Taking Behavioral Antitrust Seriously: On Default Agreements as Exclusive Dealing and the Debiasing Potential of Default Randomization

Omar Vasquez Duque

Follow this and additional works at: https://digitalcommons.law.umaryland.edu/mlr

TAKING BEHAVIORAL ANTITRUST SERIOUSLY: ON DEFAULT AGREEMENTS AS EXCLUSIVE DEALING AND THE DEBIASING POTENTIAL OF DEFAULT RANDOMIZATION

OMAR VASQUEZ DUQUE*

Antitrust law, deeply influenced by price theory, has only recently begun integrating behavioral economic insights. This shift is exemplified by some of the most important recent antitrust interventions worldwide, like the recently concluded Google antitrust trial in the United States—in which the U.S. Department of Justice sued Google for payments to Apple and other distributors to maintain its default status—and the Digital Markets Act in Europe—that mandates users to choose their default internet browser, search engine, and digital assistant. These interventions rely on the theory that setting an application as users' default can be equivalent to an exclusivity contract, because people tend to stick to the status quo. This theory suggests that firms exploit users' inertia to preserve their dominance in digital markets and recommends forcing users to choose their default settings to promote competition. This Article critiques the theory's foundation in behavioral economics, illustrating how it has misguided enforcement efforts towards behaviors unlikely to harm competition by themselves and led policymakers to adopt counterproductive remedies.

This work proposes a dual-process model of decision-making to explain the causes of status quo (or default) effects in digital applications, assess the antitrust implications of default effects on application distribution, and evaluate the effectiveness of potential debiasing policies. According to this model, default settings tend to stick when users are either satisfied with the default, unaware of alternatives, or misperceive substitutes' quality.

Undesirable defaults are unlikely to endure, particularly when users are aware of competing options. This Article tests these hypotheses through two experiments and a generalized synthetic control model. It reveals that while default effects exist, their impact and persistence are generally much less substantial and more variable than what enforcers and policymakers have assumed. Moreover, in markets where users have strong preferences, forcing them to choose defaults typically results in the dominance of the most popular option.

These findings have significant implications for antitrust policy, especially regarding exclusive dealing standards and debiasing remedies. With respect to standards, when considering that defaults only distort the choices of a subset of users, it becomes much harder to pass the substantial foreclosure test under Section 1 of the Sherman Act and Section 3 of the Clayton Act. However, this work shows that monopolists often use default settings as part of a broader monopoly maintenance strategy for which a generic monopolization theory of harm (Section 2 of the Sherman Act) is more appropriate. Regarding debiasing remedies, this study indicates that forcing people to choose their defaults may not significantly alter entrenched market dynamics if most users engage minimally with the choices presented to them and market forces already provide sensible defaults. Default randomization may be a more impactful intervention, but the least sophisticated users would bear most of the policy costs (i.e., sticking to a less preferred default).

This Article concludes with three policy recommendations. First, regulators should always base behaviorally informed antitrust interventions on theories that acknowledge the contingency of people's behavior. Second, implementing a dedicated application to manage defaults could significantly lower switching costs and be a more impactful remedy than choice screens. Finally, and more importantly, to best ensure competition in digital markets, law enforcement must target trade restraints among actual or potential competitors that block disruptive innovation rather than focusing on conduct that, by itself, is unlikely to harm consumers.

INTRODUCTION

In the last two decades, behavioral insights have enriched the analytical framework of several areas of the law.[1] Yet, despite its deep reliance on price

---

1. Two of the most cited articles of legal scholarship written after 1997 are what can be regarded as the cornerstones of behavioral law and economics. *See* Christine Jolls, Cass R. Sunstein

theory, antitrust law has been hesitant to integrate behavioral economics in its analytical framework.[2] This trend has changed in recent years, primarily due to the increased interest in digital markets and the concern about Big Tech's data analytics.[3] In fact, many of the most noteworthy recent antitrust interventions worldwide strongly rely on behavioral economics. A few examples include the Google Shopping[4] and Android[5] cases in the European Union, Europe's Digital Markets Act,[6] and the recently concluded Google case in the U.S.[7]

Behavioral antitrust scholarship had tended to provide broad prescriptions that lacked the specificity to guide law enforcement and policymaking. However, scholars, enforcers, and regulators have lately suggested detailed theories of anticompetitive harm and policy recommendations based on behavioral science.[8] One theory that has gained considerable traction is that default agreements serve as *de facto* exclusivity arrangements.[9] Proponents of this theory argue that defaults exploit user

---

& Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CALIF. L. REV. 1051 (2000).

2. *See, e.g.*, EYAL ZAMIR & DORON TEICHMAN, BEHAVIORAL LAW AND ECONOMICS (2018). Zamir and Teichman's encyclopedic book intends to document most of the developments of behavioral law and economics in all areas of the law. The antitrust section, however, has eight pages and mostly refers to the stickiness of loyalty programs.

3. *See, e.g.*, ARIEL EZRACHI & MAURICE E. STUCKE, VIRTUAL COMPETITION: THE PROMISE AND PERILS OF THE ALGORITHM-DRIVEN ECONOMY (2016); Fiona Scott Morton et al., George L. Stigler Ctr. for the Study of the Econ. & the State, *Stigler Committee on Digital Platforms Market Structure and Antitrust Subcommittee: Report*, *in* STIGLER COMMITTEE ON DIGITAL PLATFORMS: FINAL REPORT 23 (2019), https://www.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf.

4. Case T-612/17, Google v. Comm'n (*Google Shopping*), ECLI:EU:T:2021:763, ¶¶ 68, 596–97 (Nov. 10, 2021) (upholding the finding of the European Commission (the Commission) that Google abused its dominant position by favoring its own shopping comparison service in its general search results).

5. Case T-604/18, Google v. Comm'n (*Google Android*), ECLI:EU:T:2022:541, ¶¶ 15, 892 (Sept. 14, 2022) (confirming the Commission's decision that Google imposed unlawful restrictions on manufacturers of Android mobile devices and mobile network operators to consolidate the dominant position of its search engine).

6. *See, e.g.*, Amelia Fletcher et al., *The Effective Use of Economics in the EU Digital Markets Act*, 20 J. COMPETITION L. & ECON. 1 (2024).

7. United States v. Google LLC, No. 20-cv-3010, 2024 WL 3647498 (D.D.C. Aug. 5, 2024).

8. *See, e.g.*, *'TechREG® Chronicle – Behavioral Economics*, COMPETITION POL'Y INT'L (Oct. 31, 2022), https://www.pymnts.com/cpi_posts/techreg-chronicle-behavioral-economics/ (Competition Policy International's special issue about behavioral economics documenting the most recent developments in the area).

9. *See, e.g.*, Jacques Crémer et al., *What We Learn About the Behavioral Economics of Defaults From the Google Search Monopolization Case*, PROMARKET (Feb. 27, 2024),

inertia, because people tend to stick to the status quo.[10] This practice, they claim, contributes significantly to the high market concentration observed in key digital markets, such as online search and advertising. Consequently, these theorists advocate for regulatory interventions that require users to actively select their default applications, suggesting that such policies would dilute market concentration and foster competition in digital markets.[11]

This Article argues that the *de facto* exclusive dealing theory is not based on sound behavioral economics and that such theory has led law enforcers to misapprehend the defaults' most critical mechanism of anticompetitive harm and regulators to issue futile policies. This work suggests a more precise analytical framework to assess the stickiness (or status quo) effects of default settings and a stronger legal basis for evaluating monopolistic schemes that involve said conduct. Specifically, this work empirically tests default effects, acknowledging that while they are the norm,[12] defaults may be slippery,[13] or they may just reflect people's

---

https://www.promarket.org/2024/02/27/what-we-learn-about-the-behavioral-economics-of-defaults-from-the-google-search-monopolization-case/.

10. *See, e.g.*, FIONA M. SCOTT MORTON & DAVID C. DINIELLI, ROADMAP FOR A MONOPOLIZATION CASE AGAINST GOOGLE REGARDING THE SEARCH MARKET (2020), https://omidyar.com/wp-content/uploads/2020/09/Roadmap-for-a-Monopolization-Case-Against-Google-Regarding-the-Search-Market.pdf; COMPETITION & MKTS. AUTH., ONLINE PLATFORMS AND DIGITAL ADVERTISING MARKET STUDY para. 8 (2020), https://assets.publishing.service.gov.uk/media/5fa557668fa8f5788db46efc/Final_report_Digital_ALT_TEXT.pdf; AUSTRALIAN COMPETITION & CONSUMER COMM'N, DIGITAL PLATFORM SERVICES INQUIRY: SEPTEMBER 2020 INTERIM REPORT (2020), https://www.accc.gov.au/system/files/ACCC%20Digital%20Platforms%20Service%20Inquiry%20-%20September%202020%20interim%20report.pdf. Interestingly, Turkish enforcers took the opposite view, in the sense that a monopolization claim was not possible if the users had the opportunity to switch the defaults. *See* Peter Sayer, *Google Faces New Antitrust Investigation in Turkey*, COMPUTERWORLD (Mar. 6, 2017), https://www.computerworld.com/article/3177225/google-faces-new-antitrust-investigation-in-turkey.html. This article suggests both types of deterministic claims are unsound. *See also* Complaint, United States v. Google LLC, No. 20-cv-3010, 2024 WL 3647498 (D.D.C. Aug. 5, 2024). The U.S. Department of Justice claims that Google's payment to be the default search engine is equivalent to anticompetitive exclusive dealing because "defaults are especially sticky." *Id.* at 3.

11. *See, e.g.*, Francesco Decarolis & Muxin Li, *Regulating Online Search in the EU: From the Android Case to the Digital Markets Act and Digital Services Act.*, 90 INT'L J. INDUS. ORG. 102983 (2023).

12. The canonical paper is William Samuelson & Richard Zeckhauser, *Status Quo Bias in Decision Making*, 1 J. RISK & UNCERTAINTY 7 (1988).

13. *See, e.g.*, Lauren E. Willis, *When Nudges Fail: Slippery Defaults*, 80 UNIV. CHI. L. REV. 1155 (2013). A recent and comprehensive meta-analysis showed that most of default studies have found positive effects, but several did not find a significant effect, and two even demonstrated negative effects. Jon M. Jachimowicz et al., *When and Why Defaults Influence Decisions: A Meta-Analysis of Default Effects*, 3 BEHAV. PUB. POL'Y 159 (2019).

preferences.[14] It does so with two online experiments and a generalized synthetic control model. In the experiments, the participants played a trivia game and won a bonus if they found all the correct responses. This experimental setting resembled users' incentives when interacting with digital applications since people want to maximize the reliability of the information they seek and minimize the time they spend searching for it. This work complements the experimental analysis with a generalized synthetic control model that assesses the impact of Firefox's default switch from Google to Yahoo in 2014, using StatCounter data (a publicly available data source that reports the market share of search engines, internet browsers, operating systems, and other digital markets, in most of the world since 2009). The two main results are the following. First, defaults are not as impactful as enforcers and policymakers have assumed. Widely preferred options do not benefit significantly from default status, and while defaults increase the market share of options people would not choose, users tend to opt out over time when the default is not regarded as a good-quality option. Second, forcing people to choose their defaults leads most of them to pick the one they typically use.

Both findings have significant implications for antitrust law and policy. To begin with, they significantly weaken the *de facto* exclusive dealing theory, which must pass a substantial foreclosure test. This is because the non-sticky share of the market should be discounted in any foreclosure analysis (e.g., a default agreement between a supplier and a distributor that holds 50% of the market only forecloses 25% of the market if half of consumers switch to another product). Besides, this work shows that "choice screens"—the regulatory strategy most jurisdictions (including the European Union and Australia) have chosen to foster competition in several application markets—tend to perpetuate monopolistic positions when there is a clear dominant actor in the market.[15] This is because most people do not have the motivation to engage with pop-up windows. This work argues that default randomization could be a more promising option. Yet, the least sophisticated users would bear most of its costs (i.e., sticking to a less preferred default). This Article argues that policymakers should instead prioritize lowering switching costs with a dedicated application to change defaults easily and

---

14. *See, e.g*., Cass R. Sunstein, *Deciding by Default*, 162 UNIV. PA. L. REV. 1, 23 (2013).

15. On choice screens, see Omar Vasquez Duque, *Active Choice vs. Inertia? An Exploratory Assessment of the European Microsoft Case's Choice Screen*, 19 J. COMPETITION L. & ECON. 60 (2023). Russia had more success with a choice screen that may have benefited its local search engine Yandex. *See* Decarolis & Li, *supra* note 11. However, due to Russia's idiosyncratic political system, it is challenging to hypothesize this result could apply in other countries too—at least in democratic countries with a strong free-market economy.

quickly when people are motivated to do so. It concludes by stressing that law enforcers should broaden the analysis to focus on the harm to disruptive innovation that default agreements may entail (e.g., Apple not partnering with LLM-powered search engines that may become Google's strongest competitors).

This Article proceeds as follows: Part I provides general background on monopolization law, the economics of vertical restraints, and the regulation of exclusive dealing.[16] Part II sets forth the theoretical framework to analyze default effects.[17] It defines status quo biases in the digital applications domain and presents a model of consumer choice based on a dual-process framework. Part III presents empirical evidence of default effects with experimental and observational data, noting that widely preferred options do not benefit significantly from default status itself, and while default effects vary substantially in other cases, they decrease over time when the default is not people's preferred option.[18] Part IV examines the possible remedies applicable to cases dealing with default effects, particularly the use of choice screens and default randomization, noting that the latter is the only one that may nudge people to experiment with options they do not normally use.[19] Part V concludes by arguing that the strategic use of defaults has tended to be a part of a broader monopolization plan, for which a generic monopolization framework is a better fit.[20] It also suggests that making the change of default applications as easy as possible should be a priority for regulators and that enforcers should broaden the analysis to focus instead on how defaults may hinder disruptive innovation in digital markets.

I. ANTITRUST LAW AND MONOPOLY POWER

Market economies are founded on the principle that people are first and foremost responsible for their own well-being. Consumers benefit most from voluntary exchanges of goods and services in competitive markets. When all exchanges take place at competitive prices, society as a whole is wealthier than when some take place at a higher or lower price.[21] A critical goal of antitrust law is to ensure market competition.

---

16. *See infra* Part I.
17. *See infra* Part II.
18. *See infra* Part III.
19. *See infra* Part IV.
20. *See infra* Part V.
21. JOSEPH E. STIGLITZ, ECONOMICS OF THE PUBLIC SECTOR 3 (3d ed. 2000).

As Justice Thurgood Marshall put it, antitrust law is the "Magna Carta of free enterprise."[22] Competition laws aim at keeping markets competitive by preventing the unlawful acquisition and/or exercise of monopoly power.[23] Antitrust law does not ban market power by itself. In fact, monopoly power is not a synonym for market power.[24] The latter is common in markets with differentiated products. Monopoly power is a firm's ability to stifle competition, transforming behavior that would be irrational for firms in a competitive market—such as raising its prices above competitive levels or excluding competitors by charging prices below cost—into rational business strategies. Typically, the starting point for an inference of monopoly power in a legal analysis consists of high barriers to entry plus high market shares.

Competition law does not prohibit monopolies by themselves either.[25] Broadly speaking, antitrust law controls how a firm obtains or exercises its monopoly power. A typical example of anticompetitive behavior is a price-fixing agreement by which two sellers agree to charge a higher price or allocate markets to each other. Either agreement allows the companies to behave as a monopolist, operating together in the same geographic market or acting as the only—or leading—supplier in each market separately. The preceding example illustrates one of the main categories of anticompetitive conduct: anticompetitive agreements. As per Section 1 of the Sherman Act, "[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal."[26]

Another main category of anticompetitive behavior is single-firm conduct. Section 2 of the Sherman Act makes it unlawful for any person to

---

22. United States v. Topco Assocs., Inc., 405 U.S. 596, 610 (1972).

23. *See, e.g.*, A. Douglas Melamed, *Antitrust Law Is Not That Complicated*, 130 HARV. L. REV. F. 163 (2017).

24. DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 117 (4th & Global ed. 2015) ("It is common practice to say that whenever a firm can profitably set its price above its marginal cost without making a loss, it has *monopoly power* or *market power*. One might usefully distinguish between the terms by using *monopoly power* to describe a firm that makes a profit if it sets its price optimally above its marginal cost, and *market power* to describe a firm that earns only the competitive profit when it sets its price optimally above its marginal cost. However, people do not always make this distinction, and generally use the two terms interchangeably, sometimes creating confusion.").

25. Section 2 of the Sherman Act makes it illegal to acquire or maintain monopoly power through improper means. 15 U.S.C. § 2. The long-standing requirement for monopolization is both "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1966).

26. 15 U.S.C. § 1.

"monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations . . . ."[27] For instance, a dominant firm may charge prices below its costs to drive a competitor out of the market; or it may offer bundled discounts to keep a loyal demand and prevent competitors from gaining market penetration. In *United States v. Grinnell Corp.*,[28] the Supreme Court defined illegal monopolization to include two elements: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."[29] Both elements must be established before the defendant can be found guilty of monopolization.

In practice, courts begin by determining whether the firm has monopoly power in any market. This demands an in-depth examination of the leading firm's products, and any alternative products consumers might turn to if the firm attempts to raise prices. Then, courts inquire whether the firm's market power was obtained or maintained through improper conduct—something other than having a better product, or superior management. Finally, courts consider both the anticompetitive effects of the conduct and its procompetitive justifications.[30] If the former are greater than the latter, courts will rule against the defendant.

A. Vertical Restraints and Exclusive Dealing

The theory this work criticizes relies on the assumption that default agreements are *de facto* exclusive dealing arrangements. Thus, this Part briefly discusses the law and economics of exclusivity contracts. These contracts belong to the broader category of vertical restraints, so a reference to vertical integration is in order.

1. The Economics of Vertical Integration

Most firms need inputs to manufacture their products and retailers to distribute them. Vertically integrated companies participate in multiple production or distribution stages. A vertically integrated yogurt company produces its own milk, packaging, and other inputs. Non-vertically integrated

---

27. *Id.* § 2.
28. 384 U.S. 563 (1966).
29. *Id.* at 570–71.
30. A. Douglas Melamed, *Exclusionary Conduct Under the Antitrust Laws: Balancing, Sacrifice, and Refusals to Deal*, 20 BERKELEY TECH. L.J. 1247 (2005).

firms get their production and distribution inputs from other firms. A nonintegrated firm can sign long-term contracts with its business partners to set price and other commercial terms that govern how the distributor supplies final consumers. These contracts are vertical constraints. Examples include duties to sell a minimum number of units per month, not sell competing products, and charge a minimum price. Most firms partially vertically integrate.[31]

Vertical integration is a strategic decision that can produce substantial efficiencies for businesses by addressing common problems that tend to arise throughout the supply chain. In most situations, those efficiencies benefit consumers.[32] The four most common problems that vertical integration solves are (i) double monopoly markups, (ii) distributors' free riding,[33] (iii) manufacturers' free riding, and (iv) coordination problems that lead to externalities.[34]

Exclusive dealing is most often seen as a tool to obtain increased promotional effort. Whenever distributors do not reap the full benefits of their work, they are encouraged to work less and sell fewer products from the manufacturer. To discourage free riding, manufacturers use a variety of vertical restrictions.[35] One of the most common is the allocation of exclusive

---

31. CARLTON & PERLOFF, *supra* note 24, at 419.

32. On the organization of economic entities within and between markets and hierarchies, see Williamson's canonical work: OLIVER E. WILLIAMSON, MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS: A STUDY IN THE ECONOMICS OF INTERNAL ORGANIZATION (1975).

33. Free riding refers to a situation "when one firm benefits from the actions of another without paying for it." CARLTON & PERLOFF, *supra* note 24, at 438. AS Carlton and Perloff note,

> [f]ree riding is an externality. Where free riding is possible, each distributor has an inadequate incentive to advertise; it prefers to rely on the efforts of others and does not do its share. These principal-agent problems are often addressed through vertical restrictions that the manufacturer places on the distributor beyond requiring it to pay the wholesale price for the product.

Id. at 438.

34. *Id.* at 439. The problem with successive monopolies is that the distributor is incentivized to limit production and raise prices above the manufacturer's monopoly price. By charging a second monopoly markup, the distributor sells fewer units than is optimal for the manufacturer, which is detrimental to both the manufacturer and the consumers. When a distributor is unable to reap the full benefits of its sales efforts, it has an incentive to reduce those efforts and thus sell less of the manufacturer's product. Free riding is a problem that arises because distributors are not compensated separately for sales efforts; rather, they are compensated for sales efforts on behalf of a specific product only when that product is sold.

35. LUÍS M. B. CABRAL, INTRODUCTION TO INDUSTRIAL ORGANIZATION 194 (2000) ("When retailers must make investments in sales effort that benefit several retailers, vertical restraints such as RPM and exclusive territories may help by correcting inter-retailer externalities.").

territories in which only a single distributor may sell a product.[36] Other options are resale price maintenance constraints (i.e., setting a minimum price that retailers must charge), and advertising on behalf of its distributors.[37]

The previous discussion focused on the relationship between manufacturers and distributors. However, determining the effect of vertical restraints on consumer welfare is critical for antitrust policy. These constraints reduce competition while potentially intending to correct a market failure. As Carlton and Perloff put it, "[a] restriction on competition is something that an economist abhors, as it may increase market power. On the other hand, an increase in sales efforts is something that an economist applauds."[38] As a result, it is challenging to provide clear-cut categorical guidelines on the social desirability of vertical restraints.

The benefits of vertical restraints are straightforward. It is often in the self-interest of a manufacturer to employ vertical restrictions that benefit consumers. Even a manufacturer with substantial market power wants distribution at the lowest possible cost. Specifically, vertical restrictions may reduce prices by increasing existing firms' output or encouraging new firms to enter the market. When restraints allow firms to promote their products more effectively and competition drives the product prices down,

---

36. CARLTON & PERLOFF, *supra* note 24, at 445. Of course, giving the distributor market power raises the issue of a double monopoly markup. As a result, the manufacturer may have to impose additional vertical constraints to control the retailer.

37. *Id.* at 447. Free riding is also possible between competing manufacturers. Assume two rival manufacturers use the same distributor and one launches a massive advertising campaign to persuade consumers to buy its product from the distributor. Due to the increased consumer flow at the distributor's store, advertising benefits both manufacturers. And the free riding manufacturer can sell for less than the advertising manufacturer because her costs are lower. The distributor can then inform a customer who has been drawn in by the first manufacturer's advertising that the second manufacturer's product is a better value at a lower price. *Id.* at 448. A similar situation may occur if a manufacturer trains its distributors to repair or sell its products and its rivals may free ride on these training expenditures. The effects of manufacturer free riding are comparable to those of distributor free riding. The solution is establishing a system that enables manufacturers to receive full compensation for their sales efforts. Howard P. Marvel, *Exclusive Dealing*, 25 J.L. & ECON. 1 (1982). Vertical restraints may solve coordination problems between manufacturers and retailers. For instance, it may be unprofitable for distributors to sell at some locations, but it may be in the best interest of the manufacturer to sell even in places where it is not profitable to prevent consumers from trying other products and develop brand loyalty, which can increase the sales of other products. CARLTON & PERLOFF, *supra* note 24, at 448. Empirical studies show that exclusive arrangements usually take place to control free riding of this sort. Jan B. Heide, Shantanu Dutta & Mark Bergen, *Exclusive Dealing and Business Efficiency: Evidence from Industry Practice*, 41 J.L. & ECON. 387 (1998); Peter G. Klein, *The Make-or-Buy Decisions: Lessons from Empirical Studies*, *in* HANDBOOK OF NEW INSTITUTIONAL ECONOMICS 435 (Claude Ménard & Mary M. Shirley eds., 2008).

38. CARLTON & PERLOFF, *supra* note 24, at 449.

manufacturers and consumers benefit. If there is competition between different brands, vertical restrictions tend to increase market rivalry to the benefit of consumers. Besides, vertical restraints make it easier for new products that rely heavily on sales efforts to enter a market.[39]

Yet vertical constraints may facilitate collusion[40] and tie up scarce supply channels, which may prevent entry or harm rivals by raising their costs.[41] Dealers can force manufacturers to grant exclusive territories, creating local monopolies. Vertical restrictions may also facilitate the monitoring of a manufacturer's cartel because it is easier to monitor retail prices than wholesale prices.[42] Besides, manufacturers can tie up distribution in part through exclusive dealing. Under such contracts, both parties agree to rely solely on one another and not on other businesses. This strategic behavior can only successfully increase the cost of entry if distribution channels are limited.[43] While vertical restraints may solve the double marginalization problem when the proportions of goods are fixed, monopolists may harm consumers when that is not the case.[44]

2. The Law of Exclusive Dealing

Exclusive dealing arrangements are contracts in which one party promises to deal exclusively with another and, as a result, not deal with the other's competitors.[45] Exclusivity contracts between manufacturers and retailers are common, and they are often procompetitive. However, they may raise antitrust concerns because, as noted in the previous section, by denying competitors access to the goods or services provided by the promisor, they

---

39. *Id.* at 449–52.

40. CABRAL, *supra* note 35, at 197.

41. Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs To Achieve Power Over Price*, 96 YALE L.J. 209 (1986).

42. CARLTON & PERLOFF, *supra* note 24, at 454.

43. *Id.*; Janusz A. Ordover, Garth Saloner & Steven C. Salop, *Equilibrium Vertical Foreclosure*, 80 AM. ECON. REV. 127, 133–36 (1990). Game theoretic models show how monopolists can exploit distributors' coordination problems and foreclose the market to new entrants without even having to pay for it. *See* Eric B. Rasmusen, J. Mark Ramseyer & John S. Wiley, Jr., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991).

44. CARLTON & PERLOFF, *supra* note 24, at 453; *see also* Einer Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARV. L. REV. 397 (2009).

45. *See* A. DOUGLAS MELAMED ET AL., ANTITRUST LAW AND TRADE REGULATION: CASES AND MATERIALS 475–76 (7th ed. 2018).

may exclude those rivals from the marketplace or materially impair their ability to compete.[46]

In *Tampa Electric Co. v. Nashville Coal Co.*,[47] the Supreme Court provided a three-prong test to define the legality of exclusive dealing. The first two elements require courts to determine the product and geographic markets. According to the third one, a court must establish whether "the competition foreclosed by the contract . . . constitute[s] a substantial share of the relevant market."[48] While the Court had previously banned procompetitive justifications—making the Clayton Act analysis[49] more stringent and closer to a *per se* assessment—the *Tampa Electric* test mandated a holistic market analysis to determine the illegality of exclusivity arrangements.[50] Today, most agree that a rule of reason analysis applies to exclusive dealing.[51]

---

46. *See* A. Douglas Melamed, *Exclusive Dealing Agreements and Other Exclusionary Conduct—Are There Unifying Principles?*, 73 ANTITRUST L.J. 375 (2006). As then-Judge Breyer explained, exclusive dealing can harm consumers by thwarting entry or inhibiting the growth of existing rivals:

> Exclusive dealing arrangements may *sometimes* be found unreasonable under the antitrust laws because they may place enough outlets, or sources of supply, in the hands of a single firm (or small group of firms) to make it difficult for new, potentially competing firms to penetrate the market. To put the matter more technically, the arrangements may "foreclose" outlets or supplies to potential entrants, thereby raising entry barriers. Higher entry barriers make it easier for existing firms to exploit whatever power they have to raise prices above the competitive level because they have less to fear from potential new entrants.

Interface Grp., Inc. v. Mass. Port Auth., 816 F.2d 9, 11 (1st Cir. 1987) (emphasis in original) (citations omitted).

47. 365 U.S. 320 (1961).

48. *Id.* at 328.

49. *See infra* note 53.

50. *Tampa Elec. Co.*, 365 U.S. at 329 ("To determine substantiality in a given case, it is necessary to weigh the probable effect of the contract on the relevant area of effective competition, taking into account the relative strength of the parties, the proportionate volume of commerce involved in relation to the total volume of commerce in the relevant market area, and the probable immediate and future effects which pre-emption of that share of the market might have on effective competition therein. It follows that a mere showing that the contract itself involves a substantial number of dollars is ordinarily of little consequence.").

51. EINER ELHAUGE & DAMIEN GERADIN, GLOBAL ANTITRUST LAW AND ECONOMICS 577 (3d ed. 2018) ("Modern courts thus read *Tampa Electric* to overrule *Standard Stations*' exclusion of procompetitive justifications, even when the foreclosure share is large."). Elhauge and Geradin also note:

> Although perhaps not justified by a literal parsing of the precedent, this conclusion [that *Tampa Electric* adopted a Rule of Reason analysis for exclusive dealing] fits a more general policy judgment being made by the courts after the 1960s that antitrust economics did not support the categorical hostility of various legal rules on vertical agreements. But

Exclusivity arrangements are subject to Sections 1 and 2 of the Sherman Act, Section 3 of the Clayton Act, and Section 5 of the FTC Act.[52] The development of the caselaw has made the distinction between legal standards increasingly elusive.[53] Nevertheless, a few important differences remain. For Section 1 Sherman Act cases, a contract must foreclose at least 40% of the distribution channel to establish an antitrust violation,[54] and while Section 2 of the Sherman Act may apply to agreements covering less than 40% of the

---

this interpretation seems to make Clayton Act § 3 superfluous because Sherman Act § 1 already condemns agreements that violate the Rule of Reason.

Id.

52. Hovenkamp notes that exclusive dealing arrangements have been condemned under Section 1 of the Sherman Act, 15 U.S.C. § 1, and Section 3 of the Clayton Act, 15 U.S.C. § 14, as well as Section 5 of the FTC Act, 15 U.S.C. § 45. HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY, THE LAW OF COMPETITION AND ITS PRACTICE 564 (6th ed. 2020). In addition to the important development of applying § 2 of the Sherman Act to exclusive dealing when the firm imposing it is a "monopolist," he notes there are important advantages to the §2 approach. *Id.* "First, exclusive dealing is likely to be anticompetitive only when the firm is fairly dominant within its market. Second, while § 2 assesses a higher market power requirement it is less categorical about doctrine, asking only whether a practice is unreasonably exclusionary." *Id.*

53. The Clayton Act tests were designed to make it easier to challenge and prohibit restrictive arrangements. However, courts quickly started acknowledging the potential positive effects of exclusivity clauses, even in cases brought under the Clayton Act. Consequently, they developed tests of legality that, on the one hand, did not apply a *per se* condemnation of the conduct, but, on the other hand, avoided a broad economic investigation to determine whether the restraint was unreasonable. In *Standard Stations*, the Supreme Court concluded "that the qualifying clause of § 3 [of the Clayton Act] is satisfied by proof that competition has been foreclosed in a substantial share of the line of commerce affected." Standard Oil Co. of Cal. v. United States, 337 U.S. 293, 314 (1949). The substantial share was determined by percentage foreclosure of the line of commerce affected—not the defendant's market share, as lower courts had determined in previous cases. The Supreme Court then applied a similar analysis to exclusive dealing arrangements under the Sherman Act in *FTC v. Motion Picture Advertising Service Co., Inc.*, 344 U.S. 392 (1953), and *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951). *See* Jonathan M. Jacobson, *Exclusive Dealing, "Foreclosure," and Consumer Harm*, 70 ANTITRUST L.J. 311, 317 (2002).

54. As the D.C. Circuit stated in *United States v. Microsoft Corp.*:

The basic prudential concerns relevant to §§ 1 and 2 [of the Sherman Act] are admittedly the same: exclusive contracts are commonplace—particularly in the field of distribution—in our competitive, market economy, and imposing upon a firm with market power the risk of an antitrust suit every time it enters into such a contract, no matter how small the effect, would create an unacceptable and unjustified burden upon any such firm. At the same time, however, we agree with plaintiffs that a monopolist's use of exclusive contracts, in certain circumstances, may give rise to a § 2 violation even though the contracts foreclose less than the roughly 40% or 50% share usually required in order to establish a § 1 violation.

253 F.3d 34, 70 (D.C. Cir. 2001).

market,[55] it only applies to firms with monopoly power.[56] The market share requirement for Section 3 Clayton Act cases is much more lax, and courts have even been willing to assess agreements covering 15% of the market under this provision.[57] In fact, the Clayton Act Section 3 assessment demands a qualitative assessment of which the share of the market foreclosed is just one element.[58]

The *Tampa Electric* test and its predecessors rely on a substantial *foreclosure* test.[59] In the early days of the Clayton Act, said test facilitated the analysis of cases by dismissing claims involving defendants with a low market share and later, cases in which the excluded share of the relevant market was small, regardless of the defendant's market share.[60] Low market shares still serve as a screening device—but, as noted, there are substantial differences between legal standards. However, the foreclosure theories become more robust when understood as different practices that raise rivals' costs[61] by relegating them to inferior distribution channels—rather than excluding rivals from a market altogether.[62] An exclusivity agreement may

---

55. *Id.*

56. As noted in the previous section, in *United States v. Grinnell Corp.* the Supreme Court defined illegal monopolization to include two elements: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." 384 U.S. 563, 570–71 (1966). Both elements must be established before the defendant is guilty of monopolization. *Id.* at 571.

57. See, e.g., *Barr Laboratories, Inc. v. Abbott Laboratories*, 978 F.2d 98, 111 (3d Cir. 1992), in which the court assessed the effects of the contract despite the fact it foreclosed only 15% of the market.

58. *Id.*

59. For example, if independent gasoline retailers agree to purchase all of their gasoline needs from a single refiner and no one else, the stations are "foreclosed" to other gasoline refiners for the duration of their contracts. In *Standard Oil Co. of California v. United States* (*Standard Stations*), the Supreme Court ruled that such contracts were unlawful when they collectively denied the defendant's refiner competitors 6.8% of the gasoline market. 337 U.S. 293, 314 (1949). Due to the prevalence of exclusive dealing arrangements in the market, the total percentage of independent stations "foreclosed" from the market by all refiners who used such contracts was significantly higher. HERBERT HOVENKAMP, PRINCIPLES OF ANTITRUST 423 (2d ed. 2021).

60. Jacobson, *supra* note 53, at 327.

61. As some have noted, the foreclosure logic does not really target what harms competition. If the upstream firm has a dominant market position and entry into the downstream market is restricted, exclusive dealing may inefficiently foreclose competition. Effective foreclosure is unlikely if new downstream facilities can be built quickly. However, suppose that geographic location is critical to business survival and that two or three resale locations are significantly better than the alternatives. In that case, a dominant upstream firm could "foreclose" competition by entering into exclusive dealing contracts with all of the preferred downstream locations, making entry more difficult. HOVENKAMP, *supra* note 52, at 565.

62. *Id.*

reduce the efficiency of competitors if it prevents them from maintaining or expanding their operations to reach an efficient scale.[63] It can also limit competitors' economies of scope if rivals could have offered more efficient products to produce or sell together than separately.[64] In cases where network effects[65] are present, exclusive arrangements can hinder rival efficiency by preventing rivals from gaining access to the number of buyers necessary to enhance their product value. Rather than raising rivals' costs, this strategy lowers the rivals' product value.[66]

The rule of reason analysis of exclusive dealing implies that to determine its legality, one must consider both the conduct's efficiencies and its exclusionary consequences.[67] While there is no set formula for determining the lawfulness of an exclusive dealing agreement, modern antitrust law generally requires the defendant to demonstrate significant market power,[68] substantial foreclosure,[69] contracts of sufficient length to prevent meaningful competition by rivals,[70] and an analysis of likely or actual anticompetitive effects in light of any procompetitive effects.[71] If the efficiencies are outweighed by the anticompetitive costs, or if there is a less restrictive alternative to achieve the same benefits, the conduct will be found anticompetitive. The likelihood that efficiencies will outweigh any anticompetitive effects resulting from exclusive arrangements is determined by the extent to which those undertakings face competition from other providers their customers see as reasonable substitutes. All the above foreclosure theories necessitate not only a substantial foreclosure of a properly defined market but also significant entry and expansion barriers in the foreclosed market.[72]

---

63. *See, e.g*., Krattenmaker & Salop, *supra* note 41.

64. ELHAUGE & GERADIN, *supra* note 51, at 550.

65. *See, e.g*., CARLTON & PERLOFF, *supra* note 24, at 415–17.

66. ELHAUGE & GERADIN, *supra* note 51, at 550.

67. *See* Melamed, *supra* note 46 (suggesting how to assess the costs and benefits of exclusive dealing).

68. Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 329 (1961); Race Tires Am. v. Hoosier Racing Tire Corp., 614 F.3d 57, 74–75 (3d Cir. 2010); LePage's Inc. v. 3M, 324 F.3d 141, 158 (3d Cir. 2003).

69. *Tampa Elec. Co.*, 365 U.S. at 327–28; United States v. Microsoft Corp., 253 F.3d 34, 69 (D.C. Cir. 2001).

70. CDC Techs., Inc. v. IDEXX Lab'ys, Inc., 186 F.3d 74, 81 (2d Cir. 1999); Omega Env't, Inc. v. Gilbarco, Inc., 127 F.3d 1157, 1163 (9th Cir. 1997).

71. *Race Tires Am.*, 614 F.3d at 75; United States v. Dentsply Int'l, Inc., 399 F.3d 181, 194 (3d Cir. 2005); Barr Lab'ys, Inc. v. Abbott Lab'ys, 978 F.2d 98, 111 (3d Cir. 1992).

72. ELHAUGE & GERADIN, *supra* note 51, at 552.

II. DEFAULTS AND CONSUMER PREFERENCES

Defaults are pervasive in everyone's life. Unless one sets a printer's layout configuration, it will either print one-sided or two-sided; our microwaves have predetermined settings for different types of food, but one may also set the power and time to cook or heat a meal; workers usually enroll automatically in a standard pension fund, unless they actively choose a particular plan, etc. Those who design defaults are choice architects, in that they create the choice environment against which decisions are made. It is impossible to avoid a choice environment, so some form of choice architecture is inevitable.[73] An analysis of how defaults may distort people's choices requires first describing what default effects are and, second, determining when default effects are "mistakes." For this purpose, a reference to the dual-system theory of choice and the main causes of status quo bias is in order.

A. What Default Effects Are

One of the most striking findings of behavioral science is that people tend to stick to the status quo.[74] We might expect people to stick with a preset alternative when the stakes are low. Defaults, however, may influence choices even when the stakes are high. A classic example occurred in the 1990s: The states of New Jersey and Pennsylvania offered auto insurance consumers a choice between a more expensive plan that included the right to sue for "pain and suffering" and a significantly less expensive plan that covered the insured's medical costs but did not include the right to sue. By default, New Jersey drivers had a limited right to sue, whereas Pennsylvania drivers had the opposite default, a full right to sue. The default led 21% of New Jersey drivers to stick to the more expensive full right to sue plan, whereas roughly 30% of drivers in Pennsylvania chose the more expensive plan.[75] An experimental study confirmed this result (qualitatively).[76] According to one estimate, the choice of defaults in Pennsylvania resulted in

---

73. Sunstein, *supra* note 14, at 5.

74. Samuelson & Zeckhauser, *supra* note 12.

75. Eric J. Johnson & Daniel G. Goldstein, *Decisions by Default*, *in* THE BEHAVIORAL FOUNDATIONS OF PUBLIC POLICY 417, 417 (Eldar Shafir ed., 2013). In this example, the difference in outcomes is due to the assignment to two different defaults. However, the only way to measure how defaults distort people's choices is by comparing default assignment with forced choice (which is the normative benchmark).

76. Eric J. Johnson et al., *Framing, Probability Distortions, and Insurance Decisions*, 7 J. RISK & UNCERTAINTY 35, 47 (1993) (reporting that people chose the full right to sue 53% of the times when it was the default, but only 23% of the times when it was not).

an additional $140 million in insurance purchases per year, for a total of $2 billion since 1991.[77]

Some researchers operationalize the status quo bias as "suboptimal acceptance of a default choice option."[78] However, defaulting is not necessarily a "mistake." Default effects are a *bias* because of people's tendency to adhere to the status quo more often than the canonical rational choice model predicts.[79] This is formally represented as *P(a|d) > P(a|c)*, where *P(a|d)* is the probability of choosing application *a* when it is the default, and *P(a|c)* is the probability of choosing application *a* when users are forced to choose. The difference in market share under the default with a but-for world of forced choice is the *size* of default effects (i.e., *P(a|d) - P(a|c)*). The default effect approaches zero in the case of "[d]eliberate [d]efaulting,"[80] when the status quo persists because it corresponds with people's preferences. For instance, the privacy default in most social media is to make shared content available only to one's friends. Since this is probably the default that most people would choose, the default itself is unlikely to distort people's choices. Some call these cases "benign defaults."[81]

B. Dual System of Cognition and Default Effects

The classification between System 1 and System 2 is particularly relevant when referring to biased choices. According to conventional behavioral science, human judgment and decision-making derive from two distinct cognitive systems: System 1 and System 2.[82] System 1 is typically

---

77. Daniel G. Goldstein et al., *Nudge Your Customers Toward Better Choices*, HARV. BUS. REV. (Dec. 2008), https://hbr.org/2008/12/nudge-your-customers-toward-better-choices.

78. Stephen M. Fleming et al., *Overcoming Status Quo Bias in the Human Brain*, 107 PROC. NAT'L ACAD. SCIS. U.S. 6005, 6005 (2010).

79. Samuelson & Zeckhauser, *supra* note 12, at 8. Samuelson and Zeckhauser, in addition to coining the term and providing important empirical evidence to support their theory, pointed out that default effects could stem from three causes: (i) rational choice, (ii) cognitive misperceptions, and (iii) psychological commitment. *Id.* at 33–41.

80. Sunstein, *supra* note 14, at 23.

81. Goldstein et al., *supra* note 77.

82. *See, e.g.*, DANIEL KAHNEMAN, THINKING, FAST AND SLOW (2011); Kahneman's taxonomy dominates the law and public policy literature. But the most recent research shows this distinction is too simple.); David E. Melnikoff & John A. Bargh, *The Mythical Number Two*, 22 TRENDS COGNITIVE SCI. 280 (2018) ("A consensus is emerging among the critics and top proponents of the dual-process typology that the classic distinction between Type 1 and Type 2 processing is flawed. Since the Type 1/Type 2 distinction first emerged, researchers have discovered that very few processes fit into either category, most possess some mixture of Type 1 and Type 2 features."). Other theories sidestep the System 1/System 2 distinction. *See* Richard E. Petty & John T. Cacioppo,

described as automatic, heuristic-based, quick, and frugal, and has usually been held accountable for biased or incorrect decisions. System 2 is normally characterized as deliberate, analytical, slow, and laborious. System 2 operations require working memory capacity, whereas System 1 operations require fewer cognitive investments. Given that people are not always willing or able to exert cognitive effort, they frequently rely on System 1 processes.[83]

Status quo effects tend to be associated with the primacy of people's System 1 over System 2. However, this is not necessarily the case since status quo bias also affects deliberative processes. This association stems from the conventional view that biases are mistakes driven by our heuristic-based cognitive processing. This position has become dominant in behavioral law and economics but has been contested in psychology for a long time.[84] For the purposes of this work, it is more helpful to think of the dual-process theory as a continuum,[85] according to which our brains economize attention in various degrees.

In this regard, the marketing literature is critical for developing sound hypotheses about when default effects are to be expected. According to marketing scholars, consumers may act in "autopilot," "pilot," or "co-pilot" mode.[86] The former "is the state of being that enables a person to complete tasks not linked to conscious intent, needs or goals."[87] It represents habitual purchase and usage behavior (e.g., people usually go to the same barber without even considering experimenting with a different one). In contrast,

---

The Elaboration Likelihood Model of Persuasion, 19 ADVANCES EXPERIMENTAL SOC. PSYCH. 123 (1986); Richard E. Petty, John T. Cacioppo & David Schumann, *Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement*, 10 J. CONSUMER RSCH. 135 (1983).

83. L.C. Van Gestel, M.A. Adriaanse & D.T.D. De Ridder, *Do Nudges Make Use of Automatic Processing? Unraveling the Effects of a Default Nudge Under Type 1 and Type 2 Processing*, 5 COMPREHENSIVE RESULTS SOC. PSYCH. 1, 2 (2021).

84. *See, e.g*., Gerd Gigerenzer & Henry Brighton, *Homo Heuristicus: Why Biased Minds Make Better Inferences*, 1 TOPICS COGNITIVE SCI. 107 (2009).

85. *See, e.g*., Arie W. Kruglanski & Gerd Gigerenzer, *Intuitive and Deliberate Judgments Are Based on Common Principles*, 118 PSYCH. REV. 97 (2011) (providing arguments and evidence for a unified theoretical approach of both intuitive and deliberative judgments).

86. *See, e.g*., Neale Martin & Kyle Morich, *Unconscious Mental Processes in Consumer Choice: Toward a New Model of Consumer Behavior*, 18 J. BRAND MGMT. 483, 494–95 (2011).

87. Martin and Morich also note that

[a] testing environment places subjects in a novel situation, which engages the conscious mind to make 'rational' evaluations of the new product. However, when the consumer is back in her natural shopping environment, she returns to autopilot and is likely to not even notice the new product. Even if she does notice it, she will be unlikely to purchase the new product unless her automatic behavior path is disrupted. Similarly, product use or consumption behavior follows the same dynamic process.

Id. at 495.

pilot mode is conscious attendance to the purchase or use of a product or service.[88] This may entail weighing costs and benefits and comparing competing products and purchase to non-purchase outcomes. Pilot mode is more likely to occur when a consumer is in a novel purchase situation or when some aspect of routine purchase behavior, such as price, features, or distribution channels, has changed, activating the consumer's conscious awareness. Lastly, consumers operate in co-pilot mode in familiar situations where they encounter a relatively narrow range of choices that do not require a fully conscious evaluation but are too complicated to be relegated to automatic habitual choice. In these cases, consumers tend to use heuristics—simple rules—to partially automate behavior.[89]

C. What Causes Default Effects

This work suggests that one of the most common causes of default effects pertaining to digital applications is people's lack of attention. However, defaults may also stick because of people's procrastination, possible endowment and endorsement effects, people's lack of information, and other less relevant causes for the present analysis.[90]

Attention acts as the principal toggle that activates or shuts down our conscious[91] thinking.[92] Thus, status quo effects are more probable when consumers operate in auto-pilot and co-pilot modes. In the former case, users unconsciously go along with the default; the use decision does not trigger any conscious mental process that may countervail inertia. The case of users

---

88. *Id.*

89. *Id.* at 496.

90. For a comprehensive list of causes that explain default effects, see generally Jacob Goldin & Daniel Reck, *Optimal Defaults with Normative Ambiguity*, 104 REV. ECON. & STAT. 17 (2022).

91. Philosophers and neuroscientists alike find it difficult to define consciousness and struggle to comprehend its limits, qualities, and extent of control over our actions. *See, e.g.*, Francis Crick & Christof Koch, *Consciousness and Neuroscience*, 8 CEREBRAL CORTEX 97 (1998). However, following Martin and Morich, this article conceives consciousness as a combination of attention, perception, memory, and most importantly, awareness. *See* Martin & Morich, *supra* note 86, at 487.

92. Ap Dijksterhuis & Loran F. Nordgren, *A Theory of Unconscious Thought*, 1 PERSPS. ON PSYCH. SCI. 95, 96 (2006) ("[I]t is very important to realize that *attention* is the key to distinguish between unconscious thought and conscious thought. Conscious thought is thought with attention; unconscious thought is thought without attention (or with attention directed elsewhere). However, this does not mean that conscious thought comprises only conscious processes. One could compare it to speech. Speech is conscious, but various unconscious processes (such as those responsible for choice of words or syntax) have to be active in order for one to speak. Likewise, conscious thought cannot take place without unconscious processes being active at the same time."). On the psychology of unconscious thinking, see Newell and Shanks's excellent critical review. Ben R. Newell & David R. Shanks, *Unconscious Influences on Decision Making: A Critical Review*, 37 BEHAV. & BRAIN SCIS. 1 (2014).

operating in co-pilot mode is different. People may go along with the default because of regret aversion[93] or because the default may signal an implicit recommendation. As Sunstein puts it, "[m]any people appear to think that the default has been chosen by someone who is wise, decent, or smart and for a good reason."[94] Especially if they lack experience or expertise, they might simply defer to what has been chosen for them. When making complex, difficult, or time-consuming decisions, the impact of inertia is amplified.[95] An fMRI study confirms that default settings are particularly influential in complex situations.[96]

Behavioral law and economics scholars have tended to overlook the relevance of people's different cognitive states to analyze default effects by including inertia and procrastination in the same analytical category.[97] Procrastination requires at least a fair level of conscious involvement. When people want to minimize their effort, default effects can stem from (i) a preference to avoid making a choice, and/or (ii) a desire not to form a preference. In the car insurance example from above, to make a decision, the drivers had to read and understand a complex statement, decide what was best for them given personal circumstances, fill out a form, find a stamp, and drop the envelope into the mailbox. While these activities were taxing, it seems unlikely that the required actions offset the annual $300 savings available to those who chose the limited tort policy.[98] Preference formation requires another effort. Behavioral science states that some preferences are not formed until a decision situation arises.[99] This just-in-time preference construction saves effort by avoiding difficult decisions about situations we may never encounter.[100] Some call the decision to not form a preference "reflective indifference."[101]

---

93. Robert A. Josephs et al., *Protecting the Self From the Negative Consequences of Risky Decisions*, 62 J. PERSONALITY & SOC. PSYCH. 26 (1992).

94. CASS R. SUNSTEIN, CHOOSING NOT TO CHOOSE: UNDERSTANDING THE VALUE OF CHOICE 41 (2015).

95. *Id.* at 18 ("[C]omplexity has sometimes been treated as an independent reason for the power of defaults, though it might be more properly treated as an amplifier of inertia, or an increase in the 'effort tax.'").

96. Fleming et al., *supra* note 78.

97. *See, e.g.*, Sunstein, *supra* note 14, at 17–20 (discussing inertia as one of the main causes of defaults and referring to procrastination as a possible explanation). The traditional taxonomy of why default effects occur comes from Isaac Dinner et al., *Partitioning Default Effects: Why People Choose Not To Choose*, 17 J. EXPERIMENTAL PSYCH.: APPLIED 332 (2011).

98. Johnson & Goldstein, *supra* note 75, at 420.

99. Paul Slovic, *The Construction of Preference*, 50 AM. PSYCH. 364 (1995).

100. Johnson & Goldstein, *supra* note 75, at 420.

101. Sunstein, *supra* note 14, at 23.

In addition to procrastination, defaults may stick because of an endowment effect. When people do not have a defined preference, defaults set the frames of gains and losses.[102] This may occur even when people are in pilot mode, due to framing effects. To begin contributing to a retirement plan, an employee must reduce current take-home pay in exchange for future income; the trade-off appears to be a loss in the present versus a gain in the future. However, if the employee is automatically enrolled in the retirement plan, the decision to opt out may appear to be between a future loss (lower retirement income) and a present gain (a bigger paycheck). Formally, these decisions are identical; however, psychologically, they differ. Loss aversion implies that what is lost has a greater impact on decisions than what is gained.[103] Thus, a default endowment is likely to stick.

D. A Model of Default Effects in Digital Applications

Having defined default effects and described their main causes, this work now applies the general theory to the relevant law and policy setting. As noted, a default assignment is a necessary but insufficient condition to trigger a status quo effect. People might opt out, and choice architects may identify what people would choose if forced to choose. This Article argues that the principal behavioral channel of default effects is people's unconscious use of a default application (users operating in auto-pilot mode). Attention is the main opt-out driver since it leads them to evaluate their application choice (or lack of choice). However, people may also stick with the default option when consciously assessing their use (co-pilot and pilot modes), depending on their satisfaction with their default and their expectations about competing alternatives.

When functioning in *auto-pilot mode*, people stick to the default because their decision to use the predetermined option is non-salient to them. User attention is the main switch that triggers a conscious "evaluation" of an application—*i.e.*, to operate in pilot mode. Dissatisfaction is a crucial trigger of people's awareness. If people's expectations are not met, either because of a price increase or quality deterioration, they will switch to pilot mode and

---

102. Kahneman and Tversky showed that a person's perceived utility is almost doubled by a loss, compared to a gain of the same magnitude. Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 ECONOMETRICA 263, 279–80 (1979). This can affect the consumers' purchasing decisions significantly—what explains the lobbying efforts of credit card companies to frame price differences between payments by cash and plastic as a discount, rather than a fee. RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 36 (2008).

103. Johnson & Goldstein, *supra* note 75, at 422.

potentially switch to another product.[104] When people have good information about competing alternatives, exploration is more likely—unless they think the alternatives will be worse than the default. Of course, they may have well-defined preferences before being assigned to a default. When this is the case, such preferences can overcome inertia, dismiss the default's informational signal, and establish the frames of gains and losses—which influence the "evaluation" part of the user's cognitive process.[105] There is abundant evidence of "slippery" defaults.[106]

The main predictions of this analytical framework are the following: Default effects are likely (i) when people are relatively satisfied with the default option, (ii) when they are not aware of competing alternatives to the default, and/or (iii) when they misperceive their quality. This work focuses on the first prediction, but sheds light on how the other two may be related to anticompetitive strategies. It emphasizes that what matters is people's *relative* satisfaction because the decision to explore alternatives and potentially switch to another application depends on how the default compares to the alternatives the user is aware of.

E. A Hypothetical Example Illustrating the Model Predictions

Assume there are three weather applications that people may get in a bundle of preinstalled applications. For simplicity, let's denote them as w_1, w_2, and w_3. Let's assume that they are all similar in quality; not perfect, but between 90% and 95% accurate. And, to begin the analysis, assume that people have no knowledge of the alternatives. People will stick to the default if they pay no attention to their application choice (or "lack of choice"). The main trigger of a conscious process is the user's dissatisfaction with the product.[107] Thus, the status quo sticks for anyone satisfied with the application's accuracy. The application choice becomes salient to those not satisfied with an accuracy of 90-95%, and possibly those for whom an inaccurate prediction caused substantial discomfort.

---

104. As Neal puts it, "[t]he degree of dissatisfaction with a product or service can be used to accurately predict whether that product or service remains within a purchaser's consideration set. And of course, once you're out of the consideration set, you're out of the game." William D. Neal, *Satisfaction Is Nice, But Value Drives Loyalty*, MKTG. RSCH., Spring 1999, at 22.

105. Sunstein, *supra* note 14, at 26.

106. Sunstein provides the example of marital surnames in the United States. *Id.* at 25–26. While the default rule in all states is that both spouses keep their own surnames after marriage, women tend to change their surname to their husbands' surname (approximately 80% for college graduates). *Id.*

107. *See* Neal, *supra* note 104.

Having no knowledge of alternatives makes exploration less likely, but people may be motivated enough to look for a substitute. When people are aware of competing options, exploration is more probable. But this depends on the perceived quality of the alternatives. If someone assumes that w_1, w_2, and w_3 are equally good, the status quo sticks even when that person consciously evaluates her use of the default. The expectation of switching to a better application yields a higher expected benefit of exploration and thus makes it more probable.

Now assume that the quality of w_1, w_2, and w_3 is substantially different. An informed person would rank w_1 first, followed by w_2, and then w_3 ($w_{1q} > w_{2q} > w_{3q}$). The same logic above applies. Mindless (unconscious) use of the application occurs when the application's quality meets the person's needs and expectations. The status quo sticks if the person does not consciously consider her application choice. When that is not the case, a person's use of the default becomes salient, and she might consider exploring alternatives. Having no knowledge of the alternatives and/or their relative quality makes exploration less probable. The same occurs when the person believes the alternatives are as good as the default or worse. In these cases, defaults can lead people to stick to mistakes—i.e., people would prefer a different application but do not explore because of search costs or misconceptions about the quality of alternatives. The next section applies this analytical framework to exclusive dealing claims.

III. DEFAULTS AS EXCLUSIVE DEALING

A default agreement is tantamount to an anticompetitive exclusivity arrangement if it causes (i) a status quo effect that (ii) substantially forecloses relevant distribution channels.[108] Enforcers have assumed that the portion of the market covered by a default agreement corresponds to the market segment that has been foreclosed.[109] This section assesses this hypothesis, showing that widely preferred applications do not gain much use from default status, and while non-preferred options tend to benefit from some stickiness,

---

108. *See supra* Part I. In Elhauge and Geradin's words, "modern courts require that anticompetitive effects be either directly proven or inferred as likely *because of a large substantial foreclosure share*, and courts allow defendants to rebut any anticompetitive effects with proof of procompetitive justifications." ELHAUGE & GERADIN, *supra* note 51, at 577 (emphasis added).

109. For instance, in the recent DOJ 2020 complaint against Google, the DOJ states that Google owns or controls search distribution channels accounting for roughly 80% of general search queries in the United States through exclusionary contracts and owned-and-operated properties. Complaint, *supra* note 10, at 4. Thus, "Google has . . . foreclosed competition for internet search [because] [g]eneral search engine competitors are denied vital distribution, scale, and product recognition—ensuring they have no real chance to challenge Google." *Id.*

people tend to switch to their preferred option when there is a considerable quality gap.[110] This finding is critical since defaults only distort the choices of a subset of those exposed to them. This Article focuses on search engines, internet browsers, and weather applications. The choice of the first two cases was because of their significance in the most relevant antitrust cases in the field. The choice of weather applications was because of the author's hypothesis that people would not have a strong preference for a particular option.

A. Empirical Analysis

Default status is one of many variables that may affect the use of an application. Experiments and synthetic control methods are two of the most widely used methods in econometrics for determining the causal effect of an intervention on a relevant outcome.[111] This means isolating the specific effect of a treatment (default status in this case) on an outcome variable of interest (such as the use of an application), leaving aside the influence of other variables that also impact the outcome variable.

Experiments are the gold standard for identifying the causal effect of an intervention.[112] The great advantage of experiments comes from random assignment. For instance, a drug manufacturer may want to assess whether a drug makes people more productive. The company recruits 1,000 participants and gives the drug to 50% and a placebo to the other 50%. When researchers assign the treatment randomly, all the other variables that affect people's productivity—observable and unobservable—should be balanced among the two groups (e.g., people's IQ, caffeine intake, exercise habits, etc.). Then, the only difference between the average of the groups is the treatment itself, and if there is a change in productivity between the groups, the difference is attributable to the intervention alone.

Researchers can follow the same procedure to assess the effect of an application's default status on its use. Ideally, a study would gather a large group of people, ask half to choose their defaults, and randomize the default

---

110. The high variability of default effects is consistent with a recent meta-analysis that assessed status quo bias in various contexts. *See* Jachimowicz et al., *supra* note 13, at 159 ("While our analysis reveals a considerable influence of defaults ($d = 0.68$, 95% confidence interval = 0.53–0.83), we also discover substantial variation: the majority of default studies find positive effects, but several do not find a significant effect, and two even demonstrate negative effects.").

111. *See, e.g.*, Susan Athey & Guido W. Imbens, *The State of Applied Econometrics: Causality and Policy Evaluation*, 31 J. ECON. PERSPS. 3 (2017).

112. *See, e.g.*, WILLIAM R. SHADISH, THOMAS D. COOK & DONALD T. CAMPBELL, EXPERIMENTAL AND QUASI-EXPERIMENTAL DESIGNS FOR GENERALIZED CAUSAL INFERENCE (2002).

applications of the other half. Then, by comparing the market shares of each application among the forced choice and default conditions, researchers could assess whether the apps benefit from a status quo effect and how large such an effect is. Alternatively, researchers may create a fictitious scenario closely resembling how people behave in the real world. This is what this study does. As explained in more detail below, the experiments were trivia games in which the participants received a bonus if they found all the correct answers. This task resembles people's incentives to find reliable information quickly since the respondents could complete the study as quickly as they wanted. Here it is important to note that if the participants did not take the study seriously, the results would be upward biased, showing *larger* status quo effects than how people would behave outside of the experiment. In other words, defaults would influence people's choices less than what this study finds.

Aware of the criticisms about the generalizability of experimental studies (i.e., external validity), this work complements the empirical analysis with a synthetic control model, which uses data from StatCounter—a publicly available data source—to assess how Yahoo's market share in the United States changed after becoming Mozilla Firefox's default in the in late 2014. Synthetic control methods assess the effects of broad-scale interventions that impact a select group of entities, such as cities, regions, or countries.[113] These models strategically determine a combination of weights for unaffected units—such as countries or cities—that yield an optimally estimated counterfactual for the entity that received the intervention. This counterfactual provides a hypothetical scenario, illustrating the likely development of the treated entity had the intervention not taken place. For example, it can show how much the Basque Country would have developed without a terrorist threat.[114] The method would estimate a counterfactual (e.g., GDP in a synthetic Basque Country with no ETA activity) to compare the economic indicators observed in the real world (e.g., GDP in the Basque Country with terrorist activity by ETA) with those of the synthetic unit.

113. *See* Alberto Abadie, *Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects*, 59 J. ECON. LITERATURE 391 (2021); Athey & Imbens, *supra* note 111. An influential application of the method to legal policy is John J. Donohue, Abhay Aneja & Kyle D. Weber, *Right-to-Carry Laws and Violent Crime: A Comprehensive Assessment Using Panel Data and a State-Level Synthetic Control Analysis*, 16 J. EMPIRICAL LEGAL STUD. 198 (2019).

114. Alberto Abadie & Javier Gardeazabal, *The Economic Costs of Conflict: A Case Study of the Basque Country*, 93 AM. ECON. REV. 113 (2003).

A.1. Experimental Data

The data in this Article come from two experiments the author ran on Prolific[115]—an internet survey platform that has become one of the most reputable in social sciences—between July 13 and July 14, 2023. Both experiments were trivia games in which the participants had to look for the answers to either six or five questions (available in the Appendix). There were two main experimental conditions. In the *forced-choice condition*, the participants had to choose the search engine and/or weather application they wanted to use to find the answers from a list of options (i.e., Google, Bing, Yahoo, and DuckDuckGo for search engines and Weather Channel, AccuWeather, and Weather Underground for weather apps). In the *default condition*, the participants saw a pop-up window with one of the options included in said lists right after reading what the study was about (the Appendix includes a picture showing the pop-up window). They also read that they could switch to any other search engine or weather application if they wished. All the participants in the study were adults based in the United States.

Participation was restricted to desktop devices to avoid the use of digital assistants. This is important when interpreting the results, since default effects may be larger in mobile devices. The average age of participants was around 40 years old, with an average age of 38 in the first experiment and 43 in the second one. Almost half of the participants identified as female. Slightly below 5% of the samples identified as non-binary or preferred not to disclose their gender. Both samples were highly educated. Most of the respondents had a college degree.

As noted above, the study was designed to encourage respondents to identify correct answers with a monetary incentive. Participants were paid $1 for completing a six-minute task, and those who correctly answered five or six questions received a dollar extra. After excluding responses from participants who failed attention or manipulation checks, the final sample sizes were 303 for the first experiment and 319 for the second. In the first experiment, questions were split evenly between popular culture and weather forecasts. This evaluated potential status quo biases in search engine use compared to weather applications, hypothesizing that participants might show a stronger preference in the search market. There was total

---

115. Prolific is as a "platform that helps researchers recruit participants for their online research [that] enable[s] fast, reliable, and high-quality data collection by connecting diverse people around the world, while offering ethical pay to participants." *See What Is Prolific and How Does It Work*, PROLIFIC: PARTICIPANT HELP CTR. (Aug. 20, 2024), https://participant-help.prolific.com/en/article/dc132c.

randomization in the first experiment, meaning that the participants could have been assigned to any condition in the search engine and weather forecast parts (e.g., forced choice in the first part and default condition in the second). The second experiment focused exclusively on search engine use, aiming to assess the persistent preference for default options over time.[116]

1. Options People Would Not Choose Benefit From A Substantial Default Effect, But The Effect Sizes Vary Considerably

As noted, a status quo effect refers to the difference in market share that an application would hold when it is set as its potential users' default option, as opposed to when they are compelled to choose. Figure 1 below shows most of the participants in the forced-choice condition chose Google (89%). Only 4% chose Bing, and 8% DuckDuckGo. No participant chose Yahoo. In contrast, the respondents' preferences for weather apps were much more balanced. The Weather Channel ranked first with 55% of the choices, AccuWeather followed it with 35%, and Weather Underground ranked last with roughly 10% of the preferences.

Figure 1. Preferences for Search Engines and Weather Applications
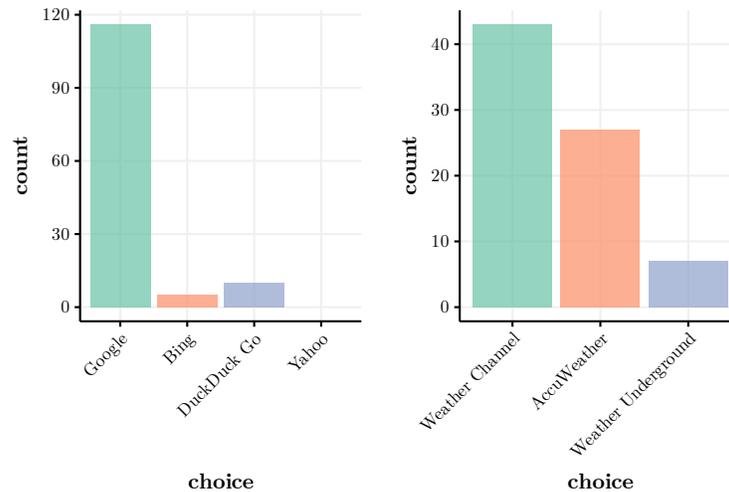
In the first experiment, when the participants were assigned to any rival of Google by default, a substantial part of the respondents used the default,

---

116. The data and analysis are available on the author's GitHub, provided in the acknowledgment of this Article.

and not only in the first question but also in the third one. Ninety percent of those assigned to DuckDuckGo used it in question 1, compared to 80% of those assigned to Bing, and 60% of those assigned to Yahoo. Having Bing or DuckDuckGo as a benchmark, Yahoo's lower use in question 1 is statistically significant (OR = 0.81, 95% CI = [0.67, 0.98], p < 0.05). The use of the default lowered for the three search engines by roughly 10% in question 3.[117]

Figure 2 below displays the status quo effect comparing the use of each application in each experimental condition (i.e., forced choice vs. default assignment; the former appears as forced choice = 1, the latter as forced choice = 0). Since no participant chose Yahoo in the forced choice condition, the statistical analysis only depicts the effect for Google, Bing, and DuckDuckGo. Both Bing and DuckDuckGo benefited from a considerable default effect. In Google's case, there was a difference of 5% favoring the default condition, which did not pass a significance test, probably because of the relatively small sample size.[118]

---

117. The comparisons between questions 1 and 3 were performed with conditional logistic regression to account for the correlations between each participant's responses (a repeated measures analysis).

118. A power analysis indicates a sample of 868 participants would be necessary to detect a 5% difference with 0.8 power.

Figure 2. Status Quo Search Engines
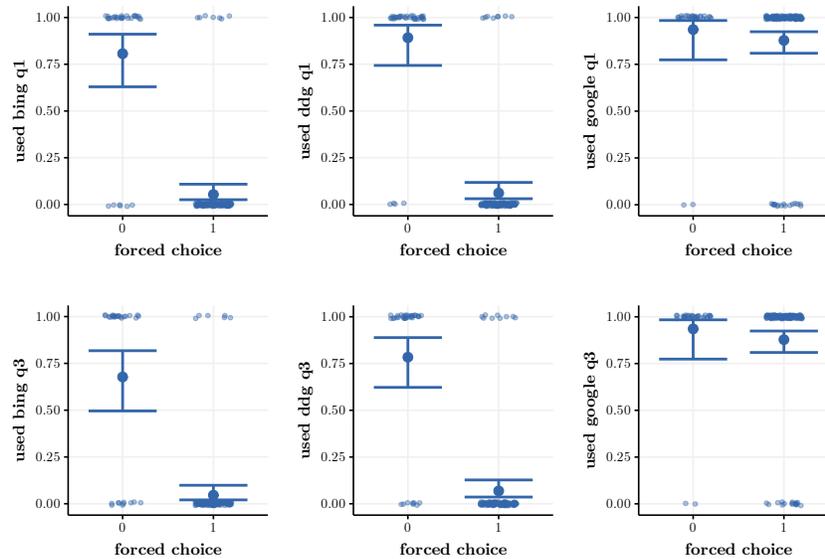
The status quo effects for weather applications were much smaller. The main reason is that people's preferences in the forced-choice condition were more balanced across the three options. Weather Underground was the least sticky default. Fewer people stuck to it in question 1, and more switched to another weather application by question 3. Figure 3, below, displays these results.

Figure 3. Status Quo Weather Applications
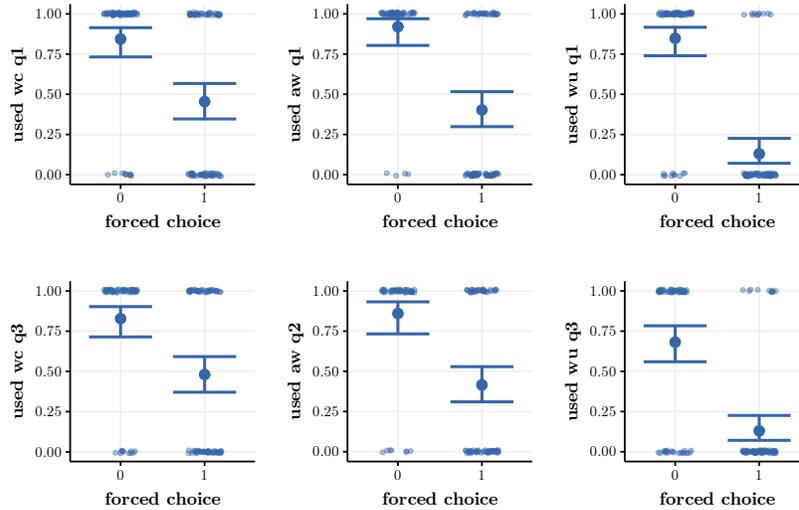
2. Adaptation Towards Preferred Option and Opt-Outs from Bad Defaults

In the first experiment, there were two main effects regarding the lowest-ranked applications. First, as noted above, Yahoo's use was much lower than any other default (59% of use compared to 80-90% of the alternatives). Second, 17% of those assigned to Weather Underground opted out by question 3. This was the highest opt-out rate among weather applications (McNemar's chi-squared = 9.09, p < 0.01). On average, all search engines but Google lowered their use by 10% from question 1 to question 3. The result is not statistically significant for each search engine individually due to the small sample size, but it is considering the whole group of search engines (McNemar's chi-squared = 6.75, p < 0.01). No participant opted out of Google. The Weather Channel and AccuWeather almost had no opt-outs (1% and 6%, respectively).

The trend showing a lower use of the default in question 3 led the author to conduct a follow-up experiment with five questions: the same used in the first experiment and two new ones (available in the Appendix). In this second study, the participants were randomly assigned to either Google or Bing by default (with an equal probability). Figure 4 below shows how Bing's default

effect went down from roughly 70% in question 1 to 45% in question 5, a difference that is substantially and statistically significant (OR = 0.08, 95% CI = [0.02, 0.26], p < 0.001).

Figure 4. Status Quo Effect Question 1 versus Question 5
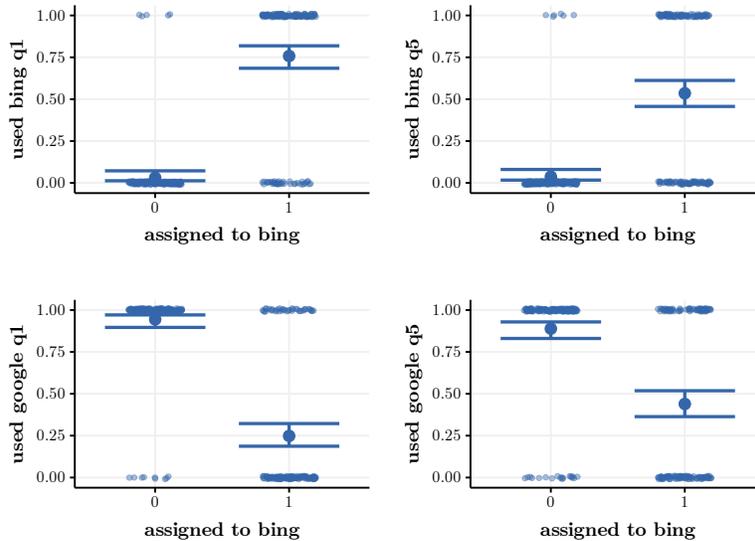
The experimental data do not allow hypothesizing how the size of status quo effects would change in a longer trivia game. Nevertheless, the data show a relevant finding with significant legal and policy implications. In a simple trivia game with low economic stakes, half of those assigned to Bing by default tended to switch to Google after answering four questions. The synthetic control model in the next subsection complements this analysis, shedding light on the persistence of status quo effects concerning applications people do not prefer.

A.2. Generalized Synthetic Control Analysis

In late 2014, Firefox did not renew its default contract with Google; instead, it contracted with Yahoo to set it as Firefox's default search engine in its mobile and desktop versions.[119] The deal was for five years, but Firefox

---

119. *See, e.g.*, Frederic Lardinois, *Yahoo Will Soon Become the Default Search Engine in Firefox*, TECHCRUNCH (Nov. 19, 2014, 2:09 PM), https://techcrunch.com/2014/11/19/mozilla-partners-with-yahoo-which-will-become-the-default-search-engine-in-firefox-next-month/.

terminated the contract less than two years after it took effect.[120] According to an expert, "[w]hile [the new default] was a small change, it was part of a number of moves that turned users against Firefox because it didn't always feel as if Mozilla had the user's best interests in mind."[121]

Nevertheless, the deal benefited Yahoo. Considering search queries from desktop devices, Yahoo's market share did go up right when the new contract entered into force (by 2%).[122] Figure 5 displays a generalized synthetic control analysis[123] estimating a synthetic United States with a weighted average of countries where Yahoo was not Firefox's default.[124] The model estimates an average treatment effect of 1.79% (95% CI = [1.29, 2.30], $p < 0.01$).[125] This means that Yahoo's market share went up by 1.79% thanks to Yahoo's default position. However, a year after the intervention, the effect started decreasing, and two years after December 2014, it was no longer statistically different from zero.

---

120. Frederic Lardinois, *Mozilla Terminates Its Deal With Yahoo and Makes Google the Default in Firefox Again*, TECHCRUNCH (Nov. 14, 2017, 12:07 PM), https://techcrunch.com/2017/11/14/mozilla-terminates-its-deal-with-yahoo-and-makes-google-the-default-in-firefox-again/.

121. *Id.*

122*. See Desktop Search Engine Market Share United States of America*, STATCOUNTER, https://gs.statcounter.com/search-engine-market-share/desktop/united-states-of-america (last visited Sept. 6, 2024) (click on "Edit Chart Data," then enter June 2013 and March 2018 in the "From" and "To" boxes, respectively, under the "Period" heading. Select "View Chart" to update the chart data).

123. A Generalized Synthetic Control Method is a variation of the canonical synthetic control method that includes linear fixed effects. *See* Yiqing Xu, *Generalized Synthetic Control Method: Causal Inference With Interactive Fixed Effects Models*, 25 POL. ANALYSIS 57 (2017).

124. The data and code are available on the author's GitHub. This model shows countries where Firefox's market share was within two standard deviations from the United States average in the pre-treatment period. The plot on the right shows Yahoo's market share in the United States and in the synthetic United States. The analysis includes three years in the pre-treatment period and two in the post. So, treatment kicks in in period 38. The plot on the right shows the months relative to the treatment and just the difference between the United States and the synthetic United States including a 95% confidence interval.

125. The pre-treatment fit is not perfect. However, the pre-treatment deviations from zero are short and small, and the post-treatment effect is much larger and statistically different from zero for more than ten months.

Figure 5. Yahoo's Market Share in the United States and Synthetic United States
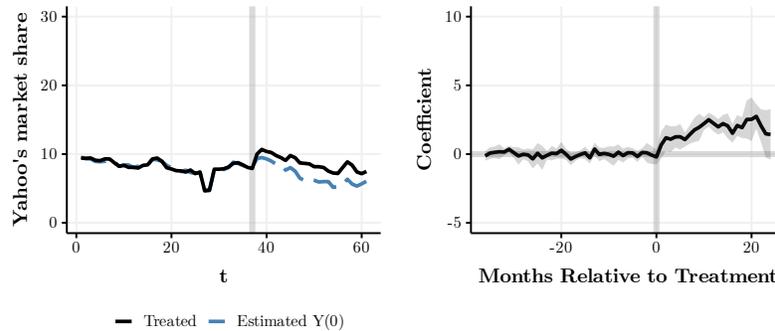
The 1.79% market share increase is substantial. Yahoo's market penetration was roughly 10% when the agreement took effect. Thus, an increase in Yahoo's use of 17.9% *among Firefox users* triggers the overall 1.79% effect. Figure 5 shows Yahoo's market share went up rapidly right after becoming Firefox's default. However, Yahoo's market share decreased just twelve months after gaining default status. Firefox's market share was going down too, which partially explains Yahoo's lower market share in the months following the contract.[126] However, it is sensible to assume that the default change was what triggered Firefox's market share drop, because no other relevant intervention took place during this period and Firefox itself decided to put an end to the contract with Yahoo due to its reputational impact.

3. An Application's Quality Impacts Its Default Effect

One of the main predictions of the dual-process model is that people's perceptions about the default application's quality influence the potential status quo effect. Bad defaults lead people to operate in pilot mode, a main

---

126. A Generalized Synthetic Control Model relies on a strong exogeneity principle, which means that the time-varying variables used to create the synthetic unit are unaffected by the treatment. Thus, the model does not include Firefox's market share as a covariate. It did, however, include Apple's OS and Linux's market shares.

opt-out trigger. The questionnaire asked the participants their opinion about each application's quality at the end of the form (with a 5-point ranking). While it is not possible to calculate perception changes at the individual level with repeated measures (because the questionnaire did not include a pre-treatment ranking question), the data do allow for the comparison of quality rankings among the experimental conditions (i.e., assigned to Yahoo vs. assigned to any other search engine). As noted above, Yahoo was the least used search engine when assigned as the participant's default. And it turns out that Yahoo was the only one that did not improve its quality ranking among those assigned to it by default.[127]

Table 1 shows three regression models that analyze only the responses of those assigned to a search engine by default. The dependent variable is the number of times the participants used the default. Model 1 only considers the assignment to one of the four search engines, having Google as the reference, as predictors. It shows Bing and Yahoo did, on average, a worse job at retaining users—with 0.6 number of times (95% CI [-1.13, -0.03], $p < 0.05$) and 1.1 (95% CI [-1.67, -0.53], $p < 0.01$) fewer times of use, respectively, than Google. Model 2 adds the default's quality as a control. Quality improves the model performance substantially and makes the assignment to any default statistically insignificant. Each quality point increases the use of the default, on average, by 0.59 times (95% CI [0.42, 0.76], $p < 0.01$). The author's future research will explore the interaction effect of default assignment with quality (with a larger sample size), which will precisely test the pilot/auto-pilot theory. However, even without the analysis of interaction effects, the results are consistent with such theory. Model 3 also includes the previous use of the default (before participating in the study) as an additional control. With this additional variable, the impact of quality lowers slightly to 0.52 times of use (95% CI [0.35, 0.69], $p < 0.01$). Previous use of the default increased its use in the experiment by 0.5 times on average (95% CI [0.18, 0.74], $p < 0.01$).

---

127. This result is discussed in Part III.A.4, *infra*.

Table 1. Quality, Prior Use, and Use During the Experiment

	Dependent variable:		
	Number of times used		
	(1)	(2)	(3)
Default's quality		0.589***	0.521***
		(0.087)	(0.088)
Assigned to Bing	-0.581**	-0.083	0.061
	(0.283)	(0.253)	(0.251)
Assigned to Yahoo	-1.103***	-0.020	0.151
	(0.293)	(0.298)	(0.296)
Assigned to DuckDuckGo	-0.347	0.197	0.299
	(0.271)	(0.246)	(0.241)
Previous use			0.568***
			(0.200)
Constant	2.806***	0.203	-0.044
	(0.200)	(0.422)	(0.420)
Observations	126	126	126
R^2	0.110	0.353	0.393
Adjusted R^2	0.088	0.331	0.368
Residual Std. Error	1.113 (df = 122)	0.953 (df = 121)	0.926 (df = 120)
F Statistic	5.002*** (df = 3; 122)	16.478*** (df = 4; 121)	15.557*** (df = 5; 120)

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

4. Default Assignment Increased Bing and DuckDuckGo's Quality Ranking but Neither Affected Yahoo nor any Weather Application

The data show that an application's quality was a key driver of its continued use. It also displays that the search engine and weather application that ranked worst did not retain users as much as the other alternatives. Nevertheless, the data show another important finding. Most participants started the study with misconceptions about Bing and DuckDuckGo's quality. As noted, a five-point scale measured the respondents' perceptions about each search engine's quality. Table 2 shows Google's baseline was 4.5, and the other search engines' was slightly below 2.8 (in the forced-choice condition). Those assigned to Bing and DuckDuckGo by default ranked their

default with a 3.5—a 0.8 increase in Bing's case (95% CI [0.36, 1.25], p < 0.01), and 0.72 in DuckDuckGo's (95% CI [0.28, 1.16], p < 0.01). Table 3 displays that the data do not allow rejecting the hypothesis that the assignment to any of the weather applications had no effect on their perceived quality. Interestingly, the participants ranked the three options with a high score (between 3.5 and 4), and there was just a 0.5-point difference between the best and worst-ranked options.

5. Defaults and Mismatches

Even after considering the updated beliefs of those assigned to Bing and DuckDuckGo, on average, Google still ranked higher than any other option. Nevertheless, by question five in the second experiment, a substantial part of the participants assigned to Bing used it exclusively. In fact, out of the 72 respondents assigned to Bing by default, 56 (78%) ranked Bing worse than Google, meaning that they stuck to a default they did not prefer. In the first experiment, by question 3, the mismatches were relatively similar for the three search engines other than Google (between 60% and 92%). In contrast, there were fewer mismatches affecting the use of weather applications (between 17% and 38%). And there was almost no difference between the Weather Channel and AccuWeather conditions.

Table 2. Default Assignment's Effect on Perceived Quality

	Dependent variable:			
	Google's quality (1)	Bing's quality (2)	DDG's quality (3)	Yahoo's quality (4)
Default status	-0.123	0.804***	0.719***	-0.066
	(0.105)	(0.225)	(0.224)	(0.220)
Constant	4.541***	2.769***	2.777***	2.647***
	(0.046)	(0.098)	(0.105)	(0.091)
Observations	162	162	168	158
R^2	0.008	0.074	0.058	0.001
Adjusted R^2	0.002	0.068	0.053	-0.006
Residual Std. Error	0.526 (df = 160)	1.127 (df = 160)	1.205 (df = 166)	1.041 (df = 156)
F Statistic	1.370 (df = 1; 160)	12.767*** (df = 1; 160)	10.265*** (df = 1; 166)	0.089 (df = 1; 156)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 3. Default's Effect on Perceived Quality: Weather Applications

	Dependent variable:		
	Weather Channel's quality	AccuWeather's quality	Weather Underground's quality
	(1)	(2)	(3)
forced choice	0.107	-0.266	-0.206
	(0.188)	(0.174)	(0.186)
Constant	3.828***	3.980***	3.530***
	(0.139)	(0.135)	(0.136)
Observations	141	127	143
R²	0.002	0.018	0.009
Adjusted R²	-0.005	0.010	0.002
Residual Std. Error	1.112 (df = 139)	0.958 (df = 125)	1.109 (df = 141)
F Statistic	0.323 (df = 1; 139)	2.333 (df = 1; 125)	1.222 (df = 1; 141)

Note: *p<0.1; **p<0.05; ***p<0.01

B. Discussion

In line with recent meta-analyses,[128] this work finds the magnitude of status quo bias is highly variable. Yet one thing is clear: said effect is not as strong as enforcers and policymakers have assumed.[129] When an application is widely preferred, assigning people to it by default facilitates an efficient matching with minimal distortion of people's preferences. For instance, Google does not benefit much from default status by itself. Moreover, even

---

128. Jachimowicz et al., *supra* note 13.

129. A radical deterministic theory of harm assumes that an application not assigned as its potential users' default will have a market share of zero. It would suggest this is the case when any other application is people's default. Of course, this is not sensible. However, this is a necessary assumption to equate the market share covered by a default agreement with the foreclosed share of the market. With forced choice as the benchmark, the default effect is one minus the share of people that would choose the application as their default when forced to choose. Another alternative is to compare market shares with different defaults. However, this approach does not reveal whether people's preferences were distorted. The forced choice benchmark is the only correct way to measure status quo effects. On determinism and the challenges behavioralism entails for law and economics, see Robert J. MacCoun, *The Relativity of Judgment as a Challenge for Behavioral Law and Economics*, 2 DAITO L. REV. 29 (2006).

when a non-preferred application benefits from a strong default effect, such an effect tends to lower over time. However, the deterministic view that default agreements are *de facto* exclusivity arrangements relies on the premise that defaults are much more powerful than they are, which is particularly clear in the assertion that the share of the market covered by a default agreement equals the foreclosed share of the market.[130]

This section delves into the implications that follow from the fact that defaults only distort the choices of a subset of users. For instance, if 50% of users opted out of a relatively good default (e.g., Bing) and there were only two distribution channels of equal size (e.g., Android and Apple's operating systems), a default agreement with one of the distributors would amount to an exclusivity arrangement covering 25% of the market. I refer to this effect as the *default multiplier*. It has important implications for antitrust law, especially for cases brought under Section 1 of the Sherman Act and Section 3 of the Clayton Act.[131] To discuss the implications, it is important to first revise the distinction between default effects and mistakes.

2. Defaults and Distorted Choice

As noted above, there are many different possible causes of default effects, and this work argues one of the main channels of status quo bias in digital applications is people's lack of attention. Good defaults do not trigger people's awareness. Bad defaults do. Because of this, market forces incentivize app distributors to provide sensible defaults. Consumer outrage was what caused the premature end of the 2014 agreement between Yahoo and Firefox.[132] So, how important can exploitative nudging be in explaining the high concentration of search, advertising, and other digital markets?

---

130. This is particularly clear in the DOJ's suit against Google. *See* Complaint, *supra* note 10, at 4 ("Google's exclusionary agreements cover just under 60 percent of all general search queries. Nearly half the remaining queries are funneled through Google owned-and-operated properties (e.g., Google's browser, Chrome). Between its exclusionary contracts and owned-and-operated properties, Google effectively owns or controls search distribution channels accounting for roughly 80 percent of the general search queries in the United States. Largely as a result of Google's exclusionary agreements and anticompetitive conduct, Google in recent years has accounted for nearly 90 percent of all general-search-engine queries in the United States, and almost 95 percent of queries on mobile devices.").

131. Interestingly, this is what the court did in *Boydstun Equipment Manufacturing, LLC v. Cottrell, Inc.* No. 16-cv-790, 2017 WL 4803938, at *15 (D. Or. Oct. 24, 2017) ("[Defendant] is correct that [plaintiff] does not assert a separate claim of exclusive dealing. The important question, though, is whether [plaintiff's] allegations sufficiently state a claim for monopolization under Section 2—whether the alleged facts indicate 'the use of monopoly power "to foreclose competition, to gain a competitive advantage, or to destroy a competitor."'" (quoting Image Tech. Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1208 (9th Cir. 1997)).

132. *See infra* note 194 and accompanying text.

A familiar example helps illustrate the point. Let's assume (i) there are two leading supermarket chains in a city, (ii) Coca-Cola pays slotting allowances to both chains and (iii) Coca-Cola's only competitors are much smaller companies that produce an inferior product yet charge Coca-Cola's price. A more prominent positioning of Coca-Cola may lead people who prefer the smaller producers to pick Coca-Cola because it is easier to reach (which can be rational). However, they could still spend a few seconds looking for their preferred option. Biased choices (i.e., search costs could be avoided depending on the framing of the decision context) may hurt the sales of products not featured on the promotional shelf. Nonetheless, this impact is likely not significant enough to impair their ability to compete. If everyone had to look for their preferred drink for a few seconds, most people would still get Coca-Cola.

Cases and regulatory procedures taking place outside of the United States provide valuable information to complement the analysis of Google's exploitative nudging. In a recent submission to the Australian Competition Authority, Google notes that 91% of searches on Windows desktop devices are conducted using Google Search, despite Bing being the default search engine on Microsoft's pre-installed browsers Edge and Internet Explorer. According to Google, this is evidence that default settings do not lock users in, and "can and do override defaults in [favor] of their preferred service."[133] However, in the European Android case, internal documents reviewed by the European Commission revealed that a senior Google employee conveyed that the value of "preloading (that is, pre-installation)" was that "users just use what comes on the device" and "rarely change defaults."[134]

The two statements are not necessarily contradictory—in fact, both are consistent with the pilot/auto-pilot model this work proposes. Google, as a high-quality default, is likely to stick. The reference to Bing, however, is a fallacy. What the data show is that people opt out of internet browsers they regard as a medium- or low-quality option. Browser-opt-outs affect the use of Bing, but indirectly. In fact, most Windows users switch to Chrome, and this browser comes with Google preset as its default. Figure 6 below shows the correlations between IE/Edge and Bing, and Chrome and Google. Internet browsers do not appear to influence what search engine people use.

---

133. AUSTRALIAN COMPETITION & CONSUMER COMM'N, DIGITAL PLATFORM SERVICES INQUIRY: INTERIM REPORT NO. 3—SEARCH DEFAULTS AND CHOICE SCREENS 45 (2021).

134. Case AT.40099—Google Android, Comm'n Decision, ¶ 787 (July 18, 2018) (summary at European Commission, Commission Decision, 2019 O.J. (C 402) 8), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2019.402.01.0019.01.ENG&toc=OJ%3AC%3A2019%3A402%3ATOC.

Figure 6. Correlations Between U.S. Browsers and Search Engines

colour — Bing — IE and Edge   *colour* — Chrome — Google
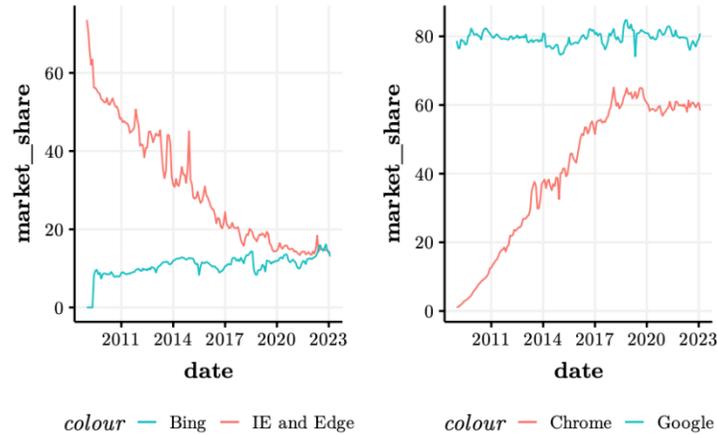
2. Default Multiplier and Defaults as as a Part of a More General Foreclosure Strategy

Defaults alone are limited in making people stick to applications they do not prefer. Yet, some stickiness is noticeable. In the Firefox-Yahoo agreement, around 18% of Firefox users were stuck with a search engine they did not prefer for several months. The experimental data showed similar results, with many participants assigned to Bing by default not using Google despite ranking the latter as the best search engine. However, half of the participants switched to Google right after answering four low-stakes trivia questions. And, as Google has noted, 80% of Windows users switch to alternative internet browsers despite having Edge preinstalled and preset as their default. Then, what role can defaults play in an anticompetitive strategy?

Defaults can certainly play a role. However, considering the preceding limits, the exclusive dealing theory is unlikely to be the most appropriate for assessing their harm to competition. As noted, opt-outs should be discounted in the foreclosure analysis. Ideally, also the share of users whose choices are not distorted. This is what this work refers to as "default multiplier." The assertion that the share of the market foreclosed equals the share covered by a default agreement assumes a multiplier of one. This is a simplistic analysis that assumes everyone functions in auto-pilot mode all the time.

The default multiplier has important implications for antitrust law. Regarding Sherman Act Section 1 exclusive dealing cases, agreements involving market shares lower than 40-50% are usually considered insufficient to establish an antitrust violation.[135] Substantial opt-outs would make it unlikely to reach the threshold. Nevertheless, as noted, from a strict but-for-causation perspective, the foreclosure analysis should discount the share of users whose decisions were not distorted by the default (i.e., the deliberate defaulting part). Much lower shares may be enough for Clayton Act Section 3 cases.[136] Yet its more stringent test depends on the existence of an "exclusive" contract, and some courts interpret this requirement strictly.[137] This means that even a small fraction of opt-outs would render Clayton Act Section 3 inapplicable.

The likelihood of anticompetitive effects increases when a monopolist uses defaults and other vertical restraints intending to preserve a monopolistic position. And Sherman Act Section 2 cases benefit from more flexibility regarding the foreclosure share.[138] In the supermarket promotional shelf example, the shelf itself is unlikely to impair the other products' ability to compete. However, the supermarket may adopt complementary measures that could drive the other brands out of the market or put them at a considerable competitive disadvantage. In Google's case, the main question

---

135. *See, e.g.*, ZF Meritor, LLC v. Eaton Corp., 696 F.3d 254, 286 (3d Cir. 2012) (citing LePage's Inc. v. 3M, 324 F.3d 141, 159 (3d Cir. 2003) ("noting that foreclosure of 40% to 50% is usually required to establish an exclusive dealing violation under Section 1 of the Sherman Act").

136. See, e.g., *Barr Lab'ys, Inc. v. Abbott Lab'ys*, 978 F.2d 98, 111 (3d Cir. 1992), in which the court assessed the effects of the contract despite the fact it foreclosed only 15% of the market:

> [The plaintiff's] argument ignores the effect of *Tampa Electric*'s qualitative substantiality test, which "introduced greater flexibility and requires the courts actually to evaluate the restrictiveness and the economic usefulness of the challenged practice in relation to the business factors extant in the market." . . . [U]nder *Tampa Electric*'s qualitative substantiality test, the degree of market foreclosure is only one of the factors involved in determining the legality of an exclusive dealing arrangement.

Id. (citations omitted).

137. *See, e.g.*, *Barr Lab'ys*, 978 F.2d at 110 n. 24 (citing Kellan Enters., Inc. v. Duncan, 668 F. Supp. 861, 883–84 (D. Del. 1987)) ("An agreement affecting less than all purchases does not amount to true exclusive dealing."); Concord Boat Corp. v. Brunswick Corp., 207 F.3d 1039, 1044, 1062–63 (8th Cir. 2000) (noting that the defendant's discount program, which conditioned incremental discounts on customers purchasing 60–80% of their needs from the defendant, did not constitute exclusive dealing because customers were not required to purchase all of their requirements from the defendant, and in fact, could purchase up to 40% of their requirements from other sellers without foregoing the discounts).

138. United States v. Microsoft Corp., 253 F.3d 34, 70 (D.C. Cir. 2001) ("[W]e agree with plaintiffs that a monopolist's use of exclusive contracts, in certain circumstances, may give rise to a § 2 violation even though the contracts foreclose less than the roughly 40% or 50% share usually required in order to establish a § 1 violation.").

is whether a small distortion of user choice could be enough to prevent Google's competitors to reach an efficient scale. This works suggests it is hard to answer this question in abstract. However, it is much easier to answer whether a larger set of restrictions constitute a monopoly maintenance scheme.

Not surprisingly, the main cases that have dealt with the strategic use of defaults in both the United States and the European Union have entailed additional restrictions to competition, which made the default position just a part of a broader monopolization scheme. In the late 1990s, the U.S. Department of Justice ("DOJ") alleged that Microsoft committed several anticompetitive acts to severely limit Netscape's commercial viability and deflect the threat that Netscape and Java middleware posed to Microsoft's OS monopoly by promoting interoperability between OSs. According to the government, the primary means used by Microsoft to exclude Netscape were commingling files, changing the Add/Remove utility, and preventing original equipment manufacturers (OEMs) from removing the IE icon from the desktop.[139]

The D.C. Circuit found that Microsoft violated Section 2 of the Sherman Act by "commingling" the computer code for its Windows operating system with Internet Explorer web browser.[140] When certain aspects of Microsoft's product design excluded competitors, the court required Microsoft to provide a pro-competitive justification. The court ruled that the commingling of browsing code with other code in the same file and the exclusion of Internet

---

139. The DOJ's theory was that Microsoft did everything in its power to preserve the incompatibility of different operating systems. Hovenkamp nicely summarizes the main practices that the government challenged as the following:

> (a) Microsoft "commingled" Windows and Internet Explorer code, giving IE a decisive advantage over Netscape in people's choice of a web browser; (b) it prevented computer manufacturers from removing Microsoft icons, including Internet Explorer icons, from the desktop or start menu of the computers they sold, or from modifying the "boot," or startup sequence so as to favor non-Microsoft products; (c) it prevented computer manufacturers from altering the Windows desktop, or interface that shows the various icons for the programs that the system includes; (d) it induced software developers by various contractual devices to favor Internet Explorer over Netscape as a web browser choice; (e) it pressured Apple Computer to use Internet Explorer rather than another browser in its own office systems; (f) it placed pressure on Intel, a major chip manufacturer, to withdraw developmental support for chips that ran the Java multi-platform computing language. The D.C. Circuit condemned all these practices, although it exonerated a few others.

HOVENKAMP, *supra* note 59, at 309.

140. *Microsoft Corp.*, 253 F.3d at 66–67. The parties then entered a consent decree, which was approved by the D.C. Circuit in *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1209 (D.C. Cir. 2004).

Explorer from the Add/Remove Programs utility were unlawful because they tended to exclude Navigator, and Microsoft provided no justification for them. Besides, back then, computer manufacturers were unwilling to support two versions of the same program. Thus, commingling effectively eliminated Internet Explorer's main rival, Netscape, from the original distribution portion of the browser market. As a result, Netscape found it much more difficult to create tools that would have made computers compatible with a wide range of operating systems. Interestingly, the court did not provide a resolution concerning the tying claims.[141]

European enforcers followed the DOJ's example, expanding the foreclosure assessment with strong assumptions. In 2007, the European General Court confirmed a European Commission's decision that found Microsoft had abused its dominant position by bundling its operating system with Media Player and refusing to supply interoperability information to its competitors.[142] The Commission argued that Media Player automatically achieved a market share corresponding to that of each Windows client PC, which was an unfair advantage. According to the enforcer, having a preinstalled application made it less likely that users would switch to an alternative.[143] Oddly, the European authorities stated that the presence of several media players on the same device created a risk of confusion on the users' part and increased customer support and testing costs.[144] Nevertheless, like in the U.S. Microsoft case, the most probable explanation for Microsoft's behavior was that it intended to prevent the development of interoperability technology that would threaten its dominant position in the OS market.[145]

---

141. A. Douglas Melamed & Daniel L. Rubinfeld, U.S. v. Microsoft: *Lessons Learned and Issues Raised*, *in* ANTITRUST STORIES 287, 302 (Eleanor M. Fox & Daniel A. Crane eds., 2007).

142. Case T-201/04, Microsoft Corp. v. Comm'n of the Eur. Cmtys., 2007 ECR II-3601. The Commission determined that Microsoft's refusal to supply violated Article 102(b) TFEU by limiting technical development to the detriment of consumers. *Id.* It ordered Microsoft to license relevant interoperability information to its competitors on reasonable and non-discriminatory terms. *Id.* It was noted that the potential negative impact of an order to supply on Microsoft's incentives to innovate was outweighed by the positive impact on the overall level of innovation (including Microsoft). *Id.* The General Court confirmed the Commission's decision. *Id.*

143. *See, e.g.*, Ian Ayres & Barry Nalebuff, *Going Soft on Microsoft? The EU's Antitrust Case and Remedy*, 2 ECONOMISTS' VOICE, no. 2, 2005, at 5.

144. Case T-201/04, Microsoft Corp. v. Comm'n of the Eur. Cmtys., 2007 ECR II-3601.

145. Ayres & Nalebuff, *supra* note 143, at 5. Later, the Commission opened a new investigation following a complaint made by Opera, which claimed Microsoft also bundled IE to its OS. It ended with a settlement, in which Microsoft committed to display a choice-screen to facilitate the installation of IE's competitors. *See* Case COMP/C-3/39.530—Microsoft (Tying), ¶ 60 (Dec. 16, 2009) (summary at 2010 O.J. (C 36) 6), https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52010XC0213%2802%29.

More recently, the General Court confirmed the Commission's decision that found Google imposed unlawful restrictions on manufacturers of Android mobile devices and mobile network operators to strengthen the dominant position of its search engine.[146] A large part of the complaint was about Google's default position within the Android ecosystem. But the case was about much more than just a default position. For instance, Google granted the operating license for the pre-installation of Google Search and Play Store apps only to manufacturers that sold devices running on Android versions approved by Google. One of the remedies imposed was a choice-screen, which forced each Android user located in Europe to choose its default search engine.

In the United States, the DOJ and a group of state attorneys general sued Google in October 2020 for reasons very similar to those stated in the European Android case.[147] This was the most significant monopolization case to be filed in the United States in decades—as someone put it, the "biggest antitrust case in a generation."[148] The DOJ explicitly alleged that Google had "entered into exclusionary agreements, including tying arrangements, and engaged in anticompetitive conduct to lock up distribution channels and block rivals."[149] The government notes that Google pays billions of dollars annually to distributors, such as Apple, LG, Motorola, and Samsung; major U.S. wireless carriers such as AT&T, T-Mobile, and Verizon; and browser developers such as Mozilla, Opera, and UCWeb, to secure default status for its general search engine and, in many cases, to prohibit Google's counterparties from engaging in business with Google's competitors.[150] In fact, most of these agreements prohibit the preinstallation of competing search engines, denying market access to Google's search competitors.

---

146. *See* Press Release, Ct. of Just. of the Eur. Union, The General Court Largely Confirms the Commission's Decision That Google Imposed Unlawful Restrictions on Manufacturers of Android Mobile Devices and Mobile Network Operators in Order to Consolidate the Dominant Position of Its Search Engine (Sept. 14, 2022), https://curia.europa.eu/jcms/upload/docs/application/pdf/2022-09/cp220147en.pdf.

147. *See* Press Release, Dep't of Just., Justice Department Sues Monopolist Google For Violating Antitrust Laws (Oct. 20, 2020), https://www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws.

148. Kari Paul, *Google Is Facing the Biggest Antitrust Case in a Generation. What Could Happen?*,   GUARDIAN   (Oct.   21,   2020), https://www.theguardian.com/technology/2020/oct/21/google-antitrust-charges-what-is-next.

149. Complaint, *supra* note 10, at 4.

150. *Id.* Some of these agreements also require distributors to feature a collection of Google apps, including its search apps, in prominent positions on devices where consumers are most likely to initiate internet searches.

There is a common denominator in all these cases: a platform restricts the preinstallation of competing applications—sometimes limiting the supply of interoperability information—and imposes a more favorable distribution for an application. Microsoft intended to prevent the development of technology that facilitated the interoperability between different operating systems.[151] Google made it harder to replace the whole set of preinstalled applications, which favored its search engine.

The analysis of the default position in isolation may be misleading. The IE and Media Player examples are particularly helpful because the former was a bad default and the latter an unremarkable one. Google is a good counterexample. By the time of the European General Court's decision, Media Player's dominance was already declining.[152] And within a few years, iTunes+QuickTime market share would virtually match Media Player's.[153]

However, a broader look is necessary to properly assess the channel and likelihood of anticompetitive effects.[154] In the United States, a big part of the Microsoft case was about interoperability restrictions. Remarkably, the court did not prevent Microsoft from commingling IE with its OS. However, it did mandate the defendant to make its code accessible to facilitate the development of competing applications within its OS. This work develops this argument further in the following section, but what explains the

---

151. As Melamed et al. put it,

   after concluding that Microsoft had monopoly power, the District Court held that Microsoft had violated § 2 by engaging in a variety of exclusionary acts (not including predatory pricing), to maintain its monopoly by preventing the effective distribution and use of products that might threaten that monopoly. Specifically, the District Court held Microsoft liable for: (1) the way in which it integrated IE into Windows; (2) its various dealings with Original Equipment Manufacturers ("OEMs"), Internet Access Providers ("IAPs"), Internet Content Providers ("ICPs"), Independent Software Vendors ("ISVs"), and Apple Computer; (3) its efforts to contain and to subvert Java technologies; and (4) its course of conduct as a whole.

MELAMED ET AL., *supra* note 45, at 1003.

152. *Apple to Pass Microsoft in Streaming Media Players by Early 2011 - September 2010 Bandwidth Report*, WEBSITEOPTIMIZATION.COM, https://www.websiteoptimization.com/bw/1009/ (last visited Sept. 6, 2024).

153. *Apple iTunes Penetration Closing Gap with Microsoft - April 2011 Bandwidth Report*, WEBSITEOPTIMIZATION.COM, https://www.websiteoptimization.com/bw/1104/ (last visited Sept. 6, 2024).

154. As Feldman and Lemley have noted, antitrust has tended to focus too much on particular acts and has not paid sufficient attention to how several acts reveal an underlying complex strategy. *See* Robin C. Feldman & Mark A. Lemley, *Atomistic Antitrust*, 63 WM. & MARY L. REV. 1869 (2021).

plummeting of IE's market share is Firefox[155] and Chrome's entry.[156] The court's remedy facilitated the entry of new competitors into the browser market.

Interestingly, Google's agreement with Apple does not prevent the latter from pre-installing Google's competitors. In fact, any Apple user may quickly change her default to Bing, DuckDuckGo, or Ecosia in the device settings—all of which come preloaded in Apple devices. So, why would Google pay between $12 and $26 billion a year to Apple? This can be especially puzzling if most people would choose Google if they were forced to choose their default. In another article,[157] I argue that Apple is not only Google's distributor but also its potential competitor. Google's revenue sharing agreements do make it much more expensive for its competitors to access Apple's premier distribution channel (and, most likely, irrational). Nevertheless, by paying between $12 and $26 billion dollars a year to Apple, the latter has no incentive to enter the market.[158] Keeping Apple out of search is essential for Google to maintain its monopoly. When analyzing the situation from a broader perspective that considers Apple not only as Google's distributor but also as its potential competitor, the case against Google is stronger. A generic monopolization case would focus on whether

---

155. Firefox entered the market in 2004 using Netscape's code.

Firefox 1.0 was released in 2004 and became a big success — in less than a year, it was downloaded over 100 million times. New versions of Firefox have come out regularly since then and keep setting new records. The popularity of Firefox has helped bring choice back to users. The renewed competition has accelerated innovation and improved the internet for everyone.

History of the Mozilla Project, MOZILLA, https://www.mozilla.org/en-US/about/history/ (last visited Sept. 6, 2024).

156. Erick Schonfeld, *Since March, Internet Explorer Lost 11.4 Percent Share to Firefox, Safari, and Chrome*, TECHCRUNCH (July 5, 2009, 10:10 AM), https://techcrunch.com/2009/07/05/since-march-internet-explorer-lost-114-percent-share-to-firefox-safari-and-chrome/.

157. Omar Vasquez Duque, *Monopolization by Exploiting People's Inertia? On the DOJ's 2020 Complaint Against Google and Revenue Sharing Agreements as Non-Compete Arrangements*, 75 UC L.J. 1403 (2024).

158. According to the DOJ, Google's revenue share with Apple accounts for approximately 15-20% of Apple's total net income. Complaint, *supra* note 10, at 37. Google pays Apple billions of dollars in advertising revenue each year for this privileged access to Apple's massive consumer base with public estimates ranging between $8 and $12 billion. Daisuke Wakabayashi & Jack Nicas, *Apple, Google and a Deal That Controls the Internet*, N.Y. TIMES (Oct. 25, 2020), https://www.nytimes.com/2020/10/25/technology/apple-google-search-antitrust.html; Hemant K. Bhargava, *Google Antitrust Case Suggests Apple Should Be in the Department of Justice's Crosshairs Too*, THE CONVERSATION (Oct. 29, 2020, 8:30 AM), http://theconversation.com/google-antitrust-case-suggests-apple-should-be-in-the-department-of-justices-crosshairs-too-148691.

the revenue-sharing agreement is unreasonably exclusionary.[159] Google's contracts prevent competition in the Android OS applications market—which could lessen its search engine's preeminent role within the Android ecosystem—and substantially discourage a key potential competitor (i.e., Apple) from entering search and advertising. All these acts reveal a monopolization scheme by which Google preserves its monopoly in both product markets.

With respect to the default status itself, there would be no need to determine how close the default agreement is to the exclusive dealing standard. The default position, together with the contractual restraints imposed on the Android licensees, and Apple's lessened incentives to enter the market should provide strong indicia of a monopoly maintenance scheme. Google then would have to show objective justifications for its conduct.[160] With respect to the part of the case involving Apple, while most of Apple's users get their preferred search engine by default, thus saving search costs, forcing people to choose their preferred default would achieve the same efficient matching and break the potentially collusive alliance between Google and Apple at a negligible cost.[161]

IV. BEHAVIORALLY-INFORMED REMEDIES

Judges and regulators may apply different remedies to correct default effects that produce socially undesirable results. Most of the alternatives fall within two broad categories this Article discusses below: (i) forced-choice remedies, and (ii) default assignment to an alternative selected by a choice architect (i.e., default randomization). These are beyond the scope of antitrust law conceived of as the law of the competitive process. In fact, the most straightforward antitrust remedy in Google's case is to enjoin default agreements. However, given the popularity of choice screens in Europe, which has extended to other continents, this work now focuses on the potential of forced choice remedies to level the field among competitors and discusses the potential "debiasing" effects of default randomization. The mantra that "antitrust protects competition and not competitors" is well

---

159. HOVENKAMP, *supra* note 52, at 564 (noting the practical implications of bringing exclusive dealing cases based on Section 3 of the Clayton Act and Section 1 or 2 of the Sherman Act).

160. This approach is almost identical to what the D.C. Court did in *Microsoft* after finding Microsoft's commingling of its OS with IE *and* removal of IE from the application management settings tended to exclude Netscape from the market. United States v. Microsoft Corp., 253 F.3d 34, 70 (D.C. Cir. 2001).

161. I develop this argument much more fully in Vasquez Duque, *supra* note 157.

understood.[162] The following section assumes that judges and/or regulators have already determined that regulatory measures are socially desirable.

A. Forced Choice

If undesirable default effects stem from people's lack of the opportunity to choose the applications that they want, forcing people to choose appears as the most straightforward solution. Choice has both consequentialist and normative appeals. On the one hand, forced choices are easy to implement and can protect people from engaging in inconvenient actions or transactions.[163] When people have good information and make thoughtful decisions, markets reflect consumers' preferences.[164] On the other hand, choice is a manifestation of moral autonomy.[165] This latter foundation of choice is particularly salient in Europe, where competition authorities have prosecuted digital platforms for violating people's rights to self-determination.[166]

Most of the evidence about the limits of forced choice strategies to level the field among competitors comes from Europe, as I will discuss. However, in the U.S. Microsoft case, the DOJ pursued the vertical separation of Microsoft to divide it into two smaller entities—an operating system company, and an applications company.[167] Judge Jackson accepted this proposed remedy, but then the appeals court remanded the case for a rehearing on the remedy issue.[168] Had this remedy prevailed, the most natural consequence would have been to have each user choose their default internet browser. Interestingly, the DOJ considered proposing the use of a choice screen to police Microsoft's monopolistic behavior. But this idea did not gain traction then.[169]

---

162. *See, e.g.,* Eleanor M. Fox, *We Protect Competition, You Protect Competitors*, 26 WORLD COMPETITION 149, 162 (2003).

163. As Cooter and Ulen put it, "Most people look after their own interests better than anyone else would do for them." ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 342 (6th ed. 2016).

164. RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 115–23 (8th ed. 2011).

165. MICHAEL J. TREBILCOCK, THE LIMITS OF FREEDOM OF CONTRACT 9–10 (1997); *see generally* Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L.J. 541 (2003).

166. *See* Omar Vasquez Duque & Jörg Hoffmann, *Can Data Exploitation Be Properly Addressed by Competition Law? A Note of Caution*, CONCURRENCES, Feb. 2021, at 75.

167. Melamed & Rubinfeld, *supra* note 141, at 293.

168. *Id.* at 294.

169. Michael Ostrovsky, *Choice Screen Auctions* 1-2 (Nat'l Bureau of Econ. Rsch., Working Paper No. 28091, 2020).

In Europe, choice screens have been used as competition remedies three times. First in the Microsoft case (Internet Explorer ("IE")),[170] and, more recently, in the Android case and the Digital Markets Act. When discussing a series of antitrust cases against Google, the European Commissioner for Competition, Margrethe Vestager, stated that Europe had "seen in the past that a choice screen [could] be an effective way to promote user choice."[171] However, the author's empirical research shows there was no evidence to back that claim.[172] The internet browser choice screen was displayed in March 2010. As Figure 7 depicts, IE's market share fell following the intervention, and this is perhaps the only piece of evidence that could suggest the choice screen lowered IE's market share. However, IE's market penetration was declining before the choice screen's display. And the same trend was visible in other developed nations, including Canada, New Zealand, Australia, the United States, and most of the world. The effect attributable to the choice screen itself is, at most, a 2% decrease in IE's market share—i.e., IE's market share in Europe fell 2% more than in other similar countries where no choice screen was displayed.[173]

---

170. The first Microsoft case in Europe was about the integration of Microsoft's operating system with its media player.

171. *See* Statement by Comm'r Vestager on Comm'n Decision to Fine Google € 1.49 Billion for Abusive Practices in Online Advert. (Mar. 20, 2019), https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_19_1774.

172. Vasquez Duque, *supra* note 15.

173. *Id.*

Figure 7. Internet Explorer's Market Share 2009–2015

Internet Explorer
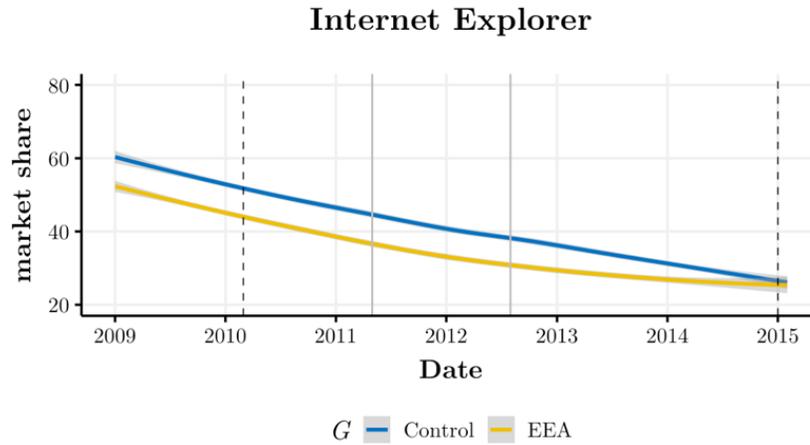
While this may appear counterintuitive, IE was a slow browser, and most users viewed it as a poor default.[174] What is clear, however, is that people were switching to other browsers, especially Chrome, irrespective of whether they saw a choice screen or not. This is what a dual-system model would suggest—because bad defaults make people switch to pilot mode. Figure 8 below shows the market penetration of the most used internet browsers from 2009 and 2016 in Europe and the United States. The general trend in both groups is a decline in IE and Firefox's market shares, and a rapid expansion of Chrome's. In 2012 Chrome became the leading browser in Europe, which occurred only one year later in the United States.

---

174. *See, e.g.*, Don Reisinger, *Google Chrome Is Better Than Microsoft Internet Explorer: 10 Reasons Why*, EWEEK (Mar. 9, 2011), https://www.eweek.com/cloud/google-chrome-is-better-than-microsoft-internet-explorer-10-reasons-why/.

Figure 8. Internet Browsers in Europe and the U.S. 2009–2016

data from https://gs.statcounter.com
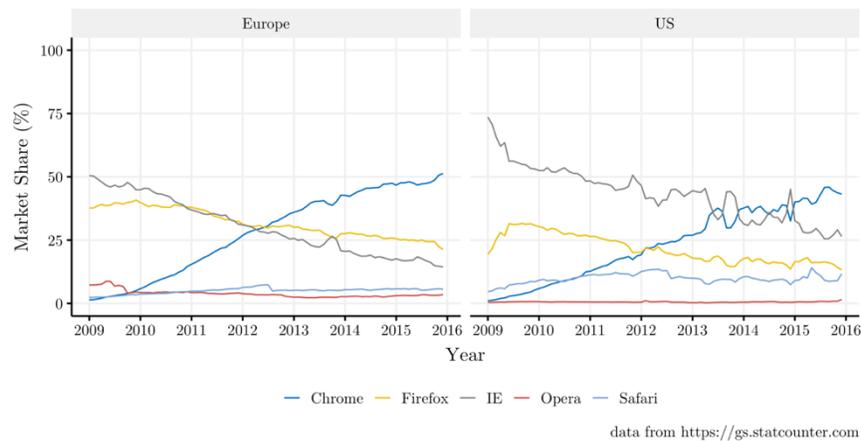
Despite the availability of browsers that most people consider a better alternative,[175] IE's market share did not drop to zero. In 2016, IE's market penetration was still close to 20% in both regions. It is important to bear in mind that people may well have an idiosyncratic preference for IE or be obligated to use it. In many offices, for instance, employees may not download applications unless they have administrator privileges and are thus limited to using the full Microsoft suite. This may partially explain why IE's decline plateaued by 2014. In fact, after Edge's introduction in 2015, most of IE's further decline is explained by Edge's market penetration.[176] However, as of 2020, millions of people still used IE,[177] despite Edge being Microsoft's default, and despite that Microsoft developed Edge acknowledging IE's bad reputation.[178]

---

175. Many joked about this, claiming that "Internet Explorer [was] the best browser to download a better browser with." Ross James, *What Is Microsoft Edge?: Everything You Need To Know About Microsoft's Latest Web Browser*, Bᴜs. Iɴsɪᴅᴇʀ (Feb. 18, 2020, 1:41 PM), https://www.businessinsider.com/guides/tech/what-is-microsoft-edge.

176. *See* Desktop Browser Market Share Worldwide, SᴛᴀᴛCᴏᴜɴᴛᴇʀ, https://gs.statcounter.com/browser-market-share/desktop/worldwide/#monthly-201201-202212 (last visited Sept. 6, 2024).

177. Mike Moore, *Millions of People Are Still Using Internet Explorer for Some Reason*, TᴇᴄʜRᴀᴅᴀʀ (Nov. 2, 2020), https://www.techradar.com/news/watch-out-chrome-microsoft-edge-just-hit-an-important-landmark.

178. James, *supra* note 175.

After the recent display of the Android choice screen, Google's market share almost did not change at all.[179] This is consistent with the experimental data described in this work. When presented with several options to participate in the study, most people (89%) chose Google. The Digital Markets Act's choice screens did not impact Google's market share in mobile devices and had a negligible effect on desktop devices.

Nonetheless, default applications may also stick because some users do not know how to change the default. For simplicity, let's assume there are only two types of computer users: (i) experienced and (ii) inexperienced. The experienced use the applications they think are best, or, at least, good enough to avoid looking for an alternative. The inexperienced tend to go along with the default. The data suggest that experienced users were switching to Chrome virtually everywhere, regardless of whether they were forced to choose a browser or not. But think of what inexperienced users would do when presented with a pop-up window to select a browser in which they only see one familiar alternative.

The dual-process rationale is essential to assess the effectiveness of choice screens. The persuasion literature has documented that for a message to be successful, people must have the interest and the ability to process it.[180] This is one of the most fundamental implications of conceiving people's behavior as a function of a dual cognitive process. In the choice screens debate, there is an implicit premise in the sense that the goal of forced choices is to (i) provide information to the recipients and (ii) prompt a decision to ensure that they reveal their actual preference. So far, scholars, enforcers, and regulators have assumed that people want to make conscious choices and engage with the selection of applications they use.

Forced choice appears to be especially unnecessary or futile in the cases of bad defaults (e.g., IE) and defaults that reflect people's preferences (e.g., Google), respectively. Assuming people will police the market with their choices with no data to support the hypothesis is as naïve as assuming that

---

179. A comprehensive analysis finds a 2% reduction in Google's market share, but a much larger effect in Russia and Turkey. *See* Francesco Decarolis, Muxin Li & Filippo Paternollo, *Competition and Defaults in Online Search* (Ctr. for Econ. Pol'y Rsch., Discussion Paper No. DP17779, 2023). However, Turkey did not mandate a choice screen. The intervention in Turkey triggered a change of default, which is a different policy alternative, one this work suggests would be much more impactful than forcing people to choose. Nonetheless, it is fair to say that in liberal economies with democratic governments, choice screens have had a negligible effect.

180. Petty & Cacioppo, *supra* note 82, at 142.

people reject the non-essential cookies in Europe,[181] ask websites not to sell their data in California,[182] or read the fine print of consumer contracts.[183] Difficult problems are rarely solved with simple solutions.

Conscious choices do have the potential to discipline market outcomes. Unconscious picking does not.[184] For instance, in the DOJ's 2020 Complaint, the government notes that Google's *de facto* exclusivity agreements have harmed consumers by reducing the quality of general search services (including dimensions such as privacy, data protection, and use of consumer data), reducing choice in general search services, and impeding innovation.[185] For this assertion to be right, consumers must reveal they value their privacy with their choices. And there is convincing empirical data showing that people are not willing to make little effort to protect their privacy.[186] When, for informational deficiencies and/or behavioral biases, consumers do not reward the producers that best match their stated preferences, competition does not ensure that those stated preferences are satisfied.[187] If consumers do not reward applications that respect their privacy and punish those that exploit it, developers will tend to extract as much value as possible from people's privacy, allowing the companies to subsidize their product's

---

181. Natasha Lomas, *Most EU Cookie "Consent" Notices Are Meaningless or Manipulative, Study Finds*, TECHCRUNCH (Aug. 10, 2019, 6:00 AM), https://techcrunch.com/2019/08/10/most-eu-cookie-consent-notices-are-meaningless-or-manipulative-study-finds/ (last visited Feb. 6, 2023).

182. Rob Pegoraro, *Here's A Hint About How Few People Click Those "Do Not Sell My Personal Information" Links*, FORBES (Nov. 13, 2020, 6:22 PM), https://www.forbes.com/sites/robpegoraro/2020/11/13/heres-a-hint-about-how-few-people-click-those-do-not-sell-my-personal-information-links/.

183. *See generally* Yannis Bakos, Florencia Marotta-Wurgler & David R. Trossen, *Does Anyone Read the Fine Print? Consumer Attention to Standard Form Contracts*, 43 J. LEGAL STUD. 1 (2014).

184. Except when a regulator effectively nudges people in a direction that fixes a market failure. For this reason, a forced-choice remedy would be a sensible intervention for the DOJ's 2020 Complaint against Google: people would still pick their preferred option (achieving an efficient matching) without lessening Apple's incentives to enter the market. *See* Vasquez Duque, *supra* note 157.

185. Complaint, *supra* note 10, at 53.

186. Susanne Barth & Menno D.T. de Jong, *The Privacy Paradox – Investigating Discrepancies Between Expressed Privacy Concerns and Actual Online Behavior – A Systematic Literature Review*, 34 TELEMATICS & INFORMATICS 1038 (2017); Patricia A. Norberg, Daniel R. Horne & David A. Horne, *The Privacy Paradox: Personal Information Disclosure Intentions Versus Behaviors*, 41 J. CONSUMER AFFS. 100 (2007); Spyros Kokolakis, *Privacy Attitudes and Privacy Behaviour: A Review of Current Research on the Privacy Paradox Phenomenon*, 64 COMPUTS. & SEC. 122 (2017).

187. Vasquez Duque & Hoffmann, *supra* note 165.

nominal price.[188] This is how an internet model based on advertisement works. The same occurs with search quality.[189] For search companies, better search quality is a synonym for higher advertising revenue.[190] This is exemplified by the truism that "if you pay for something, you're a customer—but if you get it for free, you're a product."[191]

B. Use of Defaults

Another possible nudge to level the field among competitors is to assign people to one of the options that would qualify to be on a choice screen. Rather than asking people whether they prefer Google, Bing, Yahoo, or DuckDuckGo, assign them to one of these options with an equal probability.[192] From a policy perspective, the attractiveness of defaults stems from their apparent effectiveness in various contexts and their relative ease of implementation.[193] In this setting, the effectiveness of this strategy would depend on the defaults' stickiness.

By reaching a larger scale, applications that lack a substantial user base could improve their quality thanks to getting more consumer feedback that

---

188. A familiar example is in order. Credit card providers usually offer a nominal price of $0 and charge high late fees. This is because people are optimistic and overlook the cost of late payments. Let's assume that in period 1 banks charged an annual fee of $100 and a late fee of $1 per incidence, and that an average person would miss five payments a year. The market is competitive, therefore each bank charges a price equal to the cost of providing the service. In period 2, one of the banks realizes that people care too much about the annual charge and overlook the late fees. So, it starts offering a deal with a $0 annual fee and a $25 late fee per incidence (increasing its revenue to $125). Since consumers perceive this is a free product, the other banks must follow suit immediately and match the $0 annual fee. In period 3, all the banks charge no annual fee and set late fees above competitive levels, certainly above $21 (since $21 x 5 = $105 and that is the average cost per user). This is an equilibrium because no bank has incentives to change its behavior. *See* OREN BAR-GILL, SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS 2 (2012).

189. Recent research has shown that the quality of many search engines' content moderation is disturbing. *See* Josh Constine, *Microsoft Bing Not Only Shows Child Sexual Abuse, It Suggests It*, TECHCRUNCH (Jan. 10, 2019, 10:07 AM), https://techcrunch.com/2019/01/10/unsafe-search/; Daniel Bush & Alex Zaheer, *Bing's Top Search Results Contain an Alarming Amount of Disinformation*, STANFORD: FREEMAN SPOGLI INST. FOR INT'L STUD. (Dec. 17, 2019), https://fsi.stanford.edu/news/bing-search-disinformation.

190. This is another case of what Akerloff and Shiller describe as a "phishing equilibrium." *See* GEORGE A. AKERLOF & ROBERT J. SHILLER, PHISHING FOR PHOOLS: THE ECONOMICS OF MANIPULATION AND DECEPTION 58–59 (2015).

191. Jim Salter, *Search Engine Startup Asks Users to Be the Customer, Not the Product*, ARS TECHNICA (June 29, 2020, 7:49 AM) https://arstechnica.com/gadgets/2020/06/googles-former-advertising-vp-starts-a-subscriber-only-search-engine/.

192. This is an idea that I first suggested in Omar Vasquez Duque, *Active Choice vs. Inertia? An Exploratory Assessment of the European Microsoft Case's Choice Screen*, *supra* note 15.

193. Jachimowicz et al., *supra* note 13, at 160.

machine learning algorithms (such as search algorithms) need to improve their performance. As noted, a real-world example on default changes took place in late 2014 when Firefox did not renew its contract with Google and contracted with Yahoo instead to have it as its preset search engine in Firefox's mobile and desktop versions.[194] Firefox's decision turned users against it because "it didn't always feel as if Mozilla had the user's best interests in mind."[195] However, Yahoo benefited with a 1.8% increase in market share, which follows from a non-negligible 18% default effect. Besides, the experimental data presented in this work show that people tended to stick to a default search engine and/or weather application. Still, Firefox's experience casts doubt on the possibility that market actors would voluntarily randomize their defaults.[196]

This work has argued that one of the potential causes of default effects is people's misperceptions about the quality of competing alternatives. The experimental data showed that the default assignment to a search engine led most of the participants to update their beliefs about the quality of some, but not all, of the possible search engine options (Bing and DuckDuckGo). There were no differences in the weather applications' case, in which the participants ranked the three options with similar (and high) scores. Nevertheless, even after updating their quality rankings about Bing and DuckDuckGo, most participants still ranked Google as the best search engine.

In other words, defaults led to mismatches. Any regulator should balance the benefits of leveling the field among applications with opt-out costs.[197] In search, most of the monopoly costs are borne by the consumers who pay higher prices due to Google's monopolistic overcharges in the advertising market. While the costs of being assigned to a non-preferred default appear negligible compared to the costs of Google's monopoly, a specific analysis of this trade-off would be helpful to shed light on the social desirability of default randomization. And the distributive consequences of

---

194. Chris Beard, *New Search Strategy for Firefox: Promoting Choice & Innovation*, MOZILLA BLOG (Nov. 19, 2014), https://blog.mozilla.org/en/mozilla/promoting-choice-and-innovation-on-the-web/; Lardinois, *supra* note 119.

195. Lardinois, *supra* note 120.

196. In 2023, Samsung announced it would change its default to Bing but then pulled back due to concerns about consumer backlash (and Google's possible retaliation). *See, e.g.*, Emma Roth, *Sorry Bing, Samsung's Sticking With Google as Its Default Mobile Search Engine*, THE VERGE (May 19, 2023, 5:43 PM), https://www.theverge.com/2023/5/19/23730368/samsung-google-bing-default-mobile-search-engine.

197. On optimal defaults for consumers, see Oren Bar-Gill & Omri Ben-Shahar, *Optimal Defaults in Consumer Markets*, 45 J. LEG. STUD. S137 (2016).

this policy should be considered since most of the mismatching costs are likely to be borne by the least sophisticated users.

Here, it is essential to address the potential use of "bad defaults." When status quo effects are due to procrastination, bad defaults may incentivize people to look for alternatives and switch to the one they prefer.[198] In these cases, a bad default may be better than a suboptimal one. However, the possible efficiencies of bad defaults—and default randomization—will always be at the expense of inexperienced users who lack the knowledge to switch.

In the Microsoft case settlement, the DOJ required[199] changes to improve how applications were managed within the operating system.[200] Almost two decades after *Microsoft*, desktop and mobile settings impose unnecessary burdens to change defaults. An ad-hoc application within each device's settings simplifying the switch of defaults would nicely complement default randomization, though it could also function independently. While users often lack motivation to engage with choice screens and pop-up windows, they may wish to change their settings when their default does not meet their expectations. Current user interfaces may increase inertia by adding unnecessary friction, causing users to stick with defaults they dislike. An application that facilitates changing defaults would allow motivated users to explore other options more easily. Forcing unmotivated people to choose may not make much difference, but enabling motivated users to switch easily should.

CONCLUSION

Behavioral economics emphasizes the importance of observing real-world behavior to evaluate the predictive power of economic models. However, antitrust enforcers and policymakers have often assumed, without sufficient empirical evidence, that choice manipulation has been an important factor driving the high concentration we see in critical digital markets like search and advertising. This work argues that the naive application of

---

198. James J. Choi et al., *Passive Decisions and Potent Defaults*, in ANALYSES IN THE ECONOMICS OF AGING 59, 60 (David A. Wise ed., 2005) ("Intuitively, if an agent suffers from a procrastination problem, then a 'bad' default—that is, one that is far from the consumer's optimal savings rate—will be more motivating than a better default. Hence, sometimes bad defaults make people better off than better but imperfect defaults.").

199. *See supra* notes 144–151 and accompanying text.

200. *See* Press Release, Dep't of Just., Department of Justice and Microsoft Corporation Reach Effective Settlement on Antitrust Lawsuit (Nov. 2, 2001), https://www.justice.gov/archive/atr/public/press_releases_2001/9463.htm.

behavioral economics to antitrust law and policy has been harmful. It has led enforcers to misapprehend the mechanism of anticompetitive harm in the Google case, and European regulators to issue futile remedies that maintain market concentration. Any application of behavioral economics to law enforcement should consider the main drivers of contingencies that affect the model predictions.

This work's empirical analysis shows that default status is less effective at distorting consumer choices than conventionally believed. When considering what applications would choose if forced to choose, it becomes clear that widely preferred options benefit little from status quo bias. In fact, quality is a main driver of default effects, which is consistent with a pilot/co-pilot model. This result has critical implications for exclusive dealing standards. For defaults to be tantamount to exclusive dealing, there must be a status quo effect that causes substantial anticompetitive foreclosure. The fact that defaults may be slippery and only distort the choices of a subset of users implies that a default agreement, by itself, is not enough to shed light on the foreclosed share of the market. This finding has important implications for tests of legality based on Section 1 of the Sherman Act (which requires foreclosure of at least 40% of the market) and Section 3 of the Clayton Act (which some courts only apply to contracts that grant total exclusivity).

Nonetheless, a revision of the most relevant cases that have dealt with the strategic use of defaults shows that privileged distribution has tended to be only a part of a more general monopolization plan, which usually targets the entry or expansion of potential competitors. This was Microsoft's case. Google's agreements may well have a similar aim by deterring Apple's entry to search, in addition to blocking its competitor's access to more favorable distribution channels. Apple may play an essential role in developing the next generation of search engines, either alone or by partnering with Bing or an LLM-powered search engine like Perplexity.ai. However, the revenue-sharing agreement with Google deters Apple's incentives to challenge its partner without providing any agreement-specific efficiency for consumers. While this agreement does not distort user choice, it does harm potential competition and hinders innovative disruption. A less formalistic assessment like the one conducted by the D.C. Circuit in *Microsoft*[201]—is a better fit to appraise the role a default may play within a broader monopolization strategy.

The dual process rationale presented in this work is also relevant when considering the remedies that judges and regulators may employ for

---

201. United States v. Microsoft Corp., 253 F.3d 34, 70 (D.C. Cir. 2001).

correcting mistakes due to status quo biases. This Article argued that choice screens are ineffective when there is a dominant player in the relevant market. If regulators could reasonably balance opt-out costs and potential harm to innovation stemming from a potentially self-perpetuating monopolistic position, only default randomization to an option within a set of competing applications could encourage users to experiment with alternatives to the dominant one. Nonetheless, making the change of defaults as easy as feasible should be a priority for policymakers. An application specifically designed to facilitate the choice of defaults could provide substantial benefits.

APPENDIX A

Trivia questions
First experiment

1. What is the shortest Beatles song?
2. What were the charges for which Al Capone was criminally convicted **the first time** he went to jail?
3. What is Vincent van Gogh's second most expensive painting ever sold?
4. What is the probability it will rain in Austin, TX, on July 19?
5. What is the probability it will rain in Cambridge, MA, on July 19?
6. What is the probability it will rain in Cupertino, CA on July 19?

Second experiment

1. What is the shortest Beatles song?
2. What were the charges for which Al Capone was criminally convicted **the first time** he went to jail?
3. What is Vincent van Gogh's second most expensive painting ever sold?
4. What was the first name of Leon Trotsky's wife when he passed away?
5. What country founded the oldest permanent European settlement in what is now the United States?

APPENDIX B

Balance Test. Experiment 1

choice_search		0			1		
Variable	N	Mean	SD	N	Mean	SD	Test
age	126	38	12	131	37	13	F=0.604
education	126			131			X2=2.313
... college degree	45	36%		57	44%		
... graduate degree	24	19%		19	15%		
... high school	19	15%		20	15%		
... some college	36	29%		34	26%		
... some high-school	2	2%		1	1%		
computer_use	126			131			X2=5.285
... between 2-4 hours/day	24	19%		29	22%		
... between 4-6 hours/day	31	25%		20	15%		
... between 6-8 hours/day	27	21%		30	23%		
... more than 8 hours/day	41	33%		44	34%		
... up to 2 hours/day	3	2%		8	6%		
gender	126			131			X2=1.793
... female	57	45%		66	50%		
... male	65	52%		63	48%		
... non-binary	3	2%		2	2%		
... prefer not to say	1	1%		0	0%		
ethnicity	126			131			X2=2.246
... african american	13	10%		8	6%		
... american indian	12	10%		12	9%		
... asian	1	1%		1	1%		
... hispanic	10	8%		9	7%		
... other	2	2%		1	1%		
... white	88	70%		100	76%		

Statistical significance markers: * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Balance Test. Experiment 2

Bing_default		0			1		
Variable	N	Mean	SD	N	Mean	SD	Test
age	162	44	14	157	42	15	F=1.195
education	162			157			X2=3.527
... college degree	70	43%		68	43%		
... graduate degree	29	18%		32	20%		
... high school	17	10%		23	15%		
... some college	45	28%		32	20%		
... some high-school	1	1%		2	1%		
computer_use	162			157			X2=2.036
... between 2-4 hours/day	23	14%		30	19%		
... between 4-6 hours/day	38	23%		31	20%		
... between 6-8 hours/day	46	28%		41	26%		
... more than 8 hours/day	42	26%		40	25%		
... up to 2 hours/day	13	8%		15	10%		
gender	162			157			X2=0.793
... female	79	49%		72	46%		
... male	76	47%		80	51%		
... non-binary	5	3%		4	3%		
... prefer not to say	2	1%		1	1%		

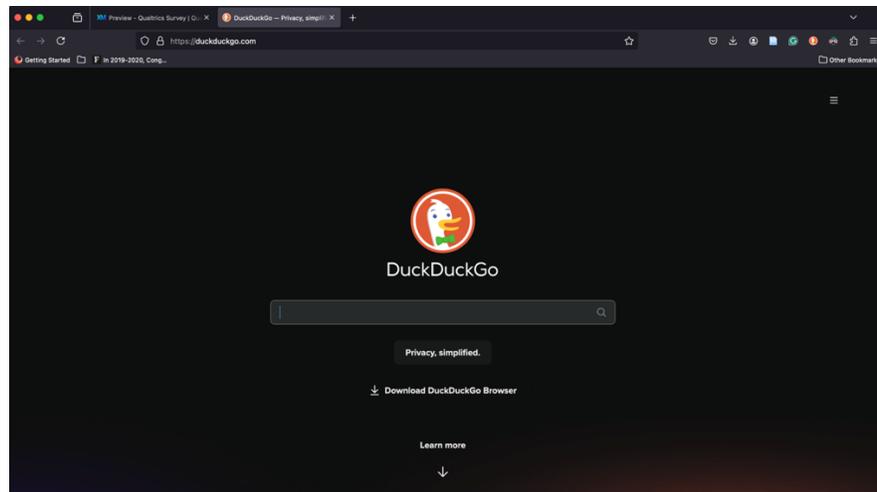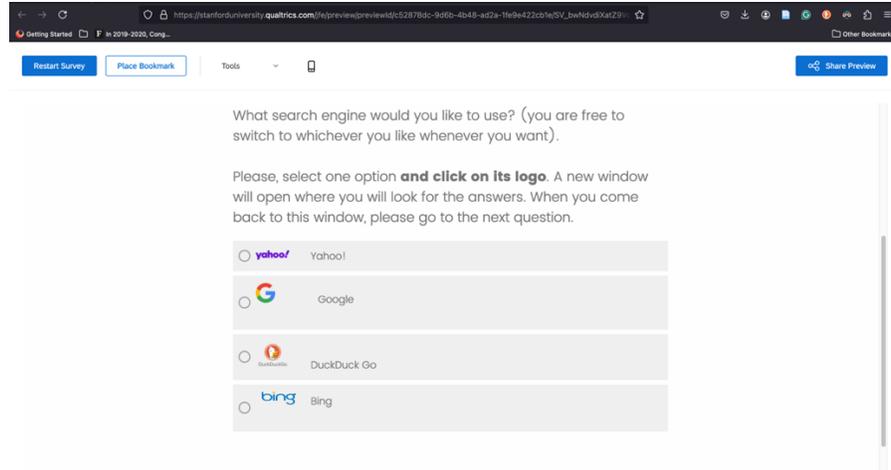Statistical significance markers: * p<0.1; ** p<0.05; *** p<0.01

APPENDIX C

Experimental conditions screenshots

Default condition
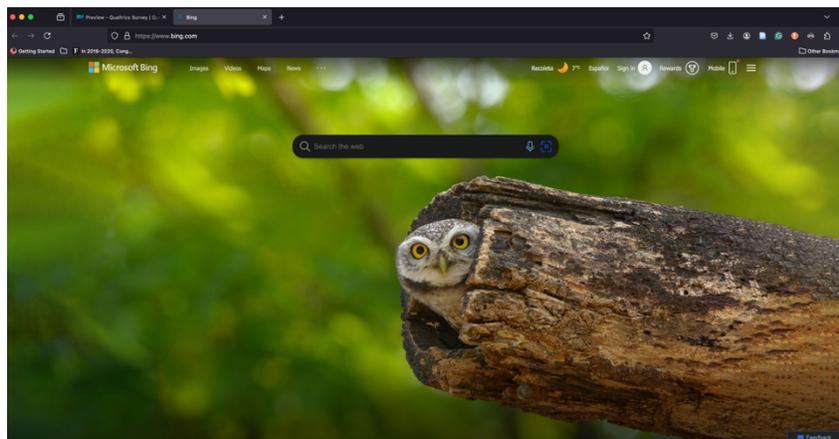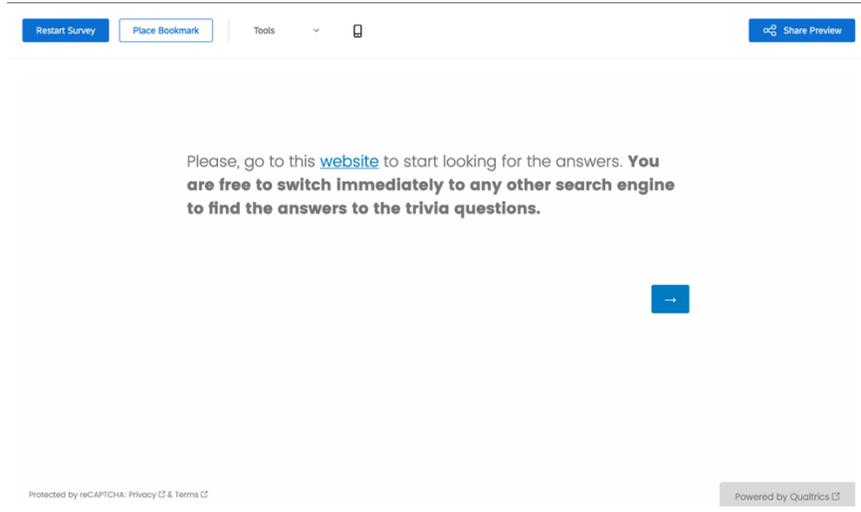
Forced choice condition

APPENDIX D

List of countries used in the generalized synthetic control model

American Samoa, Belize, Bermuda, Botswana, Burkina Faso, Burundi, Cameroon, Fiji, Gabon, Guam, Guyana, Haiti, Liberia, Malawi, Mali, Marshall Islands, Northern Mariana Islands, Philippines, Puerto Rico, Sierra

Leone, Singapore, Timor-Leste, United States, Virgin Islands, United States, Zambia.