signal that a user's click or a scroll[177] sends to the algorithm – reflecting the degree of user attention or interest in the result. For a properly functioning algorithm, the process of a user interaction with a result (a click, read, scroll, or mouse hover) provides data feedback to the algorithm on the actual relevance of the result to the user in the given situation.[178] An algorithmic learning from the user interaction occurs.[179] This is just as true for an efficient ads algorithm as it is for an efficient organic algorithm: both are responsive to observed user preferences. This algorithmic learning can be complicated by the fact that user click behaviour may reflect positional-bias

174. When demand exceeds supply, price increases as quantities run out and supply is relatively fixed in the short-run. When demand is less than supply, price falls as inventories rise.

175. DUNCAN K. FOLEY, ADAM'S FALLACY: A GUIDE TO ECONOMIC THEOLOGY 160, 171 (In Neoclassical economics: "relative scarcities can determine marginal utilities and hence price [when quantities are relatively fixed]." Market prices then are "exactly analogous to the ratios of marginal utilities that an individual equalizes in making a rational allocation of resources . . .The idea that the goal of economic activity is the satisfaction of individual consumers is deeply rooted in the structure of marginalist thought, which sees subjective utility evaluation as the regulating factor of price and value.").

176. Within and between sectors.

177. More precisely, its inverse - dwell time.

178. U.S. and Plaintiff States v. Google LLC., Trial Exhibit-UPX0004, https://www.justice.gov/d9/2023-11/417508.pdf.

179. U.S. and Plaintiff States v. Google LLC., Trial Exhibit - UPX0228, https://www.justice.gov/d9/2023-09/416665.pdf.

(as above). Algorithms try to adjust for this bias as well as using additional signals.[180]

In the context of Amazon's third-party marketplace, when a product appears higher in search results than warranted by user interest or the overall quality of the result, an efficient algorithm should use this data to lower the product's rank in subsequent searches by other users. This downward demand signal is received by the merchant, who (in a simplified analysis) will produce less products in response, or try to make their product more attractive through lowering price or improving product quality. Conversely, when much greater user interest is expressed in a lower ranked product than predicted by the algorithm, the screen position of the product improves in subsequent results, the merchant will in turn sell more, and the firm either runs out of inventory, raises price, or tries to increase output quickly.[181] An algorithmic process of adjustment via the screen mechanism helps sustain an effective matching of consumer preferences to merchant producers, thereby ensuring an efficient allocation of resources between firms.

In the presence of market power, a platform may choose to impair this algorithmic adjustment mechanism directly or indirectly. For advertising rents on Amazon, results appear in the user's primary choice set on the screen not in order of relevance but on the basis of the highest bidder.[182] This occurs because Amazon's profit target can only be met by promoting irrelevant ads, according to the FTC, given the large share of screen space devoted to them.[183] This implies an advertising algorithm downweighing relevancy signals and refusing to learn from past user clicks, as with Amazon promoting "junk ads."[184] But fundamentally, it points to the dangers of advertised product results crowding out organic results. It is this crowding out that creates

180. Matthew Richardson, Ewa Dominowska, and Robert Ragno, *Predicting Clicks: Estimating the click-through rate for new ads*, PROCEEDINGS OF THE 16TH INTERNATIONAL CONFERENCE ON WORLD WIDE WEB, 521–530 (2007); Xinran He et al., *Practical lessons from Predicting Clicks on Ads at Facebook*, PROCEEDINGS OF THE EIGHTH INTERNATIONAL WORKSHOP ON DATA MINING FOR ONLINE ADVERTISING, 1–9 (2014).

181. Economists usually assume fixed capital cannot adjust in the short-run, thereby limiting capital mobility.

182. We don't know the relative importance of bid price and ad quality for Amazon's advertising bids. Or how this adjusts based on a given query's demand and supply for products and for ads.

183. Trade Commission, et al. v. Amazon.Com, Inc., No. 2:23-CV-01495-JHC, 2023 WL 7496348 (W.D. Wash. Nov. 13, 2023); Feiner, L., and Palmer, A., CNBC, *Jeff Bezos urged Amazon to Flood Search Results with Junk Ads*, FTC alleges. (Nov. 2 2023), https://www.cnbc.com/2023/11/02/jeff-bezos-urged-amazon-to-flood-search-results-with-junk-ads-ftc.html.

184. Richardson et al., *supra* note 180; He et al., *Practical Lessons from Predicting Clicks on Ads at Facebook*, ACM DIGIT. LIBR. (2014), https://dl.acm.org/doi/10.1145/2648584.2648589.

the incentive for Amazon's supplier base to pay for user attention – even when it does not boost their product's relative rank.

What an algorithm optimizes for, and how it makes adjustments over time, therefore, determine the market's performance: its efficiency (productive and allocative), equity, consumer welfare outcomes (prices, output, quality, variety), and profit levels. In total, this reflects how well the platform serves the needs of consumers and society at large.

C. Advertising in the digital context

In detailing the institutional and informational context online, we argue that the impacts of advertising become potentially far more consequential.. This is especially true for *native*[185] advertising on platforms with high levels of user trust[186] and concentrated user click behaviour above the fold. Native advertising is a clickable direct substitute for organic product results when integrated within the results screen. Much offline advertising, such as a billboard or a television advert, are not taking place in a *decision-making environment*, and especially not a highly focused and frictionless one. As a shorthand: we say that the *informational environment online is entirely different*.

Native advertising, placed centrally within users' limited screen aperture, can fundamentally distort the competitive process by competing with organic results for users' limited attention quotient.[187] A radio or television advert is not taking place in an informationally complex decision-making environment, where the user is choosing between millions of different products, websites, videos, etc. and trying to make a click (view, listen, watch, purchase, browse, delivery, etc), all with the assistance of the platform's algorithm and choice architecture. Offline, users may be listening to the news on the radio or watching it on TV, when an advert happens to interrupt. The advert is not an actionable substitute though, since the consumer cannot choose to engage with the advert further. It is fixed. The user may pay with their time, but other consequences are limited. Online, users are always making a decision about what to watch or listen to next. And so every advert can become an immediately clickable substitute. In summary, what makes the online context for native advertising unique is that:

- It is a frictionless decision-making environment. Decisions are made quickly and frequently within carefully curated choice

185. Native advertising is sponsored information designed to match the content of its source. An example of mobile native advertising would be paid video content on the YouTube app.

186. O'Brien and Keane., *supra* note 146; Keane et al., *supra* note 146.

187. Daniel Kahneman, *Thinking, Fast and Slow*, New York, Farrar, Straus and Giroux, 2017 ("The often-used phrase "pay attention" is apt: you dispose of a limited budget of attention that you can allocate to activities, and if you try to go beyond your budget, you will fail."); Herbert A. Simon, *Rationality As Process and As Product of Thought*, 68(2) AM. ECON. REV. (1978).

environments. Online environments are built to foster speed in decision-making (system 1 thinking), thereby saving user time.

- It is informationally complex and dynamic. The amount of available information aggregated by a platform is so extensive that it defies manual curation. It is constantly changing, rendering any user preference quickly outdated. Thus, top results are typically selected by complex combinations of algorithms and artificial intelligence.

- Advertising can lead to immediate action. Online advertising is click based, it is highly targeted,specific to the user intention, and immediately actionable. When inserted natively, advertising is part of the same decision-making environment as organic information.

- All results compete for a fixed quantum of user attention, since screen space is finite. As a result a trade-off exists between organic results and advertising, especially when shown above the fold. Advertising may serve as a useful companion to organic results, providing an additional stream of useful information, when it corrects for shortcomings in the organic algorithm or supports lesser known products or sellers.

- There is a strong "positional bias" to users' click behaviour on a platform: the position of a result strongly influences expected clicks and attention from the user. This reflects user reliance on the platform's algorithm to guide their behaviour, as a heuristic device.

- Advertising online can use large amounts of data. This allows for high degrees of content personalization and closer attribution of certain advertising campaigns to specific consumer outcomes. Advertising online can mimic an organic result closely due to data-driven personalization.

IV. HOW ADVERTISING ON AMAZON BECAME PART OF THE RENT

"Attention is the scarce commodity of the late 20th century."

– Jeff Bezos, 1997 Interview[188]

Amazon's main source of profits today is likely its advertising business, exceeding even profits from its cloud business,[189] with few incremental costs

188. Jeff Bezos 1997 Interview, YOUTUBE (Dec. 22, 2013), https://www.youtube.com/watch?v=rWRbTnE1PEM.

189. *See supra* note 9. Advertising profits are not disclosed only sales.

and mostly sunk development costs. When analyzed in conjunction with the other fees that merchants are charged (especially referral fees), advertising can be seen as a form of rent that Amazon extracts from its third-party merchants.[190]

As the sphere of organic results has diminished on Amazon and other platforms, the incentive has increased for third-parties on the platform to advertise to gain user attention, unable to rely on their product (or website) being promoted organically.[191] The restructuring of user attention allocations to paid (unearned), over organic (earned), information aims not to "drive down prices and improve quality,"[192] but instead to "collect rent to let one side talk to another."[193] Users invariably suffer as less organic output results in less relevant and less competitive product results. Marketplace merchants suffer from higher fees. Meanwhile, Amazon's net margin increased nearly sixfold between 2017 and 2021 and return on capital invested increased threefold.[194]

According to Brad Stone, placing advertising results above the fold was a calculated profit-seeking decision personally approved by Bezos.[195] It reflects the company holding a dominant position in the e-commerce shopping market, such that Amazon could increase attention to sub-optimal ads without losing enough users to make such a decision unprofitable. This is similar to when a firm has market power and can "raise price above the competitive level without losing so many sales so rapidly that the price increase is unprofitable and must be rescinded."[196]

This dominant position required Amazon to have traditional market power over its third-party firms – who rely on Amazon for a major portion of their sales and have some lock-in. But it also represents "algorithmic power" over its users, because more ads (at the same or higher prices) means that more users need to click on them in order to render them an effective profit centre for Amazon. This "algorithmic power" means that users largely

190. *See* Strauss, O'Reilly, and Mazzucat, *supra* note 4 for usage of the term "merchant" in this paper.

191. Maurice Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 YALE L.J. & TECH. 70, 90 (2016) (Especially true because "When customers cannot accurately assess the quality of a product or service, a supplier may not be rewarded for improving quality. In these instances, it would be rational for such supplier to divert investment from quality enhancement to other channels.").

192. Jean Tirole, *Platforms as Regulators, in* ECONOMICS FOR THE COMMON GOOD, PRINCETON UNIV. PRESS, 2018.

193. Cory Doctorow, *Amazon's $31b "ad business" isn't,* CORY DOCTOROW BLOG, https://pluralistic.net/2022/02/27/not-an-ad/#shakedowns (last visited Apr. 1, 2024).

194. *See* Refinitiv Desktop, *supra* note 16.

195. Stone, B., *supra* note 13.

196. Richard A. Posner & William L. Landes, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937(1981).

follow Amazon's algorithmic recommendations and results even when information quality in results deteriorates. If users instead showed great responsiveness to changes in results quality then such a strategy would not be profitable. The brief case study below draws on several sources including original data scraped and analyzed by us in a separate paper.[197]

A. What market does Amazon compete in?

Before delving deeper into Amazon's Marketplace, it is worth first considering what unique market(s) Amazon competes in. Amazon's ratcheting up of its advertising rents from merchants speaks to its dominance not just in online retail, but in product search and comparison ("discovery"), gradually overtaking Google.[198] Amazon dominates attention share in retail search among product aggregators online.[199] This is also what helps to distinguish Amazon from traditional retailers – it's function as a discovery platform. 56% of US adults started their product search on Amazon in Q1 2023,[200] albeit down from 63% in Q1 2022. This is still far higher than Amazon's share of total U.S. e-commerce sales in 2022 at 40%.[201]

Because market sides on a single multi-sided platform are connected, including through strong cross-side network effects, growth in a product search comparison service on one side of the platform can make advertising on the other side of the platform more attractive. It was in response to competition from Amazon in product search – not in response to the EU's ruling on its product shopping verticals – that Google, for example, eventually removed the need for products (via shopping aggregator sites) to pay in order to appear in their (now sponsored) shopping verticals.[202]

197. Rock et al., *supra* note 22.

198. In 2018, JumpShot found that almost 90% of all product views on Amazon still resulted from Amazon's own organic product search – rather than merchandising, ads, or product aggregators. *See The Race is On: Jumpshot Releases the Competitive State of Ecommerce Marketplaces Data Report,* MARTECH SERIES (Sept. 8, 2018), https://martechseries.com/analytics/behavioral-marketing/race-jumpshot-releases-competitive-state-ecommerce-marketplaces-data-report/.

199. Sales share without attention or search share is not just expensive but precarious. Amazon paying Google for user attention ("traffic"), through product ads, for example, means that Amazon's underlying market power over users is potentially fleeting. *See* Amy Rotondo, *Social platforms are cutting into Amazon's product search dominance*, INSIDER INTEL. (2023), https://www.emarketer.com/content/social-platforms-cutting-amazon-s-product-search-dominance.

200. Social platforms are cutting into Amazon's product search dominance. Product searches starting on Amazon are at 56% in Q1 of 2023, which is down from 63% in Q1 2022. *Id.*

201. Sara Lebow, *Amazon will capture nearly 40% of the US ecommerce market*, INSIDER INTEL. (Mar. 23, 2022), https://www.emarketer.com/content/amazon-us-ecommerce-market.

202. Paresh Dave, *Google drops charges on shopping service to counter Amazon's surging ad sales,* REUTERS (Apr. 21, 2020), https://www.reuters.com/article/us-google-amazon-idUSKCN2231UC/.

Amazon's pivotal role in product search and discovery online gives it enormous market power in the consumer shopping *process*, even when the sale is not completed on its own website – and even when the sale is completed offline. Today, online search guides the consumer product discovery process, regardless of site of sale (online or offline).[203] According to one survey, 75% of consumers check prices and product reviews on Amazon before making a purchase anywhere.[204] Physical shops without a large searchable inventory are not direct competitors in this search market – unless they can take away sufficient searchable online product inventory from Amazon's algorithm i.e., its merchants. For example, from Shopify which provides individual sellers with websites and merchant point-of-sale services. In aggregate, Shopify's sales amount to 10% of U.S. e-commerce according to one estimate.[205] But the individual sellers on Shopify do not compete in the market for shopping comparison, nor does Shopify as a platform – even though it briefly experimented with a merchant-wide search button for its app, [206] and has relaunched an aggregator competitor that pools products from its shops with a centralized discovery mechanism.[207]

Amazon's high search share itself relies on Amazon saving users time, and in turn making it more attractive to merchants to list on Amazon.[208] This underscores Amazon's enormous fixed capital investment in its delivery and fulfilment network, making customers prefer to shop on Amazon, and in turn attracting a mass of merchants. Amazon's hold over its third-party merchants is closer to a monopoly than monopsony power, since Amazon sells these merchants a range of services in order to sell on its third-party Marketplace. (By contrast, Amazon's first party business reflects monopsony power over merchants.) These merchants are Amazon's customers. And power over them is represented by the high share of their sales that Amazon accounts for.

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203. KPMG, *The Truth about Consumers*, KPMG 1, 15 (2017), https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/01/the-truth-about-online-consumers.pdf.

204. *87% Of Consumers Click On Amazon For Online Purchases*, MARTECHVIBE (Oct. 3, 2022), https://martechvibe.com/article/87-of-consumers-go-to-amazon-for-online-purchase/.

205. *Amazon Marketplace is 25% of US E-commerce*, MARKETPLACE PULSE (Feb. 1, 2022), https://www.marketplacepulse.com/articles/amazon-marketplace-is-25-of-us-e-commerce.

206. *Shopify Tests Universal Search*, MARKETPLACE PULSE (Nov. 15, 2022), https://www.marketplacepulse.com/articles/shopify-tests-universal-search.

207. *Shopify's Marketplace Expands to the Web*, MARKETPLACE PULSE (Nov. 2, 2023), https://www.marketplacepulse.com/articles/shopifys-marketplace-expands-to-the-web.

208. R Dave, *supra* note 202 ("Some merchants said they lost sales during the outbreak when Amazon.com stopped offering fast shipping on some products so it could prioritize what it called essential items. [. . .] Ben Frederick said he listed his Dr. Frederick's Original foot-health products through Buy on Google in mid-March when Amazon's delivery times lengthened. But he said just three Google orders had trickled in by last week.").

In aggregate, Amazon was forecast to account for 39.5% of all US retail e-commerce sales in 2022, or nearly $2 in $5 spent online. The next 14 biggest digital retailers were forecast to comprise just 31%.[209] Amazon has more than five times the digital sales of its closest rival, Walmart.

Walmart[210] and Target are gaining e-commerce market share on Amazon, though, indicating that Amazon's position is not unassailable for companies with large financial resources. Amazon is also losing search market share to social media companies.[211] Users do multi-home.[212] But still only 11% of U.S. adults pay for Walmart+[213] compared to the 62% who subscribe to Amazon Prime.[214] And much of this competition does not take place based on the quality of results, with Walmart offering a seemingly equal number of ads in its results – most likely in order to fund its competitive online expansion.

Amazon's value in online product discovery draws on its trove of customer review data. This is a major differentiator from Google and is one reason why vertical integration in product search and sales has such advantages and economies of scope. But Amazon's advantages in search ultimately stem from the enormous quantity and variety of products that it sells. On their own, the vast amount of information about these millions of competing products is not merely useless; it becomes a disutility, as users must invest significant time and cognitive resources to determine the "best" product for their needs.[215]

209. Sara Lebow, *Amazon will Capture Nearly 40% of the US Ecommerce Market*, EMARKETER (Mar. 23, 2022), https://www.emarketer.com/content/amazon-us-ecommerce-market.

210. Spencer Soper & Brendan Case, *Walmart Chips Away at Amazon's Lead in a Key Area: Wealthy Online Shoppers*, BLOOMBERG (Mar. 9, 2023, 7:00 AM), https://www.bloomberg.com/news/articles/2023-03-09/walmart-chips-away-at-amazon-s-lead-in-wealthy-online-shoppers; Amy Rotondo, *Social platforms are cutting into Amazon's product search dominance*, EMARKETER (Mar. 24, 2023), https://www.insiderintelligence.com/content/social-platforms-cutting-amazon-s-product-search-dominance.

211. Rotondo, *supra* note 210.

212. *The 2022 Amazon Consumer Behavior Report*, FEEDVISOR, https://feedvisor.com/resources/e-commerce-strategies/the-2022-amazon-consumer-behavior-report/ (Oct. 3, 2022) ("Our survey revealed that most consumers have more than one membership, with 34% of Prime members also subscribing to Walmart+ and 26% also subscribing to Costco to increase their savings. However, 36% of surveyed shoppers stated they were only Prime members.").

213. Rachel Wolff, *Walmart+ membership needs to do more than copy Amazon to succeed,* EMARKETER (Aug. 15, 2022), https://www.emarketer.com/content/walmart-membership-needs-do-more-than-copy-amazon-succeed.

214. *Id.*

215. Alexander Chernev, *When More is Less and Less is More: The Role of Ideal Point Availability and Assortment in Consumer Choice*, 30 J. OF CONSUMER RSCH., 170 (2003) (stating cognitive costs of evaluating choice alternatives depend upon the number of alternatives to be considered).

B. Day one: saving time

From day one, Amazon saw the ability of its algorithms to save consumers time as core to the unique competitive advantage that it could provide as an online retailer. This is part of what sets apart user decision-making online, and the online business model as a whole, compared to offline retail. Algorithmic discovery, not merely the act of shopping online — which involves avoiding driving to the store, for example – is core to saving users time. The company's algorithms advances highly efficient online shopping by leveraging users' "collective intelligence" to rate products and in turn improve online decision-making.[216] Amazon famously used a user's purchase history data to drive personalized product recommendations based historically on finding similar items ("item-to-item collaborative filtering.")[217] Today, Amazon's algorithms leverage machine learning and a range of indicators – chief of which are "behavioural" (e.g. logs of past observed user clicks and behaviour) to downgrade or upgrade product ranking.[218] For example: how often do customers buy this product when issuing this particular query or similar queries? Ranking models also use many other types of features, like text matching, but in most cases they interact with behavioural features.[219] In this way Amazon's *organic* algorithm uses data to constantly bring into balance user demand (preferences) with the most relevant merchant supplier – both of which will be constantly changing.

At its best, such algorithmic expertise can lead to highly relevant, high quality, and personalized product results, which in turn can facilitate high levels of user trust and fast purchases. As noted previously, customers complete 28% of purchases on Amazon in three minutes or less, and half of all purchases are finished in less than 15 minutes.[220] The average user spends 6 minutes and 59 seconds on the Amazon site.[221]

Proper leveraging of algorithmic expertise to benefit consumers reflects Bezos's belief that overwhelming selection was one of Amazon's

216. TIM O'REILLY, WTF?: WHAT'S THE FUTURE AND WHY IT'S UP TO US, CHAPTER 2 (2017).

217. Greg Linden, Brent Smith, & Jeremy York, *Amazon.com Recommendations: Iten-to-Item Collaborative Filtering,* IEEE COMPUT. SOC'Y (Jan./ Feb. 2003), https://www.cs.umd.edu/~samir/498/Amazon-Recommendations.pdf.

218. Daria Sorokina & Erick Cantu-Paz, *Amazon Search: The joy of ranking products,* ASS'N FOR COMPUTING MACH. 459-60 (July 7, 2016) https://dl.acm.org/doi/10.1145/2911451.2926725. *See also* Daria Sorokina, *Amazon Search: The Joy of Ranking Products*, MLCONF (2016), https://dl.acm.org/doi/10.1145/2911451.2926725

219. *Id.*

220. *See Amazon Selling Stats*, AMAZON (Oct. 10, 2023), https://sell.amazon.com/blog/amazon-stats.

221. *Amazon.com*, SIMILARWEB (The average user visits 9.4. pages, including a bounce rate of 33.77%, the percentage of visitors who view only one page of the website before leaving), https://www.similarweb.com/website/amazon.com/#overview (last visited Apr. 12, 2024).

key advantages over its physical counterparts. Brick-and-mortar merchants could curate selection, but users still had to shop and try to inspect all the items on offer – unless a brochure was provided. In Amazon's first 1997 shareholder letter, Bezos wrote [emphasis added]: "Today, online commerce saves customers money and **precious time**. Tomorrow, through [algorithmic] personalization, online commerce will accelerate the very process of discovery."[222] Overwhelming selection is why Amazon chose books as its first product category, since it had the largest number of items for sale, which only an online retailer could make searchable and seemingly available on demand.[223] This made Amazon's algorithms an essential layer to its value proposition to users and for its merchants to achieve visibility. Search on Amazon, like much of e-commerce, started off scant. According to one history, from software engineers at Amazon and other sites:[224]

> "Initially, there was not much search in eCommerce. Product catalogs were organized by a taxonomy which customers navigated by clicking. At the taxonomy leaves [sic], products from that leaf were shown. Sometimes there were too many products and so sorting was introduced to quickly jump to the top and bottom of the list based on product attributes such as title or price. These sorts were very similar to those in databases. Sorts evolved, becoming more complex and more useful to the customer. Some sorts, in particular popularity or trending, have become the norm. As catalogs grew larger, a natural next step to exploring the products within a category was to allow filtering, including limiting the products in a category given a search term. This resulted in the search box appearing on eCommerce sites. Search, however, was [then] merely about finding exact matches of the query term against the product title. In the 2010s, eCommerce sites began adopting search the way we define it in IR. The use of open source search engines in popular eCommerce suites such as Magento and the ability of third-parties to add functionality to these suites propelled the adoption of search and recommendation engines in today's websites."

Given the strength of Amazon's organic algorithmic recommendations, user welfare was enhanced further by Amazon's frictionless decision-making and purchasing environment,[225] one in which perfect information seemed

222. Jeffery P. Bezos, *1997 Letter to Shareholders*, AMAZON.COM (1997), https://www.sec.gov/Archives/edgar/data/1018724/000119312513151836/d511111dex991.htm.

223. Chuck Severance, *Jeff Bezos 1997 Interview,* YOUTUBE (Dec. 22, 2013), https://www.youtube.com/watch?v=rWRbTnE1PEM.

224. *See* Manos Tsagkias, Tracy H. King, Surya Kallumadi, & Vanessa Murdock, *Challenges and Research Opportunities in eCommerce Search and Recommendations*, 54 ACM SIGIR F. 1, 7 (June 2020), https://sigir.org/wp-content/uploads/2020/06/p04.pdf.

225. *See* Tristan Harris, *A Call to Minimize Distraction and Respect Users' Attention,* GOOGLE (2013), https://www.slideshare.net/paulsmarsden/google-deck-on-digital-wellbeing-a-call-to-minimize-distraction-and-respect-users-attention.

possible, thereby rendering user search irrelevant if not irrational. The removal of frictions was greatly heightened by the advent of mobile.[226] Due to the large use of mobile for shopping, much of the fine print is easily overlooked by consumers.[227] As the screen shrinks, more independent user effort (through scrolling or clicking) is required to see the same number of results. In other words, the sphere of decision-making – and the scope of self-directed search – is further narrowed. The lack of friction becomes problematic when the diminished relevance of Amazon's product results and recommendations should, instead, prompt users to conduct more independent product inspection.

In Bezos's final shareholder letter (April 15, 2021),[228] he again focused on time saved as core to the value that Amazon creates for users, citing the average time it takes for a user to shop online compared with driving to a store and shopping there: "We offer low prices, vast selection, and fast delivery, but imagine we ignore all of that for the purpose of this estimate and value only one thing: we save customers time. [. . .] Compare that to the typical shopping trip to a physical store – driving, parking, searching store aisles, waiting in the checkout line, finding your car, and driving home. Research suggests the typical physical store trip takes about an hour. If you assume that a typical Amazon purchase takes 15 minutes and that it saves you a couple of trips to a physical store a week, that's more than 75 hours a year saved. That's important. We're all busy in the early 21st century." In other words, the welfare effects of Amazon's Marketplace, as well as the dimensions along which competition takes place, increasingly need to be understood in non-price terms.

C. The rise of third-party and ads

Central to Amazon's ability and desire to extract advertising rents from its third-party marketplace has been a shift in emphasis from Amazon as seller of merchandise, that it purchases and resells (its "first-party" retail business), to Amazon as facilitator of a third-party marketplace selling services to merchants who sell their products directly to consumers using Amazon's digital and physical infrastructure to facilitate the transactions. Advertising makes little sense in a first-party environment where Amazon itself is the seller. There were always limited fees exacted from publishers and

226. Although three-quarters of Amazon visits by users are still done via desktop in the U.S., including all visitors. SIMILARWEB, https://www.similarweb.com/website/amazon.com/#overview (last visited Dec. 14, 2022).

227. *See* Spencer Soper, *Amazon Buyers Beware: Scammers Are Targeting the Best-Seller Badge,* BLOOMBERG (Dec. 7, 2022), https://www.bloomberg.com/news/articles/2022-12-07/why-amazon-s-1-best-seller-badge-may-be-misleading-you.

228. *See* Jeffery Bezos, *Letter to Shareholders*, AMAZON. (Apr. 15, 2021), https://www.aboutamazon.com/news/company-news/2020-letter-to-shareholders.

other vendors for special placement in the old first party business, but there was no room for growth.

Starting in 2002 Amazon offered its own fulfilment service to third-party sellers.[229] In 2007 Amazon's marketplace was largely third-party book sellers, accounting then for only 13% of all online units sold.[230] Fulfillment by Amazon (FBA) only became profitable after 2014 – and growing selection and adding sellers was the reason. Many of the marketplace sellers would eventually come from China.[231] But initially sellers came from eBay, ironically in response to being charged high fees on that platform.[232] This shift helped Amazon remove the competitive threat of eBay, which was originally seen as the more natural place for third-party sellers, and with which Amazon had previously made several failed attempts to compete.[233]

In 2015 the value of goods sold through Amazon's third-party marketplace surpassed sales from Amazon's first-party retail side.[234] This would then grow from 48% of its e-commerce sales in 2016 to 59% by Q1 2023.[235] Amazon's Marketplace has twice the margins of the first party retail, according to a 2018 Bloomberg article.[236] That the third-party marketplace is more profitable is acknowledged by Amazon itself,[237] even before advertising is considered. While advertising is reported as a separate line of business rather than as part of the third-party fee revenue, they surely should be considered together.[238] Advertising is one of these "services" that Amazon provides to its third-party sellers. With advertising included, the margins of third-party

229. Then called "self-service order fulfilment". Stone, *supra* note 13 at chapter 7.

230. Stone, *supra* note 13 at Chapter 7.

231. *Id*. ("Throughout 2015 and 2016, thousands of Chinese sellers registered on Amazon's marketplace each day. 'The numbers were astronomical. No one had seen volume like that,' said Sebastian Gunningham.").

232. *Id.* ("What helped Amazon to recruit third-party merchants was its rival eBay, which was alienating its unruly seller community by raising fees and giving favorable deals to large retailers.").

233. *See* Alistair Barr & Dhanya Skariachan, *EBay lures big retailers in Amazon battle,* REUTERS (Aug. 8, 2012 6:37 AM), https://www.reuters.com/article/net-us-ebay-retailers-idUSBRE8761F220120808/.

234. *See* Stone, *supra* note 13 at 46.

235. *Amazon's Slow Shift to Marketplace*, MARKETPLACE PULSE (May 3, 2023), https://www.marketplacepulse.com/articles/amazons-slow-shift-to-marketplace.

236. *Id.*

237. *See* About Amazon Team, *How Amazon and third-party sellers together give customers more choice*, AMAZON (Aug. 23, 2021), https://www.aboutamazon.eu/news/policy/how-amazon-and-third-party-sellers-together-give-customers-more-choice ("Third-party sellers are growing twice as fast as Amazon's retail sales, and on average an independent seller sale is more profitable to our business than an Amazon retail sale.").

238. *See* MARKETPLACE PULSE, *supra* note 235.

retail grow considerably. Exact numbers are not released by Amazon though due to poor SEC disclosure requirements.[239]

Expert analyst Juozas Kaziukėnas of MarketPlace Pulse notes:[240] "Without the [first-party] retail business as the first customer for fulfillment and advertising services, the marketplace wouldn't have become the key part of the flywheel it is today. But that flywheel couldn't work without it today. The old [first-party] retail business looks out of place in the current platforms-and-services-focused Amazon because the marketplace is more profitable, carries no inventory risk, and takes fewer employees to manage." Similarly, Brad Stone notes:[241] "Bringing independent merchants onto the site and into Amazon's fulfilment centres allowed the company to increase the volume of products it pushed through its warehouses and to increase its revenues compared to its fixed costs."

Amazon has six million unique third-party sellers on its platforms across all countries (more than half selling in North America). Since 2017, the informational dynamism of Amazon's marketplace has been ratcheted up several fold. Between Q1 2017 and Q1 2021, third-parties' share of Amazon unit sales grew by around 15%.[242] Meanwhile the number of third-party sellers grew by more than 100%, from a bit below 3 million to a bit above 6 million – even if only a small share of these are active.[243] In other words, 6.6 more firms were, in theory, competing on average for the same unit of sale. Noted MarketPlace Pulse in 2021: "Amazon is adding seven to eight hundred thousand [700,000 - 800,000] new sellers every year when accounted [sic] for duplicate seller accounts. That number hasn't accelerated, but then Amazon is still adding over two thousand new sellers daily."[244]

Ads and third-party seller growth are inextricably linked. Notes Brad Stone: "Third-party sellers — including the flood of merchants coming online from China — were eager to boost the visibility of their products on the increasingly crowded pages of search results. The solution was obvious: charge them for it, just as Google taxed web publishers to promote their websites in its search engine."[245]

239. *See* Mariana Mazzucato, Ilan Strauss, Tim O'Reilly, & Josh Ryan-Collins, *Regulating Big Tech: The Role of Enhanced Disclosures,*39 OXFORD REV. OF ECON. POL'Y 47, 50 (Feb. 7, 2023), https://academic.oup.com/oxrep/article-abstract/39/1/47/7030605?redirectedFrom=fulltext.

240. *See* Marketplace Pulse *supra* note 235.

241. *See* Stone, *supra* note 13 at 486.

242. *See* Marketplace Pulse *supra* note 235.

243. *Amazon Tops Six Million Third-Party Sellers,* MARKETPLACE PULSE (Mar, 24, 2021), https://www.marketplacepulse.com/articles/amazon-reaches-six-million-third-party-sellers.

244. *Id.*

245. Stone, *supra* note 13 at 752.

The number of third-party sellers on Amazon is far greater than what competitors are managing. According to a source cited in recent Bloomberg analysis, Walmart still only has 135,000 merchants compared with some 2 million active on Amazon.[246]

Amazon's vastly expanded organic product selection may have come at the expense of quality.[247] But this mode of competition was adopted by other competing platforms eventually too. Both Walmart and Target were formerly reviewing sellers carefully before accepting them, thereby limiting seller growth on the platform. In late 2022, Walmart reversed course on this point,[248] recognizing that it too needed *all* sellers – even lower quality ones – in order to compete with Amazon. But adding third-party sellers appears by itself to be insufficient so far to capture wider market share. According to Marketplace Pulse,[249] Etsy and eBay add more sellers than Amazon yet their market share still trails far behind in the U.S.[250]

This competition and uncertainty has been monetized. From December 2017 to December 2022, Amazon's annual reports show third-party seller services (excluding advertising) grew by 270% on an annual basis from US$31.8 bn to US$117.7 bn. Third-party seller services now account for 23% of total external revenue. When advertising is included, this jumps 30% by December 2022 to over $155 bn, almost double AWS's $80 bn, or 15.5% of total external revenue.[251]

246. Spencer Soper & Brendan Case, *Walmart Chips Away at Amazon's Lead in a Key Area: Wealthy Online Shoppers,* BLOOMBERG (Mar. 9, 2023), https://www.bloomberg.com/news/articles/2023-03-09/walmart-chips-away-at-amazon-s-lead-in-wealthy-online-shoppers?embedded-checkout=true.

247. *See* Stone, *supra* note 13 at 499. ("He also battled with his counterparts on the retail team, whose priority was a premium selection of merchandise to guarantee a good customer experience, versus the anything-goes anarchy that accompanied the seller platform, where anyone could sign up and start selling cheap, low-quality products [. . .] The perennial debate inside Amazon was pitting the quality of products versus the quantity.").

248. *Walmart Opens Third-Party Seller Floodgates*, MARKETPLACE PULSE (Aug. 25, 2022), https://www.marketplacepulse.com/articles/walmart-opens-third-party-seller-floodgates#:~:text=A%20lot%20more%20sellers%20are,marketplace%20previously%20required%20Walmart's%20approval.

249. *Amazon is Adding Thousands of New Sellers Each Day*, MARKETPLACE PULSE (Apr. 7, 2022), https://www.marketplacepulse.com/articles/amazon-is-adding-thousands-of-new-sellers-daily.

250. *See* Andrew Lipsman, *Temu is Seeing Unprecedented Ecommerce Growth- How Seriously Should We Take It?*, EMARKETER (Feb. 28, 2023), https://www.emarketer.com/content/temu-seeing-unprecedented-ecommerce-growth-how-seriously-should-take-it.

251. Amazon.com, Inc., Annual Report (Form 10-K) (2022).

D. Advertising explodes on Amazon's Marketplace

Jeff Bezos was always against flooding Amazon's Marketplace with ads, unless it supported low prices on the platform.[252] However, as Amazon's third-party marketplace expanded and its dominance in e-commerce grew, the potential profit from advertising became immense. The crucial decision took place in 2016: whether to allow ads on the top half ("above the fold") of the search results page, intermixed with organic results. "[W]hile [Bezos] cautioned against alienating customers by serving too many ads, he opted to vigorously move forward, saying that any deleterious long-term consequences would have to be implausibly large to outweigh the potential windfall and the investment opportunities that could result from it."[253]

Amazon's "organic"[254] search algorithm had previously set the rules for the process[255] by which user attention was competed for among Amazon's third-party ecosystem[256] of merchants. It was cutthroat, but ensured efficient allocations between user preferences and high quality, relevant suppliers. As native advertising began to dominate the screen, the sophisticated optimizations of organic algorithms were supplanted by a more rudimentary advertising algorithm, built to maximize profits for Amazon even at the expense of showing users far less relevant results and extracting more profits from merchants, who were no longer rewarded for having the most competitive products. Amazon's advertising algorithm does not appear to engage in

252. *See* Stone, *supra* note 13 at 231 ("Bezos was a proponent of bringing ads onto Amazon and using them to support low prices . . . For Bezos, during the first part of Amazon's journey into advertising, the sanctity of the customer experience took absolute precedence over any business relationship or incremental boost to the balance sheet.").

253. *Id* at 234.

254. Google calls "organic" search results those that have been algorithmically selected based on quality to a user query – which includes relevance, freshness, popularity, behavioural features (i.e. other people's clicks), localization, and centrality – as opposed to paid advertising results. We generalize this term to refer to any search result, social media feed output, or recommendation output that is optimized for user benefit. *See Ranking for Research,* GOOGLE (Nov. 16, 2018), https://www.justice.gov/d9/2023-09/416694.pdf.

255. E T-612/17, Google and Alphabet v. Commission (Google Shopping), 2021 E.C.R. I-26 ("The quality of the specialised search algorithm is the constant against which the relevant undertakings compete.").

256. Michael G. Jacobides & Ioannis Lianos, *Regulating Platforms and Ecosystems: An introduction*, INDUS. & CORP. CHANGE (Nov. 2021), https://www.researchgate.net/publication/356709968_Regulating_platforms_and_ecosystems_an_introduction; *see also* Nicolas Petit & David J. Teece, *Taking Ecosystems Competition Seriously in the Digital Economy*, ORG. FOR ECON. CO-OPERATION AND DEV. (Dec. 2020), https://one.oecd.org/document/DAF/COMP/WD(2020)90/en/pdf (*"*Ecosystems are networks of business entities that work together to create and capture value."); *see also The Evolving Concept of Market Power*, ORG. FOR ECON. CO-OPERATION AND DEV. (June 2022), https://one.oecd.org/document/DAF/COMP/WD(2022)34/en/pdf.

careful ranking adjustments based on user behaviour[257] – or at least not enough to ensure that only relevant advertising results are shown. In prioritizing profits, Amazon's advertising algorithm promotes "junk ads," according to unsealed FTC evidence, with few apparent corrective mechanisms.[258]

Amazon's capability to compel its sellers to relinquish a greater portion of their revenue over to the platform is indicative of the significant market power Amazon holds over its ecosystem of users and third-party firms, which it has chosen to exploit. Market power comes in varying "degrees" [259] and entails the ability of a firm to raise prices profitably – here on one side of the platform, while adjusting attention allocations to the necessary level on the other side. Or as Hovenkamp puts it for platforms: "the ability of a platform to increase its price without changing the terms or incurring increased costs on the other side is an indicator of power."[260]

Note the two-sided nature of power needed by Amazon to show more ads: the algorithmic power to be able to exploit users' "positional bias," and traditional market power over its third-party firms, based on market share and lock-in, which allowed it to raise the fees facing these firms through higher visibility costs.

This does not mean that Amazon may not lose some customers (and product sales) in the process of exerting its market power, but only that such a loss does not outweigh the benefits. As Brad Stone notes, the initial A/B testing (experiments) showing more ads to some users did find a modest decline in activity on the site: "When sponsored ads were prominently displayed, there was a small, statistically detectable short-term decline in the number of customers who ended up making a purchase." [261] However, this was not significant enough to outweigh the substantial monetary gains.

Our own findings based on a large dataset of products and clicks from Amazon's marketplace (published separately) indicate that Amazon has considerable algorithmic influence over user clicks on sponsored, less relevant, product results.[262] With captive suppliers, users' willingness to click is ultimately what limits Amazon's ability to charge merchants for visibility. Our econometric results show that higher relative visual prominence correlates strongly with more clicks – supporting the view that users satisfice rather

257. Lauren Feiner & Annie Palmer, *Jeff Bezos Urged Amazon to Flood Search Results with Junk Ads*, CNBC (Nov. 2, 2023, 1:21 PM), https://www.cnbc.com/2023/11/02/jeff-bezos-urged-amazon-to-flood-search-results-with-junk-ads-ftc.html.

258. Comp. at ¶ 5, Amazon.com, FTC Case No. 2:23-cv-01495-JHC (Nov. 2, 2023).

259. Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 474 (1992).

260. Hovenkamp, Herbert, *The looming crisis in antitrust economics*, B.U. L. REV. 101, 525 (2021).

261. Stone, *supra* note 13 at 758. ("The engineers who administered the tests never thought their instrumentation or data was very reliable, but the results were fairly consistent").

262. *See* Rock et. al., *supra* note 22.

than optimize online. In the top five search results shown by Amazon, decreased relevancy or increased price matter less to user decision-making, with typically four of these results being advertisements. Such user behaviour provides Amazon with considerable room to use advertising to extract rents from its ecosystem.

Soon after Bezos prioritized placing ads "above the fold" in 2016, Amazon's prioritization of profits began to bear fruit:[263] "Amazon's net income – its annual profit – jumped from $3 billion in 2017 to $10 billion in 2018, sending investors into a defibrillated frenzy. Amazon's stock price levitated. Its market capitalization soared past $550 billion by the end of 2017, and to $730 billion at the end of 2018."[264]

Native product advertising became an outright substitute for the original information the user was seeking:[265] Advertising has replaced product recommendations and personalization on Amazon and other retailers' websites. They are no longer trying to guide product discovery, letting ads instead lead the journey, notes Marketplace Pulse.

Stone argues that ads were central to undermining the competitiveness of the marketplace as a whole, leading to other initiatives that risked distorting competition on the marketplace being embraced too:

> "Once Bezos showed a willingness to convert the relative meritocracy of search results into a domain that prioritized Amazon's commercial interests, the possibilities were endless. For example, Bezos had received an email from a customer in Florida a few years before, who described visiting Amazon.com to buy a selfie stick. There were hundreds of choices and the customer had no idea which one to buy; then he went to a local store and got advice from a salesperson. Why couldn't Amazon, the customer wrote, offer such a recommendation? [. . .] Their product was called Amazon's Choice."[266]

The connection between advertising content and competitive allocations is rarely made by policy makers, who view advertising as something entirely different from distortions in search result ranking from say "self-preferencing." However, this view ignores the crowding out effects that showing the user more ads has on the visibility of other more competitive

263. *See* Stone, *supra* note 13 at 777. ("We just decided that after years of rapid fixed cost investment, it made sense for us to slow it down at least for a year and digest the growth and make sure we were being efficient," said Jeff Wilke. [. . .] "In the midst of this realignment, Bezos found another way to reduce fixed costs, flatten his organizational chart, and avoid a specter that he dreaded: that Amazon might become a stodgy "Day 2 company.").

264. *Id.*

265. *Everything on Amazon is an Ad*, MARKETPLACE PULSE (Feb. 25, 2021), https://www.marketplacepulse.com/articles/everything-on-amazon-is-an-ad.

266. Stone, *supra* note 13 at 406-07.

products. It also ignores the role of algorithms in regulating positional adjustments and in turn allocative efficiency in online markets, as we argued previously.

E. Rents: Paying with higher prices, less choice, more time, and merchant money

Today, the conflict of interest that arguably best defines Amazon is its $37 billion advertising business – getting paid by its third-party merchants to promote *their* products, even as it promises its customers the *most relevant* products. Advertising shapes the relative prominence of results on Amazon more than anything else. Policymakers, however, remain focused on Amazon "receiving business from its rivals, even as it competes with them"[267] through its own brand products. This focus seems misguided, since branded products are a much smaller business segment for Amazon, with less systemic impact on relative rankings than advertising.

Advertising in the context of the finite quantity of attention which it allocates is the purest form of rent, since it is a zero-sum transfer of attention and value *between* sellers.[268] A positional gain for one seller must come at the cost of another. No net attention benefits to sellers can occur. This simultaneously increases revenue for Amazon but without "necessarily growing the sales volume."[269] But with 25 cents for every dollar spent on e-commerce in the U.S. going to Amazon's third-party marketplace, sellers don't often have a choice to circumvent Amazon's platform.[270]

Merchants competing for user visibility on Amazon through advertising spending has fostered both higher ad prices and less return from ad spend,[271] leading to a profit transfer from third-party firms to the platform itself. Data on average cost per click on Amazon ads shows a doubling from $0.56 in 2018 to $1.2 in 2021.[272] Average cost of spend (ACOS) was 30% according

267. Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710, 755 (2017).

268. *See* Alexander Gornyi, *Letter: Why Amazon's advertising revenue is not what is seems*, FINANCIAL TIMES (Jan. 4, 2023), https://www.ft.com/content/e1969f6e-85ce-42aa-9149-ca21a8a895ad.

269. MARKETPLACE PULSE, *supra* note 207.

270. MARKETPLACE PULSE, *supra* note 207.

271. Spencer Soper, *Amazon Is Taking Half of Each Sale From Its Merchants*, BLOOMBERG (Feb. 13, 2023, 3:00 PM), https://www.bloomberg.com/news/articles/2023-02-13/amazon-amzn-takes-half-of-each-sale-from-2-million-small-businesses; *see Amazon Advertising Report*, JUNGLE SCOUT (2023), https://www.junglescout.com/wp-content/uploads/2023/05/Amazon-Advertising-Report-2023-Jungle-Scout.pdf ; *see also Amazon Ads Are Getting More Expensive*, MARKETPLACE PULSE (June 9, 2021).

272. *Cost Per Click (CPC) Rates 2024,* BUS. OF APPS (Feb. 5, 2024), https://www.businessofapps.com/ads/cpc/research/cpc-rates/.

to Adbadger, meaning that $30 cents now has to be spent on ads to drive $1 of sales.[273]

These rents become evident through reduced product variety shown to consumers on Amazon's marketplace. Unlike Google Search, which has a policy against "Unfair Advantage," Amazon allows merchants to win multiple advertising screen slots, thereby permitting a single product to dominate most or all of the screen results.[274] As a result, the majority of Amazon marketplace ads today simply duplicate the organic listings that appear on the same page, often adjacent to them, offering no additional information to consumers. This reduces product variety (choice) facing the consumer. Moreover, with ads and organic listings competing for user attention on the same search results screen, Amazon exploits users' positional bias, and puts the ad rather than the organic result in the position most likely to be clicked on, thus extracting a fee from the supplier while providing no added benefit. In Rock et al. (2023),[275] we found that one-quarter of product search results on the first page are adverts. This leads to 48.3% of advertised results on the first page having at least one duplicate organic result, and 93.6% of top-3 most clicked ads being duplicated. This means that flooding the screen with your product multiple times is the clearest path to a product achieving click-based success on Amazon.

Consumers might also pay for Amazon's advertising in the form of higher product prices and reduced product relevancy. Amazon's fees for sellers risk getting passed on to consumers in the form of higher prices.[276] This is not a distant possibility. In Rock et al. (2023),[277] we found that the top-3 most clicked advertised products are around 17% more expensive than organic ones ($19.3 vs. $16.5), and also one-third less relevant (organic rank of 4 vs. 3).[278] One recent study,[279] ignoring product relevancy or recency, found that consumers who went to the first relevant non-ad item in Amazon's search result would pay less than if they chose the first product in the search

273. The Badger, *Amazon Advertising Stats (2024 Update*), AD BADGER (Jan. 10, 2024), https://www.adbadger.com/blog/amazon-advertising-stats/.

274. Mark Meyerson, *5 reasons Amazon Ads is better than Google Ads for ecommerce*, SEARCH ENGINE LAND (Oct. 13, 2023, 8:00 AM), https://searchengineland.com/amazon-ads-vs-google-ads-ecommerce-433186.

275. Rock et. al., *supra* note 22.

276. Jean Tirole, *Competition and the Industrial Challenge for the Digital Age*, 15 ANN. REV. OF ECON. 573, 574 (Sept. 2023), https://www.annualreviews.org/content/journals/10.1146/annurev-economics-090622-024222.

277. Rock et. al., *supra* note 22 at 2.

278. *Id.*

279. Rory Van Loo & Nikita Aggarwal, *Amazon's Pricing Paradox,* 37 HARV. J OF L. & TECH. 1, 1 (2023).

results (but would still pay an average of 24% more than if they had instead chosen "the best deal" on the first page of results).

Just as – if not more – important than pecuniary costs to users are the non-pecuniary advertising costs, in the form of user time or attention ("attention rents.")[280] If users manage to avoid higher priced, less relevant, advertising products they then face another set of time-based costs, in the form of "search." With more independent user search in the face of advertising results, an added time cost is incurred by users – and there is no guarantee still that they will be able to find the best product without algorithmic assistance. Surveys show that user "ads blindness" on Amazon has declined: whereas 31% of consumers on Amazon did not notice sponsored ads in 2019, in 2022 this was 15%.[281] With inflation, user search may be increasing, as price sensitivity grows: nearly two-thirds of respondents now scroll to the bottom of the search results page in search of deeper discounts. [282] Our own scraped data shows that users increasingly now click not on the first search result, but the fifth search result (first result in the second row), indicating that some degree of greater independent user search behaviour is now taking place – but at a time cost.[283] In our dataset, the fifth and sixth search results combined now garner almost as many clicks as the first and second combined.[284] Evidence from other platforms on user search in the face of matching difficulties is mixed. Evidence from a unique randomized controlled experiment conducted on Alibaba's e-commerce platform indicates that users do not necessarily search more when product matching declines, but instead purchase less.[285] While a major experiment run on India's Flipkart e-commerce platform found that product clicks and conversions do not decline when advertising increases.[286] Search behaviour was found to be product-specific.

Advertising may also cost users time by contributing to higher rates of product returns – but Amazon does not disclose this statistic. Although Amazon does not share its overall return numbers, online purchase return rates across platforms have been increasing globally from 18% in 2020 to 21% in

280. O'Reilly et. al., *supra* note 44.

281. Feedvisor, *supra* note 21 at 30.

282. *Id.* at 32.

283. Rock et. al., *supra* note 22.

284. *Id.*

285. Sun et. al., *The Value of Personal Data in Internet Commerce: A High-Stake Field Experiment on Data Regulation Policy*, NET Institute Working Paper No. 21-10 (Sept. 30, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3962157.

286. Vibhanshu Abhishek, Kinshuk Jerath, & Siddhartha Sharma, *The Impact of Retail Media on Online Marketplaces: Insights from a Field Experiment*, SSRN (Aug. 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3013468.

2021.[287] Returns were made easier on Amazon but this trend has changed.[288] This also follows several surveys showing that customer satisfaction on Amazon is falling.[289] In 2022 it declined to a record low on the American Customer Satisfaction Index.[290] Consulting firm Brooks Bell found that nearly a third of Amazon customers in 2022 reported regularly receiving products late or getting an item of low quality. [291]

Lastly, it is important to ask if Amazon's fees for sellers are excessive, leading to platform monopoly rents. Sellers on Amazon get a lot of value in return for the fees it pays Amazon, including world class logistics and access to a large customer base.[292] One benchmark is comparable e-commerce platforms locally and internationally. By international standards, Amazon's combined fees do appear to be high – though this may reflect higher quality services offered in return. Amazon's direct product ("referral") fees on merchant product sales[293] have always been high compared to Chinese e-commerce precisely because Amazon did not also rely on fees from ads, like similarly large Chinese platforms did.[294] Cross-subsidisation from ads was never Amazon's business model.[295] That is why Amazon Marketplace

287. George Iddenden, *Returns are costing Amazon billions of dollars*, CHARGED RETAIL (Apr. 11, 2022), https://www.chargedretail.co.uk/2022/04/11/returns-are-costing-amazon-billions-of-dollars/.

288. Katie Tarasov, *How Amazon plans to fix its massive returns problem*, CNBC (Apr. 10, 2022, 10:04 AM), https://www.cnbc.com/2022/04/10/how-amazon-plans-to-fix-its-massive-returns-problem.html. *see also* Simon Peinkofer & The Conversation, *The dark side of Amazon returns: Boxes getting sent back has metastasized to an $816 billion yearly problem,* FORTUNE (June 14, 2023, 12:49 PM), https://www.cnbc.com/2022/04/10/how-amazon-plans-to-fix-its-massive-returns-problem.html.

289. Sebastion Herrera, *Amazon's Customer Satisfaction Slips With Shoppers,* WALL ST. J. (Nov. 21, 2022, 7:00 AM), https://www.wsj.com/articles/amazons-customer-satisfaction-slips-with-shoppers-11668986981.

290. *See generally Amazon*, AM. CUSTOMER SATISFACTION INDEX, https://theacsi.org/?s=amazon.

291. Herrera, *supra* note 289.

292. *See* Soper, *supra* note 271.

293. Maria Monteros, *Amazon Briefing: Third-party sellers mull over how to manage Amazon's new 5%* surcharge, MODERN RETAIL (Apr. 21, 2022), https://www.modernretail.co/platforms/amazon-briefing-third-party-sellers-mull-over-how-to-manage-amazons-new-5-surcharge/; *see also* Stone, *supra* note 13 at 115-16 ("Chinese sellers were accustomed to paying about 2 to 5 percent of their sales to Alibaba, in addition to ads to make their listings more prominent. Amazon execs were skeptical [sic] of the advertising model so instead charged 10 to 15 percent of sales, which seemed unusually high to sellers. As a result, Alibaba raced further ahead.").

294. *Amazon* charges a monthly fee for its Professional Selling plans, which starts at $39.99 per month. It also charges a transaction fee of 15% of the product price for most products. There is a $0.99-$4.99 listing fee for each product, and additional fees for advertising, referral, and shipping. *Alibaba* charges a monthly fee for its Premium Seller plans, which starts at $99 per month. It also charges a transaction fee of 6-8% of the product price for most products. There is a $0.20-$0.30 listing fee for each product, and additional fees for marketing, promotion, and transaction fees.

295. Stone, *supra* note 13 at 468.

referral fees charged on each product sold are 8-15% of the product price,[296] similar to Walmart's,[297] but above Alibaba's 6-8% and JD.com's 6-8%. Alibaba ads revenue is comparable to Amazon's, but on a per seller basis is far lower, given how many more active sellers there are on Alibaba.

Another way to assess if Amazon is engaging in excessive rent extraction from its sellers is to assess seller margins. Although not extremely low, with 65% of Amazon sellers having profit margins over 10%,[298] third-party margins on Amazon have been declining, under pressure from Amazon to increase its own profitability. Declining third-party seller margins over the past six years is driven by higher Fulfilment by Amazon (FBA)[299] and advertising costs.[300] By one estimate, around 50% of the selling price of a product on Amazon now goes to Amazon in the form of various fees, including advertising.[301] (This will vary substantially by product type, as can be seen using Amazon's profitability calculator.[302]) Although most sellers on Amazon spend under $500 a month on Amazon ads, 36% of sellers spend $501 – $2,500 per month on average, 15% spend $2,500 – $10,000, and 1% spend $10,001 – $25,000.[303]

Rising ad costs are listed as a major concern for 59% of Amazon sellers, while 32% of sellers are planning to spend more on advertising in 2023.[304] Moreover, 67% of sellers are concerned about Amazon changing search results to favour paid results over organic results. Managing advertising budget is now reported as the third greatest challenge for Sellers on Amazon, virtually on par with finding a product to sell, and behind "getting customer reviews."[305]

296. AMAZON, *Standard Selling Fees: Referral Fees,* https://sell.amazon.com/pricing#referral-fees (last visited Apr. 4, 2024).

297. WALMART, *Referral Fees: Walmart marketplace,* https://marketplace.walmart.com/referral-fees/ (last visited Apr. 4, 2024).

298. Jungle Scout Cobalt, *The State of the Amazon Seller* 2022 Report by Jungle Scout, YOUTUBE (Apr. 14, 2022), https://www.youtube.com/watch?v=VeHFMtUPSPk.

299. *Amazon Fulfillment Fees Up 30% in Two Years*, MARKETPLACE PULSE (Aug. 17, 2022), https://www.marketplacepulse.com/articles/amazon-fulfillment-fees-up-30-in-two-years.

300. *Amazon Takes a 50% Cut of Sellers' Revenue*, MARKETPLACE PULSE (Feb. 13, 2023), https://www.marketplacepulse.com/articles/amazon-takes-a-50-cut-of-sellers-revenue.

301. *Id*.; *see* Marketplace Pulse *supra* note 271.

302. *See Revenue Calculator,* AMAZON, https://sellercentral.amazon.com/hz/fba/profitabilitycalculator/index?lang=en_US (last visited Apr. 4, 2024).

303. Jungle Scout Cobalt, *supra* note 298.

304. *Id.*

305. *Id.* 46% said managing advertising strategy and budget, 47% finding a product to sell, and 57% said getting customer reviews.

V. ANTITRUST REGULATION OF ALGORITHMIC RENTS ON AMAZON

If, as Bork argued,[306] "The [antitrust] law's mission is to preserve, improve, and reinforce the powerful economic mechanisms that compel businesses to respond to consumers," then the subjugation of algorithmic fairness to the economic needs of a dominant platform becomes of central concern. Effective organic algorithms serve, along with their positional mechanisms, as the institutions which underpin efficient market allocations online, matching user preferences with high quality, relevant, and competitive offerings. A dominant platform may intentionally impair the efficient workings of these allocative mechanisms, by ignoring user demand, ecosystem supply, or both.

A. Dominance achieved through attention allocations

Practical interpretations of antitrust regulation – especially in the U.S. – primarily rest on the concept of "market power" and its abuse.[307] Current definitions of market power[308] largely focus on price-based harms ("influence over price.") They struggle in the multi-sided digital platform context for two reasons: (1) When users consume a free service, they may instead experience non-price harms or exploitation; and (2) A platform with market power can use algorithmic attention allocations, not (just) price allocations, to achieve above normal levels of user monetization.[309] Such platform behaviour may more closely resemble a monopolist acting through "control of output," where power over price is "inferred" rather than explicit.[310]

Platform dominance in attention markets. What connects the free and paid sides of a platform is user attention. Attention is monetized

306. Bork, *supra* note 50 at 91.

307. Nicolas Petit, Understanding Market Power 22 (Robert Schuman Ctr. for Advanced Studies, Working Paper No. RSC_14, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4148489 ("the EU courts did not read market power into the law [. . .] the emphasis on market position, not power, might be interpreted as a sign of a more structuralist orientation of the lawmakers [. . .] In 2009, the EU Commission adopted a Guidance on Article 102 TFEU that eventually contained a full section entitled 'Market Power.'").

308. Areeda & Hoovenkamp, supra note 122 at ¶501 ("Market power is the ability to raise price profitably by restricting output [. . .] For antitrust purposes, therefore, market power is the abilities (1) to price substantially above the competitive level and (2) to persist in doing so for a significant period without erosion by new entry or expansion.[. . .] The formula [which includes exclusion] appears to blend the power inquiry with the question of whether the defendant(s) obtained market power through improper exclusionary conduct."). *Compare with* Petit, *Id.* at 11 (explaining broader approaches by noting "influence over price" and setting quantities to which prices adjust).

309. O'Reilly et al., *supra* note 44 at 6.

310. Petit, *supra* note 307 at 10 ("market power consists in one (or more) firm(s)'s freedom purposefully to influence price by control of market output and by benefit of constraints on industry supply."). *See also* Petit, *supra* note 307 at 50 for inferring control over price from control over output.

indirectly in an advertising context, making its ultimate allocation by the platform, and the relative expansion of paid algorithmic output, highly profitable. Even when a user is monetized directly through a paid subscription, the allocation of their attention remains highly consequential to how value is allocated within the platform's ecosystem. The market boundaries of competition for user attention are necessarily more fluid online than for most in-person markets, though still distinct. Unlike income expenditures, attention can more easily shift direction (making it quickly reversible) and is highly fungible. In digital markets, services compete in overlapping product markets for user attention, making direct observation of harms more feasible than indirect observations of market power, reliant on a clear market boundary.[311] How should a platform's conduct, the competitive process, and harms be understood in these attention markets?

The preceding analysis has argued that in attention markets, platform dominance represents a position of strength *that enables the platform to produce attention allocations that are to an appreciable degree independent of the platform ecosystem's information relevance (i.e., its third-party firms), competitor platform information, stated consumer preferences, or its users' explicit inputs*.

A "position of strength" is defined by a platform's ability then to direct, over time, significant volumes of user attention within a given market. "Independence" (also called "freedom of action") is defined here not just by an absence of external pricing pressure (to price competitively),[312] but by an absence of external pressure to show the most relevant available information on the platform. As the European Commission noted in the context of its Google *Search* (Shopping) decision, it is the algorithm that ultimately sets the competitive benchmark for a platform's ecosystem[313] – and which a platform's independence in attention allocations undermines. A similar approach was evident in the EU's insistence on Amazon allowing "equal access" for

311. Herbert Hovenkamp, *Antitrust and Platform Monopoly*, 130 YALE L.J., 1952, 1961, (2020) ("One can neutralize this requirement [of clear market share boundaries] by using direct evidence to establish that a firm or group of firms has the requisite power over price, and infer that this particular firm or grouping is a relevant market. After all, a relevant market is a grouping of sales for which an unjustified price increase is profitable. Once direct econometric analysis has established that a firm or group of firms has sufficient power to charge a noncompetitive price, we can conclude that this grouping constitutes a relevant market.") Noting also that: "power assessment on two-sided platforms requires considering the reactions that occur on the opposite side." *See also* Alex Hern, *Netflix's biggest competitor? Sleep,* THE GUARDIAN (Apr. 18, 2017), https://www.theguardian.com/technology/2017/apr/18/netflix-competitor-sleep-uber-facebook.

312. For discussion, *see* Petit, *supra* note 307 at 51-52.

313. EGC. (2021). *Google and Alphabet v Comm'n (Google Shopping)*. 148. pp.26-27 "The quality of the specialised search algorithm is the constant against which the relevant undertakings compete."

merchants to its Buy Box, suggesting that Amazon's algorithm lacked competitive fairness.[314]

In the case of Amazon's third-party Marketplace, its ability to show users the algorithmic results that Amazon wants, because they are more profitable to it (in the form of higher advertising revenue), is an indication that Amazon can act independently of the information contained in its ecosystem of merchants, and is sufficiently unrestrained by competing platforms and websites. Users' stated search inputs or revealed behavioural preferences are often ignored by Amazon when it prioritizes advertising products, which may be duplicated or only loosely related to the search.

Dominance in the EU and DMA. Dominance[315] is a special concept used by the European Union[316] to denote significant market power,[317] with the goal of protecting efficiency and consumers through supporting the competitive process – rather than competitors.

Google was labelled as "super-dominant" by the General Court in its Shopping service self-preferencing case[318] due to it being a gateway to the internet with a proven impact on competition, high barriers to entry, and an extremely high market share.[319] Following the European Commission's cases against Google in Android and Shopping, the Digital Markets Act (DMA) and its conception of a "gatekeeper" platform was drafted and passed. But no specific guidance exists in the DMA on what constitutes unfair algorithmic allocations by a gatekeeper (beyond self-preferencing). This is a notable omission since it leaves open the question of when exactly the commercialisation of algorithms – and in turn user attention – should be

314. European Commission Press Release, Antitrust: Commission accepts commitments by Amazon barring it from using marketplace seller data, and ensuring equal access to Buy Box and Prime (Dec. 20, 2022) https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7777.

315. S*ee* Whish & Bailey, *supra* note 30 at 193. ("Article 102 imposes obligations on dominant firms that nondominant firms do not bear. Unilateral behaviour is not controlled under Article 101, which applies only to conduct which is attributable to a concurrence of wills; unilateral acts can however amount to an infringement of Article 102154. However, the conundrum for anyone interested in Article 102 is to determine what, precisely, is meant by an abuse of a dominant position.").

316. This comes from the ruling in Case 27/76 United Brands v Comm'n, 1978 E.C.R. 207. ("a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of consumers."). This definition has been used in other cases too. *See* Whish & Bailey, *supra* note 30 at 179 for discussion.

317. A firm either is or is not dominant under Article 102. Though with market power firms have degrees of it. Whish & Bailey, 7th edition, *supra* note 30 at 180.

318. European Commission. (2017). *EC vs. Google Search (Shopping)*. CASE AT.39740 G. 27/06/2017, https://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf.

319. Alessia S. D'Amico & Baskaran Balasingham, *Super-dominant and super-problematic? The degree of dominance in the Google Shopping Judgement*, 18 EUR. COMPETITION J. 614, 623 (2022), https://www.tandfonline.com/doi/epdf/10.1080/17441056.2022.2059962?needAccess=true.

restricted for excessively harming consumers and fostering exploitation of its ecosystem. This issue arose in the European General Court (ECG) review of *Google and Alphabet v Commission (Google Shopping)*. The ECG found that Google erred when it turned its "competitors into customers" by transforming its Shopping product comparison service into a commercial algorithmic space, which sought shopping aggregators to bid for their products to be included and achieve user visibility. For the ECG, the harm was simply that competitors had to offer a watered-down version of their shopping aggregator service – showing products rather than comparing the products themselves.[320] This left open the possibility of Google Search, and other aggregators, to commercialize more of their screen space as a basis to exert their market power and exploit their ecosystem.

Google Shopping as independence in attention allocations. The EC and EGC cited departures from "normality" (or "normal competition") and "competition on the merits" to explain the harm from Google's self-preferencing of its shopping comparison service in its Search results.[321] By contrast, our definition emphasizes that a dominant platform, such as Google Search, might be able to ignore the information contained in its ecosystem when it makes attention allocations. It can act in a relatively unconstrained manner in what information it prioritizes to the user – including independently of its competitors – for its own benefit, and to the detriment of competition and third-party firms. Self-preferencing is just one example of this behaviour. Self-preferencing may ignore the preferences of users, since what a user searches for might be different to the result shown (if they had searched for a specific aggregator service). This harms users by showing them potentially less relevant results. As the European Commission noted: "By means of the conduct at issue, Google encourages users to click not on the most relevant results, but on the most visible results, namely its own, irrespective of their actual relevance to the user."[322] The same is true of how Amazon prioritizes search results today: showing users results which are less relevant and so ignore the optimal information contained in its ecosystem.

320. *See* Google and Alphabet v Commission (Google Shopping), *supra* note 313 at 351. ("Furthermore, the alternative offered to competing comparison shopping services in order for them to appear in Shopping Units, namely to act as intermediaries, also requires them to change their business model in that their role then involves placing products on Google's comparison shopping service as a seller would do, and no longer to compare products. Accordingly, in order to access Shopping Units, competing comparison shopping services would have to become customers of Google's comparison shopping service and stop being its direct competitors.").

321. *Id.* at 31. The EGC ultimately argued that a "normal" baseline is established by Google being expected to index its general ecosystem in an open manner, which is required to ensure "equal treatment" of search results.

322. *Id.* at 26-27, *citing* The Federal Republic of Germany.

B. Informational harms to consumers

In general: "output consists of everything in the product package, including the information that a competitive market would ordinarily provide and that is necessary for a consumer to determine willingness to pay."[323] Information is arguably far more consequential to user decision-making online, given the strong positional-bias in user click behaviour.[324] This makes harms from uncompetitive information levels in digital markets potentially far more significant, especially since many so-called platforms, such as Google Search or Amazon's Marketplace, are really aggregators[325] of information. The service they provide is that of algorithmic curator, helping users navigate information abundance through recommending the most relevant website, product, Tweet, video, or social media post.

In these markets, the level of *information* and the level of *competition* are increasingly tied together as greater user monetization necessitates a decline in the relevance of the information results displayed. This may entail showing users a level of information *relevance* below that which would prevail under more competitive conditions, where the platform had less market power over its ecosystem, and lock-in or stickiness over its users was weaker.

In digital markets, the competitive level (or reasonable benchmark) of information provision is inherently tied to the data available to the platform's organic algorithms from the platform's third-party ecosystem and are optimized for user preferences. This optimization tends to combine aspects of information recency, relevancy, quality, and popularity with past user behaviour.

In the case of Amazon, examined here, more advertising can reduce the level of information provided to the user, *relative to the competitive level which could prevail based on the existing information content of its ecosystem of merchants*. Traditionally, the courts have largely seen advertising as increasing the information made available to the user, not diminishing it. As a result: "Agreements restricting advertising are a form of output restriction in the production of information useful to consumers."[326] For example, in Bates v. State Bar of Arizona (1977),[327] the court aimed to preserve price advertising as a form of protected commercial speech, precisely because[328]

323. Hovenkamp & Areeda, *supra* note 122, (discussing section 2023d "Agreements to suppress truthful product information," in ¶2023. Agreements Pertaining to Advertising and Related Dissemination of Product Information).

324. Fed. Trade Comm'n v. Amazon.com, Inc., No. 2:23-cv-01495 (W.D. Wash. filed Sept. 26, 2023).

325. *See* Thompson, *supra n*ote 48.

326. Hovenkamp & Areeda, *supra* note 122.

327. Bates v. State Bar of Arizona.,433 U.S. 350, 364 (1977).

328. *Id.* at 381.

it was assumed to facilitate information discovery. However, in the online context where organic algorithms strive for optimal information discovery, advertising only adds useful information to the extent that it complements any shortcomings in the organic algorithm (such as not including enough relatively unknown products or mostly including historically dominant products).

In the online context, advertising, such as that on Amazon's third-party Marketplace, may impede optimal information discovery by demoting more relevant (competitively earned) organic information in favour of unearned (paid) advertising information. Practically, this may "serve to increase the difficulty of discovering the lowest cost seller . . . and [reduce] the incentive to price competitively."[329] Some restrictions on advertising may, therefore, be pro-competitive and increase fairness through improving the competitive level of information provision.[330]

The *anti-competitive* harm from suppressing information was raised by the Judge in Apple vs. Epic Games. But they apply equally to Amazon's third-party marketplace. Citing Areeda and Hovenkamp, the judge in the case noted that "The less information a consumer has about relative price and quality, the easier it is for market participants to charge supracompetitive prices or provide inferior quality."[331] Apple was criticized for its "anti-steering" provisions,[332] denying its users information on alternative (out-of-app) methods to pay.[333] The judge also found that "The lack of competition has resulted in decrease [sic] information which also results in decreased innovation relative to the profits being made."

Competitive Information Provision on Amazon's Marketplace. Signs of a less than competitive level of information provision in the context of Amazon's third-party Marketplace could be assessed in several ways. We provide several tentative avenues here.

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329. *Id.* at 377.

330. Hovenkamp & Areeda, *supra* note 122, ¶2023. Agreements Pertaining to Advertising and Related Dissemination

of Product Information [Emphasis added]: "On the other hand, **restrictions on advertising** may be beneficial to competition when they eliminate only false or deceptive advertising, which does not produce useful information for consumers and may cause rivals at least short-run injury."

331. 559 F. Supp. 3d 898, 1055 (N.D. Cal. 2021); Hovenkamp & Areeda, *supra* note 122 at § 2008c.

332. *Id.* "Epic Games has not proven a present antitrust violation, the anti-steering provisions "threaten[] an incipient violation of an antitrust law.""

333. *Id.* "Apple uses anti-steering provisions prohibiting apps from including "buttons, external links, or other calls to action that direct customers to purchasing mechanisms other than in-app purchase," and from "encourag[ing] users to use a purchasing method other than in-app purchase" either "within the app or through communications sent to points of contact obtained from account registrations within the app (like email or text)."

The first is if information discovery has been made much more difficult for the user (for no corresponding benefits), requiring more clicks through more screens, sifting through a greater quantity of less relevant results, and ultimately leading to more time spent on the platform to achieve the same outcomes as previously. Data on these platform metrics, such as time spent per purchaser, exist, but is simply not disclosed by Amazon and other platforms.[334] If information acquisition has been made much more difficult for users – judged by time or cognitive effort – then this amounts to raising the cost of information acquisition or lowering the effective level of information that the average user is exposed to. As Areeda and Hovenkamp note, informational restrictions can "increase consumer search costs by hindering consumers in obtaining important information about the various alternatives available from sellers."[335] From an antitrust perspective, the trouble is linking higher consumer search costs to a lack of competitive pressures. As discussed below, they might instead arise simply from an 'informational power' which every platform, irrespective of size, possesses.

Second, if users search for one thing on the platform but are shown another – and not due to the information content being absent from the platform's ecosystem – then this is a strong indication that information discovery is being unfairly impeded. For example, if a user on Amazon searches for a particular product that is available in Amazon's inventory but instead gets shown other products only because those other products are more profitable to Amazon, then the information content of results is likely below a reasonable competitive level, and alternative forms of user monetization should, perhaps, be sought by the platform.

A third method involves establishing a competitive information benchmark based on a plausible range of organic algorithmic outputs. If a reasonably constructed organic algorithm would ensure that the user is exposed to certain information, such as say a range of product prices, while present outputs on the screen – based on combined advertising and organic outputs – do not, then this potentially reflects excessive user monetization. One risk is that the organic benchmark will not truly reflect user preferences. For example, the EU argued that Amazon preference merchants unfairly for its Buy Box based on its use of Prime delivery and faster delivery times. In response, Amazon committed to, among other things, "displaying a second competing offer to the Buy Box winner if a second offer from a different seller that is

334. *See* Mariana Mazzucato, Ilan Strauss, Tim O'Reilly, & Josh Ryan-Collins, Regulating Big Tech: the role of enhanced disclosures, 39 OXFORD REV. OF ECON. POL'Y 47, 57 (2023), https://www.researchgate.net/publication/368359776_Regulating_Big_Tech_the_role_of_enhanced_disclosures.

335. Hovenkamp & Areeda, *supra* note 122 at § 2023d Agreements to Suppress Truthful Product Information, in "¶2023. Agreements Pertaining to Advertising and Related Dissemination of Product Information."

sufficiently differentiated from the first one on price and/or delivery."[336] It is unclear if this will enhance consumer welfare based on user preferences and click behaviour. Some users will prefer fast delivery over other ranking factors. Another difficulty with establishing benchmarks is that information content on the internet, and user preferences themselves, are incredibly dynamic, such that the optimal information shown to users should constantly be changing.

Fourth, if users are not provided with choices on how the platform's algorithms rank or present information – despite less dominant competitors having such choices available – then this could be a sign that the quality of information (through the choice architecture) is being degraded anti-competitively. For example, today, Amazon has moved the algorithmic results filter options to the left side of the screen, away from their previous more prominent positioning. So they are less likely to be used even if available to the user. Filtering revising the ranking of products is potentially harmful to Amazon's monetization of user attention since it can remove advertising results when the user filters by a specific brand, price, or star rating – criteria that an advertising result is not subject to. This means that while choice can benefit the user, it is harmful to Amazon when it monetizes user attention through the prominent display of advertising..

Fifth, if the variety of algorithmic results declines considerably, say because most advertising comes from a single seller (i.e. duplication), or Amazon makes most of the products shown on the screen, then this implies a considerable welfare loss to users. Product variety is a well-recognized principle of consumer welfare in antitrust.[337] If such a decline reflects the platform's attempt to use its market power to raise user monetization levels, then this may be deemed excessive or simply sufficiently harmful and exploitative.

Sixth, algorithmic information transparency may decline as part of a dominant platform's attempt to increase user monetization. Information transparency involves asking where the algorithmic information shown on the platform comes from and how it was calculated. In the UK, a lack of algorithmic information transparency was an issue with hotel aggregator platforms secretly providing preferential organic rankings to content that was more valuable to the platforms, unbeknownst to the user.[338] Enhanced

336. European Commission Press Release, *supra* note 314.

337. Timothy B. Leary, *The Significance of Variety in Antitrust Analysis*, 68 ANTITRUST L.J. 1007 (2000); Hovenkamp & Areeda, *supra* note 122 at §651 ("Monopoly harms consumers by producing higher prices, restricting innovation, or reducing the array of choices that consumers would face under more competitive conditions.").

338. San Sau Fung, Jenny Haydock, Alex Moore, James Rutt, Robert Ryan, Mike Walker, Ian Windle, *Recent Developments at the CMA: 2018—2019*, 55 REV. OF INDUS. ORG. 579, 579-605

transparency of algorithmic results is perhaps the major algorithmic feature of the EU's Digital Services Act and Digital Markets Act. However, a lack of algorithmic transparency may not always be tied to a lack of competition or market dominance .

Seventh, has the verification of information on the site declined, or is it below a reasonable competitive level? For example, is there third-party or rigorous validation of reviews and seller information on Amazon? If not, is this connected to Amazon's dominant market position? Brad Stone implies this in his book *Amazon Unbound*, arguing that Amazon historically had little incentive to verify seller information and was late to correcting fake product reviews[339] precisely because of its dominant market position. Such issues may or may not arise from a lack of competitive conditions. For example, Yelp appears to have to deal with fake reviews more carefully than Google due to the additional competitive pressure on it from its lower market share in restaurant reviews.[340]

Finally, a competitive level of information provision might entail showing users less rather than more information. A platform may deliberately overload the user with information (or low-quality, unreliable information) to achieve certain outcomes. For example, Amazon- branded products,[341] as well as prominently displayed sponsored products in general, may receive far higher clicks and purchases on Amazon as the complexity and reliability of Amazon's total search results deteriorate.[342]

VI. ADVERTISING AND ALGORITHMIC ABUSES AS CONSUMER PROTECTION

The rationale for regulating excessive advertising instead through consumer protection legislation is based on the fact that all platforms, regardless of size, have the incentive and ability to show excessive advertising; however, only larger platforms, with market power (including a large existing user base with a degree of lock-in or stickiness) can readily monetize this attention without loss of sales or site visits.

(2019) (Hotels which paid more commission to the platform received a higher organic ranking in search results).

339. Stone, *supra* note 13.

340. Ginny Nguyen, *How Google and Yelp Handle Fake Reviews and Policy Violations*, SEARCH ENGINE LAND (Mar. 21, 2024), https://searchengineland.com/how-google-and-yelp-handle-fake-reviews-and-policy-violations-374071.

341. Brands are historically one of the primary ways consumers distinguish between the quality of competing products, without having to engage in purchases to sample all the goods. George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213, 224 (1961) ("'Reputation' is a word which denotes the persistence of quality.").

342. Fed. Trade Comm'n v. Amazon.com, Inc., *supra* note 324.

Another justification for a consumer protection approach to regulating algorithmic output more broadly is that it is unclear if more competition will reduce exploitation of consumers, platforms ecosystems, and the degradation of algorithmic results. Market imperfections and user behaviour might limit competition or competitive entry, especially if consumers need help to easily discern differences between information quality or effective prices. In contrast, the FTC argues in their revised complaint against Facebook that more competition will improve results quality and other non-pecuniary forms of user exploitation.[343] Similarly, the CMA[344] argues that market power is why firms exploit users' positional bias and deteriorate search results quality.

However, evidence shows it to be costly and difficult for the user to verify product or service quality online.[345] Under such circumstances, where quality can be degraded and the user fails to see this, or compare the quality of product between competing platforms is costly,[346] more competition may fail to improve output quality (since a lack of competition is not necessarily driving the misallocations). Notes one prominently cited report[347] [emphasis added]:

343. Fed. Trade Comm'n v. Facebook, Inc. No.: 1:20-cv-03590, Substitute Am. Compl. for Injunctive & Other Equitable Relief. 5, 73 (D.D.C. Sept. 8, 2021), Case No.: 1:20-cv-03590-JEB ("Competition benefits users in some or all of the following ways: […] preferences regarding the amount and nature of advertising." From the firm-side it argues that "Facebook thereby also deprives advertisers of the benefits of competition, such as lower advertising prices and increased choice, quality, and innovation related to advertising." *Id.* at 5. The relationship between platform sides and competition remains unclear though.) *See also* https://www.ftc.gov/system/files/documents/cases/2021-09-08_redacted_substitute_amended_complaint_ecf_no._82.pdf ("Competition benefits users [through] preferences regarding the amount and nature of advertising. Facebook also deprives advertisers of the benefits of competition, such as lower advertising prices and increased choice, quality, and innovation related to advertising." The relationship between platform sides and competition remains unclear though.)

344. U.K. Competition & Mkts. Auth. (Algorithms: How They Can Reduce Competition and Harm Consumers. (Jan. 19, 2021), https://www.gov.uk/government/publications/algorithms-how-they-can-reduce-competition-and-harm-consumers/algorithms-how-they-can-reduce-competition-and-harm-consumers#executive-summary ("Moreover, a platform gain from unfair ranking is more likely [sic] outweigh any costs, from consumers perceiving the ranking to be lower quality and switching to an alternative, if it has greater market power and consumers less able to switch to an alternative."). The side(s) over which the platform requires market power over is not specified though.

345. Ariel Ezrachi & Maurice E. Stucke, *The Curious Case of Competition and Quality,* 3 J. ANTITRUST ENF'T 227, 235 (2015) ("[T]he correlation between competition and quality is likelier to break down with **experience goods,** whose quality consumers may evaluate only after purchase and consumption, and **credence goods**, whose quality consumers generally cannot evaluate.").

346. *Id.* at 243, citing European Commission Case No. Comp/M. 5727 (EC) ("A firm is more likely to degrade its search results, the European Commission noted, when the competing search engines provide different organic results and 'it is inherently difficult for the user to assess whether the platform engages in this behavior.'").

347. Steffen Huck, Jidong Zhou, & London Economics Charlotte Duke, *Consumer Behavioural Biases in Competition: A Survey*, OFF. OF FAIR TRADING, https://londoneconomics.co.uk/wp-content/uploads/2012/06/Consumer-behavioural-biases-in-competition-OFT1.pdf.

> "[. . .] competition may not help when there are at least some consumers who do not search properly or have difficulties judging quality and prices . . . . In the presence of such consumers it is no longer clear that firms necessarily have an incentive to compete by offering better deals. **Rather, they can focus on exploiting biased consumers who are very likely to purchase from them regardless of price and quality**. [Moreover] These effects can be made worse through firms' deliberate attempts to make price comparisons and search harder (through complex pricing, shrouding, etc) and obscure product quality. The incentives to engage in such activities become more intense when there are more competitors."[348]

As the above notes, more competition might create more information rather than the right information. The same Report notes that "when consumers have cognitive limitations, it is not only available information that may matter but also its presentation."[349]

New and forthcoming regulatory oversight of platforms in the U.S. largely adopts this consumer-focused approach through:

- Greater emphasis on understanding, monitoring, and enforcing against[350] online use of "dark patterns," particularly disguised ads, difficult-to-cancel subscriptions, buried terms, and tricks to obtain data.[351]

- A proposed rule to Ban Fake Reviews and Testimonials.

- The new 202 Integrity, Notification, and Fairness in Online Retail Marketplaces for Consumers Act (the INFORM Act), which requires online marketplaces to protect consumers from counterfeit, unsafe, and stolen goods by verifying their high-volume third-party sellers' identities and making it easier for consumers to report suspicious marketplace activity.

Under Section 5 of the Federal Trade Commission Act, "unfair or deceptive acts or practices in or affecting commerce" are prohibited. While "deceptive" practices involve misleading the consumer, "unfair" methods of

348. *Id.* at 68.

349. *Id.* at 8.

350. Press Release, Fed. Trade Comm'n. FTC to Ramp up Enforcement Against Illegal Dark Patterns that Trick or Trap Consumers into Subscriptions, FTC (Oct. 28, 2021), https://www.ftc.gov/news-events/news/press-releases/2021/10/ftc-ramp-enforcement-against-illegal-dark-patterns-trick-or-trap-consumers-subscriptions.

351. Press Release, Fed. Trade Comm'n, FTC Report Shows Rise in Sophisticated Dark Patterns Designed to Trick and Trap Consumers (Sept. 15, 2022), https://www.ftc.gov/news-events/news/press-releases/2022/09/ftc-report-shows-rise-sophisticated-dark-patterns-designed-trick-trap-consumers.

competition are more nuanced and discussed in a recent Policy Statement by the Commission, which we explore in detail below.[352]

First, we explore the implications of Apple vs. Epic Games for a consumer-focused approach to regulating platform market power through degrading information quality. In this case, the court found that Epic Games as a company had consumer protection rights under California's consumer law since it was, in fact, a consumer (or "quasi-consumer")[353] with standing, as the platform market is multi-sided: "Epic consumes the app transactions that Apple offers in a two-sided market – triggering the consumer test."[354] This means that it is not just users but business users who are potentially exploited by platforms under unfair business practices. We explore this in more detail now.

A. Using market institutions to inform market structure

It is noteworthy that in Apple vs. Epic Games, it was consumer law that was used to find that Apple had unfairly competed through anti-steering provisions, based on California's *Unfair Competition Law* (UCL), to "hide critical information from consumers and illegally stifle consumer choice."[355] The digital institutional environment and its impact on consumers and Apple's profit margins was central to the successful argument that Apple's anti-steering provisions were "unfair competition."

The Judge cited the FTC test for unfairness[356] when arguing that Apple's anti-steering provisions unfairly prevented developers from using two of the three "most effective marketing activities"[357] – push notifications and email outreach – to alert users to the 30% commission taken by Apple on all in-app purchases. The Judge argued that they "threaten[. . .] an incipient violation of an antitrust law" by preventing informed choice among users of the iOS platform," citing the precedent that[358] requires "consumers ha[ve] a

352. Fed. Trade Comm'n, Policy Statement Regarding the Scope of Unfair Methods of Competition Under Section 5 of the Federal Trade Commission Act, Comm'n i File No. P221202 (Nov. 10, 2022), https://www.ftc.gov/system/files/ftc_gov/pdf/p221202sec5enforcementpolicystatement_002.pdf.

353. Epic Games, Inc v. Apple, Inc., 559 F. Supp. 3d 898, 1033 (N.D. Cal. 2021) ("Thus, although the question is close, the Court finds that Epic Games has standing to bring a UCL claim as a quasi-consumer, not merely as a competitor.").

354. Epic Games, Inc v. Apple, Inc. No. 21-16506, slip op. at 80 (9th Cir. 2023), https://law.justia.com/cases/federal/appellate-courts/ca9/21-16506/21-16506-2023-04-24.html. ("Through its subsidiaries that have apps on the App Store, Epic consumes the app transactions that Apple offers in a two-sided market – triggering the consumer test.").

355. *Id*. at 2.

356. Epic Games, Inc v. Apple, Inc., *supra* note 353 at 1038.

357. Epic Games, Inc v. Apple, Inc., No. 21-16506, slip op., *supra* note 354 at 80.

358. *Id.*, citing Cel-Tech, 20 Cal. 4th at 187; cf. FTC v. Neovi, Inc., 604 F.3d 1150, 1158 (9th Cir. 2010).

free and informed choice", since "Without information, consumers cannot have a full understanding of costs."[359]

Significantly, in this institutional context, the deprivation of consumer information constituted "unfairness." This argument doesn't rely on the notion of a fully optimizing consumer online. Yet, on denying the consumer information that may have an impact on their purchase decision (saving them money at the cost of friction and time): "By employing anti-steering provisions, consumers do not know what developers may be offering on their websites, including lower prices."[360] In this way the court sought to update and apply Eastman Kodak, in deciding on what the relevant *information costs*[361] were given the nature of the product market. Whereas Eastman Kodak put most of its emphasis on consumers internal processing capabilities departing from those presumed by the Chicago School,[362] the court in Apple vs. Epic Games instead highlighted the digital context, though its argument was embryonic:[363]

> "In the context of technology markets, the open flow of information becomes even more critical. As explained above, information costs may create "lock-in" for platforms as users lack information about the lifetime costs of an ecosystem. Users may also be unable to attribute costs to the platform versus the developer, which further prevents them from making informed choices. In these circumstances, the ability of developers to provide cross-platform information is crucial. While Epic Games did not meet its burden to show actual lock-in on this record, the Supreme Court has recognized that such information costs may create the potential for anticompetitive exploitation of consumers. Eastman Kodak, 504 U.S. at 473–75."

Moreover, the court found a close link between information quality and exploitation. Since as consumers were being deprived of information, this enabled Apple to earn supracompetitive profits, as well as harm innovation.[364]

359. Epic Games, Inc v. Apple., No. 4:20-cv-05640-YGR, 2021 WL 4128925, at 51 (N.D. Cal. Sept. 10, 2021).

360. *Id*. at 118.

361. Eastman Kodak Co. v. Image Technical Servs., Inc.. 504 U.S. 451, 499 (1992) (Scalia, J., dissenting): (information costs are: the costs and inconvenience to the consumer of acquiring and processing life-cycle pricing data for Kodak machines-that "could create a less responsive connection between service and parts prices and equipment sales."').

362. Eastman Kodak Co. v. Image Technical Servs., Inc. 504 U.S. 451 (1992).

363. Epic Games, Inc v. Apple, Inc., No. 4:20-cv-05640-YGR, 2021 WL 4128925, *supra* note 359 at 164.

364. *Epic Games, Inc. v. Apple, Inc.*, 67 F.4th 946, 984.

However, this informational power is not the same as market power.[365] Both may stem from an absence of effective competition. Still, informational power may follow simply from the informational environment as a cross-cutting benefit to the effective pricing power of all firms. This was the argument made by Scalia, dissenting, in Eastman Kodak – and by Areeda and Hovenkamp.[366] Subsequently, in Jefferson Parish[367] (1984) the Supreme Court found that while market imperfections might *"generate 'market power' in some abstract sense"* for the firm,[368] this did not necessarily imply that it falls foul of antitrust law (in this case, the law of "tying.") Instead, for information to provide a firm with the ability to exploit consumers, it must be that consumers' imperfect decision-making ('ignorance') arises from generalized structural imperfections in the informational environment,[369] argue Areeda and Hovenkamp. In other words, it is only by reference to the informational environment that the impact of market imperfections on the ability of firms to exploit consumers can be inferred!

Even then, the market only fails "when purchasers are exploited because of ignorance that they cannot reasonably overcome via knowledge or other protections."[370] That's why in discussing the Kodak Supreme Court judgement, Areeda and Hovenkamp propose: "a reasonable buyer standard [which] considers the relative ease and cost of acquiring the necessary information or protection relative to the potential savings."

As reviewed previously and elsewhere,[371] in online markets, informational power is an algorithmic power, which combines trust in algorithms and users' persistent use of positional heuristics to infer information relevancy and optimality. This is an expected outcome of the highly complex informational environment which users navigate online and which platform algorithms are designed to curate and simplify.

365. *Eastman Kodak Co., supra* note 361 at 464.

366. Hovenkamp & Areeda, supra note 122 at ¶1740. ("Market Imperfections, 'Lock-in', and Single-Brand "Aftermarket"") (quoting "Some exploitation of some customers demonstrates 'power' in the sense that perfect competition is absent but not in the sense of a 'substantial' magnitude, which is usually meant when antitrust courts search for market power." From a market definition perspective: "Proof that market imperfections are large enough to subject an extensive group of customers to substantial exploitation makes them a market that is separate from the larger market.").

367. Jefferson Par. Hosp.Dist.No. 2 v. Hyde. 466 U.S. 2. (1984)

368. *Id*. at 466.

369. Hovenkamp &Areeda, *supra* note 122 at §1735d3. ("Market failure" and buyer ignorance in Kodak).

370. *Id.* at §735d5. (Conclusion: Leverage or ignorance generally is not "power").

371. *See* O'Reilly et al. *supra* note 44 at 12; Rock et al., *supra* note 22 at 27.

B. Are attention rents an unfair method of competition?

As noted previously, attention rents occur when a platform exploits its role as a trusted intermediator to direct user clicks to suboptimal, often sponsored information. At its core, this exploits users' positional bias[372] in how they click by placing this material in users' click zone – their core attentional zone. This positional bias relies on the suboptimal information trying to replicate and leverage the authority of the platform's organic algorithmic result (so-called "trust bias.")[373] The suboptimal information is embedded between organic results. This power of the platform to allocate clicks is imperfect but considerable.

Historically, deceptive practices like false labelling and advertising have been recognized as unfair methods of competition.[374] This would be one way to proceed, arguing that advertising must be more prominently labelled on Amazon and other platforms, and requires *a clearer separation between organic algorithmic results and sponsored advertising results*, as was the case historically on platforms. For example, Facebook only embedded advertising in its Homepage Feed in 2014, instead of placing it to the side. Lack of clear labelling or segregation between paid promotions and organic results can muddy the waters for users trying to differentiate between unbiased (organic) information and paid (advertising) content. However, this argument is fairly limited in scope.

Amazon's exploitation of users' positional bias more likely involves multiple combined practices, which together may constitute an unfair method of competition.[375] This was the judge's view in Apple vs Epic Games, who found that Apple's App store constituted an "ecosystem, with interlocking rules and regulations" and which had to be analyzed in combination.[376] In the case of Amazon, the practises that work to exploit its

372. Craswell, et al. An Experimental Comparison of Click Position-Bias Models. In Proceedings of the 2008 International Conference on Web Search and Data Mining. 7-(2008) ; Joachims, T., Accurately Interpreting Clickthrough Data as Implicit Feedback. 51 ACM SIGIR FORUM 4, (2017).: Acm.

373. See Maeve O'Brien & Mark T. Keane, Modeling Result-List Searching in the World Wide Web, 28 Proc. of the Ann. Meeting of the Cognitive Sci. Soc'y 1881, 1881 (July, 2006), https://escholarship.org/uc/item/6p6654nd#main;Mark T. Keane, Meave O'Brien, & Barry Smyth,Are People Biased in their Use of Search Engines?, 51 Communications of the AMC 49, 52 (Feb. 2008), https://dl.acm.org/doi/pdf/10.1145/1314215.1314224.

374. Jon Leibowitz, Concurring Opinion In re of Rambus, inc. FTC Docket . 9302, at 2 n.2.

375. FTC, supra note 352 at 14. (Citing Intel Consent Order at 9341 Vons, 1987-1993 Transfer Binder ¶ 23,200, "conduct by a respondent that is undertaken with other acts and practices that cumulatively may tend to undermine competitive conditions in the market.").

376. Epic Games, supra note 353 at 1013 ("Because Apple has created an ecosystem with interlocking rules and regulations, it is difficult to evaluate any specific restriction in isolation or in a vacuum. Thus, looking at the combination of the challenged restrictions and Apple's

ecosystem and that harm user choice, include a larger share of screen space – and priority screen space – being devoted to advertising results, advertising results being interspersed between organic results, organic and advertising product results in Search being largely indistinguishable from one another, and the user not being able to avoid advertising results. It is the combination of these factors that allows Amazon to exploit its ecosystem of merchants.

The most recent 2023 FTC Guidance on Unfair Methods of Competition[377] states, as its first criterion, that the action must be a type of *conduct* "undertaken by an actor in the marketplace – as opposed to merely a condition of the marketplace." Platforms are marketplace owners and engage in exploitative behavior with respect to their ecosystem of firms precisely when setting marketplace conditions that favor advertising – even if indirectly so – which compels its ecosystem to pay for advertising to achieve visibility.

The second FTC criterion assesses if the conduct is "unfair." This encompasses various practices. In the case of excessive advertising in a platform context, the conduct is an attempt at exploitation since it seeks monopoly profits through user and third-party firm monetization. It is also potentially coercive when the advertisers and the firm ecosystem overlap strongly, as on Amazon, highlighting that higher levels of advertising compel the third-party ecosystem to advertise. The conduct must also tend to negatively affect competitive conditions on platforms. This is what we see on Amazon's Marketplace. As more competitive products get downweighed in the users' attention sphere, it becomes harder for competitive products to "win out" in the market.

Several other factors might also be considered. Firstly, does the combined behaviour cause, or is likely to cause, substantial injury to consumers? If a digital platform prioritizes its advertisements so heavily that genuine, maximally relevant and competitive, organic search results are obscured or pushed down significantly, consumers might not get the information they are genuinely seeking. This could lead to consumers making decisions based on misleading information or not accessing better products, services, or information due to the excessive advertising.

Secondly, can consumers reasonably avoid this injury? If the platform dominates the market (as Amazon does), consumers might have limited alternatives for unbiased search results. However, consumers might not realistically be able to avoid such harm due to cognitive and time limitations, and the prevailing informational environment detailed in this paper.

justifications, and lack thereof, the Court finds that common threads run through Apple's practices which unreasonably restrains competition and harm consumers [. . .]").

377. FTC, *supra* note 352.

Even if alternative comparison-shopping engines are available to users, they may not be inclined to check them (due to a degree of lock-in, product stickiness, or geographical market power); or they may not be able to compare the relative merits of the results easily between platforms. Consumers may also be unaware that the excessive advertising is severely harming the quality of their results.

Lastly, the harm should not be outweighed by benefits to consumers or competition.[378] Suppose the platform argues that the advertising subsidizes a free search service; then the FTC may have to weigh this benefit against the potential harm. We have argued that the excessive advertising significantly compromises the quality of Amazon's search results, decreases consumer welfare (choice, prices, and quality), and impedes the competitive process within Amazon's Marketplace – all with few offsetting benefits for the ecosystem.

Lastly, the question also arises whether a less exploitative mode of platform funding, causing less harm to consumers, is feasible. Platforms can monetize user attention and information quality more directly. For example, users can pay on dating apps to see their optimal matches. On Spotify, users can pay to avoid most advertising. Access to organic information is unambiguously available to the user for a fee. For the platform this can potentially reduce the size of it's network effects. But for the user, payment to offset non-pecuniary costs can increase efficiency.[379] Competition commissions in middle-income countries have explored setting a fixed limit on advertising placements in algorithmic results or[380][381]

VII. CONCLUSION

To conclude, we briefly reiterate several of the core propositions of this paper:

378. Epic Games, *supra* note 353 at 1056 (To support a finding of unfairness to *consumers*, a court uses the balancing test. Under the balancing test, the Court must weigh "the utility of the defendant's conduct against the gravity of the harm to the alleged victim." *See also Progressive W. Ins. Co. v. Super. Ct.*, 135 Cal. App. 4th 263, 285 (2005)).

379. Michael R. Baye & Jeffrey Prince, The Economics of Digital Platforms: A Guide for Regulators, in: The Global Antitrust Institute Report on the Digital Economy, no. 34 (2020), https://gaidigitalreport.com/wp-content/uploads/2020/11/The-Global-Antitrust-Institute-Report-on-the-Digital-Economy_Final.pdf

381. *Online Intermediation Platforms Market Inquiry Final Report and Decision*, S. AFR. COMPETITION COMM'N (July 2023), https://www.compcom.co.za/wp-content/uploads/2023/07/CC_OIPMI-Final-Report.pdf. In July 2022, the South African Competition Commission provisionally recommended limiting algorithmic attention rents through reserving the top of the page for organic search results based on relevance only, uninfluenced by payments. However, the final report released one year later in 2023 the Commission required, among other measures through the provision of $9.4 million (ZAR180 million) in advertising credits.

- The level of information and the level of competition are more closely intertwined online than in non-digital markets. It is through the deterioration of information quality that platforms leverage their market power over their ecosystem of firms and their informational power over users.

- Advertising results displacing prominent organic results serves as the primary algorithmic mechanism degrading information quality on Amazon's Marketplace today. Advertising drives the relative prominence of Amazon's search results and represents a significant additional platform cost for users, manifesting in higher search costs, reduced product quality and choice, less relevant results, and higher prices. Advertising ultimately serves as a core means through which Amazon extracts higher fees from its third-party firms, compelling them to pay for prominence, unable to earn it competitively.

- Rational optimizing user behavior cannot be used as a justification to ignore a platform degrading information quality online, since user behavior online largely deviates from this rational optimizing model.

- Algorithms are the principal market institution coordinating exchanges online. Their allocations – from user attention to the most relevant product information – reflects the degree of competition within and between platform markets. Interrogating algorithmic outcomes and rules is essential to future platform market investigations. This also necessitates enhanced mandatory public disclosures[382] by platforms regarding the functioning and outputs of their algorithms.

- The excessive degrading of results quality by Amazon warrants interrogation by antitrust authorities, as discussed in Section 5 of this paper. Additionally, this issue requires significantly more attention under consumer protection laws (Section 6), given that increased competition is unlikely to prevent consumers from being exploited by the complex informational environment online.