

AFTERMARKET THEORY IN DIGITAL MARKETS

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Critics of the technology industry are facing unique analytical obstacles to bringing successful antitrust claims against digital platforms, particularly with regard to their multi-layered structure and often free features. Recent congressional investigations into digital platforms have not deterred these companies' efforts to profit from this structure through potentially anticompetitive methods. This Note argues that the theory of antitrust aftermarkets as defined in Eastman Kodak Co. v. Image Technical Services, Inc. is an under-utilized doctrine that could be successfully applied to digital platforms. I consider two industries—mobile app stores and their payment systems, and cloud computing—as case studies for the complex economic questions plaintiffs must prove to successfully argue that these digital platforms possess market power in their respective aftermarkets. While the structure of the particular industry and the controlling law both affect the viability of such a theory, I argue that the aftermarket theory can be applied to digital platforms and should be one arrow in the quiver of enforcement agencies and plaintiffs alike.

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INTRODUCTION

Digital platforms present unique problems to antitrust law. For example, antitrust law has historically relied on evidence of increased consumer prices to demonstrate the anticompetitive effects of a merger or certain business conduct, which creates a scheme that is ill-suited to evaluate the many free products produced by digital platforms. This dilemma implies a fundamental debate within antitrust law: whether its analytical framework is capable of determining if digital platforms—characterized by strong network effects¹ and the combination of various complimentary products and services onto centralized technological infrastructure—exhibit anticompetitive tendencies. Indeed, Professor Herbert Hovenkamp, a leading antitrust scholar, has recently suggested that aspects of American antitrust laws intended to govern conduct by individual firms are not sufficiently modern to address the unique problems digital platforms present.²

This Article highlights an underutilized aspect of current antitrust law that I argue could be useful to antitrust enforcers: anticompetitive conduct in “aftermarkets.” Aftermarkets are derivative of foremarkets. As defined in *Epic Games v. Apple*, “[a] foremarket is a market in

1. Network effects are “positive feedback loops that come from connecting different users and market participants to each other” that exponentially increase the value of a platform as more users join it. See MICHAEL A. CUSAMANO, ANNABELLE GAWER & DAVID B. YOFFIE, *THE BUSINESS OF PLATFORMS* 13 (2019).

2. See Herbert Hovenkamp, *Monopolizing and the Sherman Act 6-7* (U. Penn. Inst. For L. & Econ., Res. Paper No. 22-02).

which there is competition for a long-lasting product from which demand for a second product derives,” while “[a]n aftermarket is the market for the second product.”³ For example, computer manufacturers may compete in the foremarket for computer sales and an aftermarket for word processing services. Modern economic logic suggests that where a foremarket is competitive, companies cannot exert control over prices or product quality in an aftermarket of the foremarket good that they produce (*i.e.*, a “single-brand aftermarket”) without losing profit, as customers will simply switch to another competitor’s product in the foremarket.

Despite this logic, digital platforms engage in conduct in aftermarkets that appears to be exclusionary regularly. Apple and Google charge high commissions on sales in their application (“app”) stores and require purchases to be made through their proprietary transaction technology.⁴ Recent changes to Apple’s app store guidelines which will allow Apple to take a cut of certain advertisement purchases demonstrates that these companies are not slowing down.⁵ Cloud companies—platforms that rent remote storage, computation, and other functions for customers’ data—charge additional fees for using third-party services and copy successful third-party products.⁶ Whether this conduct could be probative of a legal violation is the subject of this paper.

This paper considers whether antitrust theories relying on single-brand aftermarkets could become valuable tools for regulating digital platforms. First, this paper will describe the economic debate surrounding market power⁷ in aftermarkets (which I will term “aftermarket market power”) and the Supreme Court’s one opinion on this issue. In particular, the Supreme Court identified information barriers and switching costs as key indicia of aftermarket market power. Next, the paper will identify various conflicts lower courts have uncovered, including whether a post-purchase change in policy is necessary. It is also unclear whether one could prove aftermarket market

3. *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 944 n.244 (N.D. Cal. 2021).

4. *See Epic*, 559 F. Supp. 3d at 923; 1st Amended Complaint at 9, *Utah v. Google LLC*, No. 21-5227 (N.D. Cal., Nov. 1, 2021).

5. *See infra* notes 103–105 and accompanying text.

6. *See infra* notes 133–142 and accompanying text.

7. Market power is the power to raise prices, limit choice, or reduce quality. *United States v. Microsoft Corp.*, 253 F.3d 34, 51 (D.C. Cir. 2001) (“The Supreme Court defines monopoly power as ‘the power to control prices or exclude competition.’”) (quoting *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 391 (1956)).

power where customers have some choice when purchasing the aftermarket good, and where the foremarket product is not a durable good. Finally, this paper will present various examples of how an anti-trust theory involving aftermarkets could arise in the context of digital platforms. These examples will demonstrate that while digital platforms present unique factual and economic wrinkles to the traditional aftermarket doctrine, this theory can be a useful tool even under the current state of the law.

I.

THE AFTERMARKET DOCTRINE

A. *Initial History and Economics*

The recent history of the photocopier industry and its culmination in *Eastman Kodak Co. v. Image Technical Services, Inc.*⁸ illustrates antitrust law's traditional approach to aftermarkets. Throughout the 1990s, a number of independent service operators ("ISOs") for complex equipment such as photocopiers thought that they were being squeezed out of the market for servicing this equipment. Companies like Kodak, Xerox, and others had taken measures to induce customers to repair their equipment using service technicians offered by the equipment manufacturers rather than the ISOs. As a result, the ISOs turned to the courts, relying on a theory that these manufacturers had engaged in anticompetitive conduct in the "aftermarkets" for service of each manufacturer's equipment.

To prove that the equipment manufacturers had violated the relevant antitrust laws, the ISOs needed to demonstrate that the manufacturers possessed market power. Courts have determined that both sections of the Sherman Act⁹ require proof that the company at issue possesses market power. A company that has market power can more durably cause anticompetitive effects through increased prices, reduced supply, or lower quality, as there are fewer alternative firms to which customers could switch.¹⁰

While courts have traditionally relied upon a company's market share to determine whether, at least as an initial matter, it possessed market power, these market dynamics presented unique economic questions in the context of aftermarkets. In particular, the ISOs ques-

8. *Eastman Kodak Co. v. Image Tech. Svcs., Inc.*, 504 U.S. 451 (1992).

9. 15 U.S.C. §§ 1–2. Section 1 of the Sherman Act governs conduct by more than one firm, and Section 2 of the Act governs unilateral conduct.

10. 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 501 (5th ed. 2022).

tioned whether, despite possessing a dominant market *share* in a single-brand aftermarket, a manufacturer could ever have the ability to possess market *power* in the aftermarket where that manufacturer competes vigorously in the foremarket.¹¹ Because these equipment manufacturers often faced significant competition in their respective equipment foremarkets, these stakeholders argued that customers would simply respond to a price increase or reduction in choice by purchasing equipment from a different manufacturer that did not impose similar restrictions.

The Supreme Court's resolution of this debate will be discussed in the next section, but economists have not reached a consensus on the answer to this question. Those who believe that companies may anticompetitively exploit an aftermarket identify two conditions under which this scenario is possible. First, manufacturers may have the *ability* to do so when they produce complex, durable equipment, as customers are "likely to be 'locked in' to that manufacturer to some extent" such that switching equipment due to higher prices in an aftermarket would be more costly than accepting the supracompetitive prices.¹² Without "lock-in," companies cannot exert aftermarket market power.¹³

Second, economists in this camp argue that companies may have incentive to exploit locked-in customers through higher prices or lower quality because the profit gains from doing so outweigh the resulting loss of sales from some customers switching to other manufacturers of the foremarket product. Professors Xavier Gabaix and David Laibson have found that where customers are unaware of the price a company may charge in an aftermarket, companies have no incentive to educate them and may have an incentive to impose anticompetitive effects.¹⁴ Similarly, Professors Severin Borenstein, Jeffrey K. MacKie-Mason, and Janet S. Netz have found that where customers do not enter into "complete" contracts for both equipment and related services, companies are able to exercise market power and engage in

11. See, e.g., *Eastman Kodak Co.*, 504 U.S. at 465 (1992) ("Kodak counters that even if it concedes monopoly share of the relevant parts market, it cannot actually exercise the necessary market power for a Sherman Act violation.").

12. Severin Borenstein, Jeffrey K. MacKie-Mason & Janet S. Netz, *Exercising Market Power in Proprietary Aftermarkets*, 9 J. ECON. & MGMT. STRATEGY 157, 158 (2000).

13. Lorenzo Coppi, *Aftermarket Monopolization: The Emerging Consensus in Economics*, 52 ANTITRUST BULL. 53, 55 (2007) ("Without lock-in there is no aftermarket issue, in that the aftermarket purchase decision is decoupled from considerations over which primary product the consumer owns.").

14. Xavier Gabaix & David Laibson, *Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets*, 121 Q.J. ECON. 505 (2006).

anticompetitive conduct in an aftermarket despite competition in the foremarket—no matter the degree to which customers are aware of the prices the company may charge over time.¹⁵ This phenomenon occurs because “the manufacturer is only likely to lose a fraction of new sales [as a result of supracompetitive prices], while enjoying higher revenues from the entire customer base.”¹⁶

At the other end of the spectrum, some economists argue either that companies do not have the incentive or the ability to engage in anticompetitive conduct in aftermarkets. Primarily, these economists argue that competition in a foremarket compensates for monopolization of an aftermarket. Professor Benjamin Klein, for instance, has argued that manufacturers of a foremarket good compete to attract customers by reducing the foremarket good’s price. Indeed, this competition is strong enough to offset any profits gained from supracompetitive aftermarket prices, therefore eliminating the possibility of anticompetitive effects.¹⁷ However, critics have suggested that this argument relies on strong assumptions that rarely exist in the real world, *e.g.*, that the foremarket goods are uniform and that customers are rational and fully informed.¹⁸

Economists in this camp also suggest that aftermarket monopolization may be procompetitive. Professors Dennis Carlton and Michael Waldman have argued that aftermarket monopolization may “serve to reduce inefficiencies that can arise in markets for new equipment and aftermarkets” by, for example, increasing a consumer’s likelihood to purchase new equipment rather than servicing old equipment.¹⁹ Similarly, where aftermarkets benefit from economies of scale—*i.e.*, where the marginal cost of producing the aftermarket good decreases as the

15. Borenstein et al., *supra* note 12, at 160; Severin Borenstein, Jeffrey K. MacKie-Mason & Janet S. Netz, *Antitrust Policy in Aftermarkets*, 63 *ANTITRUST L.J.* 455, 461–69 (1995).

16. Coppi, *supra* note 13, at 65. *See also* John J. Voortman, *Curbing Aftermarket Monopolization*, 38 *ANTITRUST BULL.* 221, 231–34 (1993).

17. Benjamin Klein, *Market Power in Aftermarkets*, 17 *MANAGERIAL & DECISION ECON.* 143 (1996).

18. Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects*, in 3 *HANDBOOK OF INDUSTRIAL ORGANIZATION* 1967, 1979 (Mark Armstrong & Robert Porter eds., 2007) (“[E]ven small steps outside the simplest story suggest ways in which” the argument that aftermarkets are efficient “break down.”).

19. Dennis W. Carlton & Michael Waldman, *Competition, Monopoly, and Aftermarkets*, 26 *J.L. ECON. & ORG.* 54, 54–55 (2010) (“[I]f maintenance markets are competitive, then consumers do not make efficient maintenance decisions. . . . Because maintenance is priced competitively, whereas market power in the replacement market due to the switching costs means replacement units are priced above cost, consumers maintain their used units inefficiently often.”).

quantity produced increases—economists have found that “consumers can be strictly better off in the presence of aftermarket power.”²⁰ Aftermarket monopolization has also been claimed to allow companies to more effectively price discriminate between various customers—a practice that is often not considered to be anticompetitive.²¹

Whether or not aftermarket monopolization is procompetitive, it appears that economic literature supports the argument that there are circumstances where a company could raise prices to a supracompetitive level or reduce quality in an aftermarket for their foremarket product. This economic foundation helps us understand the approach courts have taken to this question when applied to the Sherman Act.

B. Supreme Court Doctrine: Kodak

The Supreme Court largely accepted the economic story presented by ISOs that companies can engage in anticompetitive conduct in an aftermarket under certain conditions. Particularly, the Supreme Court has held that where customers face barriers to determining the lifecycle price of equipment (“information costs”) and find it costly to switch to competing products (“switching costs”), companies can engage in anticompetitive conduct in aftermarkets.

In *Kodak* the ISOs alleged that Eastman Kodak, a manufacturer of photocopiers and micrographic equipment, tied the purchase of parts to the purchase of repair services.²² Kodak competed vigorously in the markets for photocopiers and micrographic equipment and initially competed against the ISOs to provide the requisite repair services. The ISOs sued Kodak after it sought to limit the ISOs’ access to Kodak replacement parts and required customers who wanted to purchase replacement parts to purchase equipment maintenance services from Kodak, policies which had not been in place before 1985.²³ Kodak claimed, however, that the ISOs could not prove that Kodak possessed market power in the parts market—a showing that tying jurisprudence required.²⁴ Relying on a theory similar to that presented

20. Luís Cabral, *Aftermarket Power and Foremarket Competition*, 35 INT’L J. INDUS. ORG. 60, 61 (2014). See also Carl Shapiro, *Aftermarkets and Consumer Welfare: Making Sense of Kodak*, 63 ANTITRUST L.J. 483, 497–98 (1995) (finding that price increases from aftermarket power, if any, would be small).

21. See Zhiqi Chen & Thomas W. Ross, *Refusals to Deal, Price Discrimination, and Independent Service Organizations*, 2 J. ECON. & MGMT. STRATEGY 593 (1993) (arguing that aftermarket power allows manufacturers to price discriminate more effectively).

22. *Eastman Kodak Co. v. Image Tech. Svcs., Inc.*, 504 U.S. 451, 459 (1992).

23. *Id.* at 458.

24. *Id.* at 466.

in Section I.A, Kodak argued that it could not possess aftermarket market power for Kodak replacement parts because prices were disciplined by competition in the foremarket for equipment.²⁵ Because of this dynamic, any attempt by Kodak to raise prices in the aftermarket would be met with a “disastrous drop in equipment sales,” eliminating any incentive to raise prices.²⁶ Therefore, even if Kodak had a 100% share of the aftermarket, the new restrictions it imposed on customers could not result in anticompetitive effects.²⁷

The Court rejected Kodak’s argument, holding that a company may be able to exercise aftermarket market power despite competition in a foremarket. While the Court recognized that companies could not generally successfully charge supracompetitive prices under these circumstances,²⁸ it identified two indicia that, together, could support the theory that Kodak could exercise aftermarket market power despite competition in the foremarket: information costs and switching costs.

Beginning with information costs, the Court reasoned that purchase decisions in the foremarket could discipline Kodak’s actions in the aftermarket only if “consumers . . . inform[ed] themselves of the total cost of the ‘package’” at the time of the initial purchase.²⁹ Otherwise, information costs would prevent customers from understanding the full implications of their initial decision, which would allow a company to surprise customers with supracompetitive prices in the aftermarket. The Court reasoned that it would be most difficult to understand package costs (*i.e.*, “lifecycle pricing”) where the purchase of a foremarket good implied additional subsequent purchases along various dimensions. Difficult lifecycle pricing could arise for a multitude of reasons: the complexity of the data required to estimate these costs, the difficulty of calculating a customer’s usage rate of a product, the inability to predict changes and updates to aftermarket products, and the specificity of the lifecycle price to each customer.³⁰ In *Kodak*, the Court identified the prices, quality, and availability of supplementary parts, the costs of service and repair, and the length and cost of “downtime” as examples of these lifecycle prices.³¹

25. *Id.* at 472.

26. *Id.* at 472.

27. *Id.* at 465 (“Kodak counters that even if it concedes monopoly share of the relevant parts market, it cannot actually exercise the necessary market power This is so . . . because competition exists in the equipment market.”).

28. *Id.* at 473.

29. *Id.*

30. *Id.* at 473–74.

31. *Id.* at 473.

Kodak's arguments that customers would be informed of life-cycle costs despite these information barriers were rejected by the Court. First, Kodak argued that its competitors in the foremarket could inform customers of lifecycle costs, ameliorating any difficulties. However, the Court concluded that competitors would not be able to provide this information reliably or would not be advancing their interests by sharing it.³² Second, Kodak argued that some customers could navigate the difficulties of lifecycle pricing because of their sophistication, thus disciplining the entire market. But the Court reasoned that the presence of sophisticated customers would not discipline prices for all customers because "the amount of profits to be gained by supracompetitive pricing in the service market could make it profitable to let the knowledgeable customers take their business elsewhere."³³ Additionally, Kodak could price discriminate between customers such that "the sophisticated will be unable to prevent the exploitation of the uninformed."³⁴ Therefore, the Court concluded that "it makes little sense to assume" that customers engage in accurate lifecycle pricing.³⁵

In addition to information barriers, the Court identified that a plaintiff must demonstrate the high cost of switching foremarket goods to demonstrate that a defendant possesses aftermarket market power. The Court noted that high switching costs "lock[] in" customers to the Kodak equipment, and thus "will tolerate some level of service-price increases before changing equipment brands."³⁶ Here, the Court found high switching costs were likely because (a) the cost of switching equipment was larger than the price increase in the aftermarket, and (b) "the number of locked-in customers were high relative to the number of new purchasers."³⁷ Without both of these features, either existing customers would find switching less costly than accepting a price increase, or new purchasers would simply go elsewhere. Finally, the Court noted that such a strategy could be even more successful where a company could price discriminate between locked-in customers and new customers. The Court acknowledged that the large cost of Kodak equipment and the required Kodak-specific support material created exactly such lock-in effects.³⁸

32. *Id.*

33. *Id.* at 475.

34. *Id.*

35. *Id.* at 475–76.

36. *Id.* at 476.

37. *Id.*

38. *Id.* at 477.

The Supreme Court's logic, therefore, recharacterized the incentive-and-ability framework discussed above in its own terms. Information costs and switching costs each address this framework in different ways. If it is costly for customers to gain information about lifecycle pricing, it is more difficult for them to avoid being locked-in (ability). Moreover, customers may avoid purchasing a foremarket good altogether if they could foresee high aftermarket prices (incentive). If it is costly to switch to a different foremarket good in response to increased aftermarket prices, customers are unlikely to prefer switching foremarket goods in response to a price increase than accepting it (ability), and companies are likely to impose supracompetitive prices because the profits from doing so are larger than the losses from switching (incentive). However, while the framework outlined by *Kodak* aligned with some economic theory, it left numerous wrinkles to the lower courts to flesh out.

II.

KODAK'S PROGENY

Various legal issues have emerged in lower courts after *Kodak* that have not fully been resolved. The facts of *Kodak* are particularly straightforward for an aftermarket theory—Kodak operated in an industry with expensive equipment that was not readily interchangeable and required numerous additional purchases of items like toner and service that were specialized for the equipment it produced. Lower courts have interacted with few other industries that align with the economic theory of aftermarkets this easily. Specifically, lower courts grapple with the degree of conduct necessary to demonstrate aftermarket market power, the functional relationship between foremarket and aftermarket products, applying *Kodak* to foremarkets consisting of non-durable products, and aftermarkets with multiple producers.

A. *Conduct Sufficient to Demonstrate Aftermarket Market Power: From Contractual Restrictions to Changes in Policy*

Companies may restrict a customer's ability to choose which aftermarket products to purchase through a variety of conduct, and the facts of *Kodak* presented only one such variation. In *Kodak*, Kodak engaged in a "bait-and-switch" tactic where it contractually changed its policy relating to the aftermarket good after purchasing the foremarket good. However, apart from this method, companies could impose restraints when initially purchasing the foremarket product or utilize market imperfections, including information asymmetries, to

their advantage. As I explain below, courts have ruled that the ability to impose initial contractual restrictions is insufficient to demonstrate aftermarket market power. However, they have split on whether exploiting market imperfections can also prove aftermarket market power, or whether engaging in a bait-and-switch is required.

Kodak raises, but does not resolve, whether plaintiffs can demonstrate that a company possesses aftermarket market power where the company has not changed its policy in the aftermarket after plaintiffs were locked-in. Indeed, Justice Scalia's dissent argued that if, rather than allowing customers to purchase parts and service at a later date, Kodak had bundled parts and repair services with the equipment purchase, the company would have created a lawful tie because Kodak would not have market power in the tying product (equipment).³⁹ The Court responded in a footnote that the lack of evidence suggesting that Kodak's restriction was generally known at the time of an equipment purchase was the "crucial thing" demonstrating Kodak's market power.⁴⁰ While the Court's response to Justice Scalia occurred in a footnote and is dicta, some courts have latched onto it more than others.

i. Courts Limiting Kodak to Changes in Policy

The back-and-forth in *Kodak* has led lower courts to split on whether a change in policy is necessary to prove an aftermarket market power. The First,⁴¹ Sixth,⁴² Seventh,⁴³ and Federal⁴⁴ Circuits have

39. *Id.* at 490–91 ("Had Kodak—from the date of its entry into the micrographic and photocopying equipment markets—included a lifetime parts and service warranty with all original equipment, or required consumers to purchase a lifetime parts and service contract with each machine, that bundling of equipment, parts, and service would no doubt constitute a tie under the tests enunciated in *Jefferson Parish*. . . . Nevertheless, it would be immune from per se scrutiny under the antitrust laws because the tying product would be equipment, a market in which (we assume) Kodak has no power to influence price or quantity."). See also *United States v. Microsoft Corp.*, 253 F.3d 34, 87 (D.C. Cir. 2001) (describing that plaintiffs must demonstrate market power in the tying market to prove a violation).

40. *Kodak*, 504 U.S. at 477 n.24.

41. See *SMS Sys. Maint. Servs., Inc. v. Digital Equip. Corp.*, 188 F.3d 11 (1st Cir. 1999) (in a case involving an ISO's challenge to a three-year service warranty offered by a technology hardware company, distinguishing the purely prospective nature of the defendant's warranty from Kodak's retroactive change in policy).

42. *PSI Repair Servs., Inc. v. Honeywell, Inc.*, 104 F.3d 811 (6th Cir. 1997).

43. *Digital Equip. Corp. v. Uniq Digital Techs., Inc.*, 73 F.3d 756, 763 (7th Cir. 1996).

44. See *DSM Desotech, Inc. v. 3D Sys. Corp.*, 749 F.3d 1332 (Fed. Cir. 2014) (involving a resin company's challenge to a stereolithography ("SL") manufacturer's requirement that its SL machine could only use its proprietary resin, holding that "it is only the customers who learned about [this policy] after purchasing their equipment

endorsed the view that aftermarket market power is possible only when plaintiffs present evidence of a “bait-and-switch.”⁴⁵ Take, for example, *PSI Repair Services, Inc. v. Honeywell, Inc.*⁴⁶ In *PSI*, Honeywell, a manufacturer of products to control industrial equipment, refused to provide replacement parts for its circuit boards through any entity other than its own service organization. *PSI* sued, claiming that Honeywell illegally tied “the sale of its circuit-board components to its circuit-board repair services.”⁴⁷ Like in *Kodak*, Honeywell claimed that it could not have market power in the components aftermarket due to competition in the control equipment foremarket.⁴⁸ In particular, Honeywell could not have this market power because its policy had been consistent.⁴⁹

The Sixth Circuit agreed with Honeywell’s position, holding that a change in policy is necessary to prove a *Kodak*-style claim. The Sixth Circuit stated that the “crucial factor” in *Kodak* was Kodak’s change in policy because, “it was Kodak’s *own actions* that increased its customers’ information costs,” rather than the presence of allowable market imperfections.⁵⁰ Moreover, market imperfections alone could not be a basis for antitrust liability because of the Supreme Court’s previous rejection of a similar argument in *Jefferson Parish*, where it denied a tying claim involving various hospital services despite information barriers preventing the plaintiffs from evaluating hospitals’ quality.⁵¹ By requiring plaintiffs to show evidence of a change in policy to prove aftermarket market power, the Sixth Circuit

that are relevant to the ‘locked-in’ analysis.” (citing *Digital Equip. Corp. & PSI Repair Servs.*)).

45. In *Epic v. Apple*, Judge Gonzalez-Rogers concluded that “five circuit courts and numerous district courts refused to find a *Kodak*-type single-brand aftermarket where customers had knowledge of the alleged restrictive policies and were not subject to a post-purchase policy change.” *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 1022 (N.D. Cal. 2021). However, my analysis of the case law suggests that four circuits have endorsed this view, while other circuits are more willing to entertain an aftermarket theory in the absence of a post-purchase policy change. Judge Gonzalez-Rogers interprets *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038 (9th Cir. 2008) as requiring that a bait-and-switch is necessary in this scenario, likely based on the facts of the case, but the four-factor test *Newcal* promulgates does not suggest as much.

46. *PSI Repair Servs., Inc. v. Honeywell, Inc.*, 104 F.3d 811 (6th Cir. 1997).

47. *Id.* at 815.

48. *Id.* at 818.

49. *Id.* at 819.

50. *Id.* at 520 (emphasis added).

51. *Id.* (“[T]he Court rejected the premise that imperfect consumer information resulting from basic market imperfections could be used as a basis to infer market power for purposes of the Sherman Act.”) (citing *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 27 (1984)).

effectively established a legal requirement that extends farther than the economic theory to allow the defendant to create information barriers. These information barriers allow defendants to engage in anticompetitive conduct in an aftermarket.⁵²

ii. *Courts Embracing Market Imperfections*

An alternative reading of *Kodak* that other circuits have adopted does not demand the presence of a bait-and-switch. While the specific facts of *Kodak* included a bait-and-switch for some customers, the Third and Ninth Circuits have interpreted *Kodak* to suggest that Plaintiffs can prove a aftermarket market power based on the existence of sufficiently high information barriers to lifecycle pricing, whether or not the defendant changed its policy. In *Newcal Industries, Inc. v. IKON Office Solution*,⁵³ for instance, the plaintiffs alleged that IKON, a lessor of copier equipment and provider of service contracts, deceptively extended its lease terms to “shield IKON customers from competition in the aftermarkets for upgrade equipment and for lease-end services.”⁵⁴ IKON evaded liability at the district court by successfully arguing that plaintiffs defined a market based on contractually-created boundaries, a market that could not go forward.⁵⁵

The Ninth Circuit reversed this dismissal, holding that plaintiffs’ attempt to plead these aftermarkets could survive a motion to dismiss. The court recognized that in *Kodak*, “the simple purchase of Kodak-brand equipment . . . did not constitute a binding contractual agreement to consume Kodak parts and services in the aftermarket.”⁵⁶ Therefore, the “critical distinction” in *Kodak* was that customers “did not knowingly enter into” restrictive contracts and that information and switching costs “prevented consumers from discovering, as they were shopping for equipment, that the Kodak brand would include a de facto commitment to consume only supracompetitively priced Kodak-brand service contracts.”⁵⁷ The combination of market imperfections and IKON’s “fraud and deceit” therefore “prevent[ed] consumers from realizing that their choice in the initial market will impact their freedom to shop in the aftermarket.”⁵⁸

52. See Section I.A, *supra* at 214.

53. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038 (9th Cir. 2008).

54. *Id.* at 1043.

55. *Id.* at 1046 (citing *Queen City Pizza, Inc. v. Domino’s Pizza, Inc.*, 124 F.3d 430 (3d Cir. 1997); *Forsyth v. Humana, Inc.*, 114 F.3d 1467 (9th Cir. 1997)).

56. *Id.* at 1048.

57. *Id.* at 1048.

58. *Id.* at 1050.

The *Newcal* court concluded, therefore, that *Kodak* stands for the proposition that plaintiffs may only successfully plead aftermarket market power when they show evidence “to rebut the economic presumption that [defendant’s] consumers make a knowing choice to restrict their aftermarket options when they decide in the initial (competitive) market to” purchase the defendant’s product.⁵⁹ The Ninth Circuit identified four factors that plaintiffs must satisfy: (1) that the alleged aftermarket is “wholly derivative from and dependent on the primary market”; (2) that the illegal conduct “relate only to the aftermarket, not to the initial market”; (3) that the defendant’s market power “flows from its relationship with its consumers,” rather than through “contractual provisions that it obtains in the initial market”; and (4) that “[c]ompetition in the initial market . . . does not necessarily suffice to discipline anticompetitive practices in the aftermarket.”⁶⁰ These factors explicitly stated that restrictions in the aftermarket flowing from terms to which customers agreed when purchasing the foremarket good could not be used to prove market power in an aftermarket.⁶¹

The Third Circuit has similarly endorsed the view that evidence supporting aftermarket market power is not limited to when there is a change in policy. In *Avaya Inc., RP v. Telecom Laboratories, Inc.*,⁶² the court explicitly “declin[ed] to read *Kodak* as applying narrowly to only cases involving [a]n aftermarket policy change, because *Kodak* mandated that courts look at several relevant factors.”⁶³ Rather, the *Avaya* court determined that “exploitation of locked-in customers is one theory” that justifies *Kodak*’s holding,⁶⁴ which could also be achieved through factors including supracompetitive pricing, the defendant’s aftermarket market share, the severity of information costs,

59. *Id.*

60. *Id.*

61. *See id.* at 1046. *Queen City Pizza, Inc. v. Domino’s Pizza, Inc. and Forsyth v. Humana, Inc.* both held that plaintiffs cannot demonstrate a firm’s market power in an aftermarket when customers agree to aftermarket restrictions at the same time they purchased the foremarket good. *See Queen City Pizza, Inc. v. Domino’s Pizza, Inc.*, 124 F.3d 430 (3d Cir. 1997) (denying an aftermarket for Domino’s-approved inputs to Domino’s pizza products because franchisees contractually agreed to such restrictions when signing the franchise agreement); *Forsyth v. Humana, Inc.*, 114 F.3d 1467 (9th Cir. 1997) (denying an aftermarket for hospital consumers with Humana insurance policies because “the plaintiffs claimed a submarket whose boundaries depended entirely on a written contract.”).

62. *Avaya Inc., RP v. Telecom Labs., Inc.*, 838 F.3d 354 (3d Cir. 2016).

63. *Id.* at 404 (quoting *Harrison Aire, Inc. v. Aerostar Int’l, Inc.*, 423 F.3d 374, 384 (3d Cir. 2005)).

64. *Id.*

and high switching costs.⁶⁵ Like the Ninth Circuit in *Newcal*, the court concluded that a plaintiff “must present evidence to support a plausible economic explanation that competition in the primary market is ‘dissociat[ed] . . . from conditions in the aftermarket.’”⁶⁶

These circuits, therefore, suggest that plaintiffs may take multiple routes to prove that a company possesses aftermarket market power. In *Xerox Corp. v. Media Sciences, Inc.*, the Southern District of New York provided a concise summary of this interpretation:

Read together, these cases establish that for a nonmonopolist producer of a durable good to be held to have monopoly power in the aftermarket for parts, service, or supplies, a plaintiff generally must show that (i) customers who own the good are “locked in” by the prohibitive costs of switching to an alternate product, and (ii) the lock-in permitted those customers to be exploited, either because (a) some limitation on information undermined their ability to know that the aftermarket goods and services were being sold at high prices, or (b) the defendant changed its aftermarket prices after the lock-in occurred.⁶⁷

While the facts of *Kodak* therefore align more closely with the views of the Sixth Circuit and its sister circuits, it appears that the language of *Kodak*, combined with the economic theories described in Section I.A, support the broader view. The economic theory presented by Professor Borenstein and others do not find that a change in policy is necessary for a company to possess market power. Rather, companies will have the incentive and ability to raise prices in an aftermarket from the simple existence of high switching costs and information barriers, no matter which market force created these features.

B. Products That are Not Derivative of the Foremarket or are Features

Products alleged to be in an aftermarket must be functionally dependent on the product in the foremarket.⁶⁸ To be functionally dependent, an aftermarket product must exist because it is necessitated by the foremarket product, rather than because it is merely related. Courts state that a plaintiff may not demonstrate that a company possesses aftermarket market power where the proposed aftermarket product is

65. *Id.* at 402.

66. *Id.* at 404.

67. *Xerox Corp. v. Media Scis., Inc.*, 660 F. Supp. 2d 535, 547 (S.D.N.Y. 2009).

68. 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 564b (5th ed. 2022).

only related to the foremarket product through contractual restrictions rather than technical dependencies.

To implement this concept, the Ninth Circuit considers whether the aftermarket is “wholly derivative” from the foremarket.⁶⁹ In *Newcal*, for example, the Ninth Circuit determined that the aftermarket for lease-end service contracts and replacement equipment was “separate but related” to the equipment foremarket such that the replacement market “would not exist without” the equipment market.⁷⁰ Thus, the defendants went through a “different economic calculus when competing for consumers” of these aftermarkets than they did when competing for the initial contracts.⁷¹

The Northern District of California applied this precedent in three recent cases and found two examples of aftermarkets that were “wholly derivative” of foremarkets. In *Datel Holdings Ltd. v. Microsoft Corp.*,⁷² the plaintiff alleged that Microsoft violated the Sherman Act by announcing that after an update to customers’ Xbox 360 devices, the gaming console would no longer support unauthorized memory cards (including Plaintiff’s).⁷³ The plaintiff claimed that Microsoft monopolized the aftermarket for Xbox 360 accessories and add-ons. The Court agreed that this aftermarket was derivative of the gaming console market, as the plaintiff had alleged that the aftermarket was unique to the Xbox 360 and were required technological authentication.⁷⁴ Similarly, in *In re Apple & AT & TM Antitrust Litigation*,⁷⁵ plaintiffs alleged that Apple and AT&T restrained competition in the aftermarket for an iPhone’s voice and data services by prohibiting AT&T’s iPhone customers from using a different company’s voice and data services for three years after the initial contract term.⁷⁶ The court concluded that, even though plaintiffs agreed to initially restrict their iPhone’s voice and data connectivity to AT&T’s network, the defendants had imposed technological restrictions on plaintiffs’ iPhones that extended beyond the contractually agreed term.⁷⁷ Lastly, in *Epic Games v. Apple*,⁷⁸ the plaintiff alleged a

69. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038, 1049 (9th Cir. 2008).

70. *Id.*

71. *Id.*

72. *Datel Holdings Ltd. v. Microsoft Corp.*, 712 F. Supp. 2d 974 (N.D. Cal. 2010) (denying a motion to dismiss).

73. *Id.* at 978–79.

74. *Id.* at 989–90.

75. *In re Apple & AT & TM Antitrust Litig.*, 596 F. Supp. 2d 1288 (N.D. Cal. 2008).

76. *Id.* at 1303.

77. *See id.* at 1294.

78. *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898 (N.D. Cal. 2021).

foremarket for smartphone operating systems and an aftermarket of OS app distribution. While the court eventually rejected this market definition because Epic failed to show that the contours of the proposed foremarket were appropriate,⁷⁹ it agreed that the aftermarket was wholly derivative because without the OSs, “there would be no market for app distribution on iOS.”⁸⁰

At the other end of the spectrum, proposed aftermarkets are not derivative of the foremarket where the aftermarket product could be obtained independently of the foremarket product or where the aftermarket product was purchased at the same time as the foremarket product. A proposed aftermarket for ATM transactions, for example, demonstrates this first principle. ATM transactions from a specific bank are not considered a derivative aftermarket because customers could engage in ATM transactions with any bank network despite having a checking account at only one bank.⁸¹ As to the second principle, if the foremarket and aftermarket product were purchased “at the same time, as a package,” which is true for the purchase of a Mac operating system and Mac-OS compatible computer, the aftermarket product is not derivative of the foremarket.⁸²

Finally, courts are unlikely to find aftermarket market power where the alleged aftermarket product is merely a feature of the foremarket product. If a product is a feature of the foremarket product, rather than functionally distinct, it is likely that a company would be unable to exploit any potential market power: there would simply be no separate transaction or decision over which companies could compete. Consider ATM services. ATM services are offered by a variety of banks and may be accessed by the general public. While the Northern District of California consequently held that ATM services are not *derivative* of bank accounts and therefore not a valid aftermarket, it also highlighted that they are not simply a *feature*. Despite the fact

79. *Id.* at 1021 (“Without a product, there is no market for the non-product, and the requisite analysis cannot occur. Thus, where there is no product or market for smartphone operating systems, there are no derivative markets.”).

80. Findings of Fact and Conclusions of Law Proposed by Epic Games, Inc. at 208, *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898 (N.D. Cal. 2021) (No. 20-5640); *Epic*, 559 F. Supp. 3d at 1024 (agreeing with this position).

81. *In re ATM Fee Antitrust Litig.*, 768 F. Supp. 2d 984, 997 (N.D. Cal. 2009) (“Plaintiffs argue that once customers open accounts with Star member banks, they become “locked-in” to the Star network. Thus, Plaintiffs contend they have no choice among ATM networks Where Plaintiffs fall short, however, is in their failure to plead a viable theory suggesting that once a customer signs up for a bank account, he is “locked in” to that bank’s services.”).

82. *See Apple, Inc. v. Psystar Corp.*, 586 F. Supp. 2d 1190, 1201 n.4 (N.D. Cal. 2008); *see also supra* note 61 (discussing *Queen City Pizza & Forsyth*).

that a customer obtains an ATM card at the same time she opens a checking account, the court concluded that they “[are] arguably involved in a separate transaction each time [they] visit[] a foreign ATM for a withdrawal.”⁸³ This discussion highlights the requirement that proposed aftermarket be separate and distinct from the proposed foremarket.

It appears that this inquiry dovetails with the question of whether a customer knowingly agrees to restrictions in the aftermarket product. The Ninth Circuit, for instance, rejected a separate aftermarket of spares for equipment used in slaughterhouses because customers know that purchasing spares is inevitable, only the defendant made spares for the equipment, and “no rational purchaser would look only at [the equipment] price and suppose that he could have [the equipment] without [the spare].”⁸⁴ Therefore, where an alleged aftermarket product is purchased at the same time as the foremarket product with little expectation or knowledge that the aftermarket product can be priced separately or purchased at a different time, it is unlikely that the alleged aftermarket product will be derivative of the foremarket.

C. *Markets Without Durable Goods*

Kodak and its progeny have largely analyzed aftermarket market power in the context of foremarkets consisting of durable goods. As I describe in the next section, it is possible that non-durable products raise different issues regarding the extent to which customers are locked-in or experience high information costs. Subscription-based services, for instance, may reduce the size of the upfront costs, suggesting that customers of these products could switch to a competitor more easily.⁸⁵ Many products sold by digital platforms are also of-

83. *See In re ATM*, 768 F. Supp. 2d, at 998.

84. *Kentmaster Mfg. Co. v. Jarvis Prod. Corp.*, 146 F.3d 691, 694 (9th Cir. 1998), *amended by*, 164 F.3d 1243 (9th Cir. 1999) (“Kentmaster’s description of its product is of a unit made up of equipment and of spares—a unit sold over a period where the purchaser of what might be called section A knows that eventually he will be buying complementary section B. No rational purchaser would look only at A’s price and suppose that he could have A without B. Since A will not work for long without B, and since no one else but Kentmaster makes B, the rational buyer of A must calculate the cost of B when he makes his initial purchase. Kentmaster alleges no special market imperfections . . . that would prevent consumers from accurately determining the total cost of A and B.”).

85. *Cf. Eastman Kodak Co. v. Image Tech. Svcs., Inc.*, 504 U.S. 451, 477 (1992) (“Respondents have offered evidence that the heavy initial outlay for Kodak equipment, combined with the required support material that works only with Kodak equipment, makes switching costs very high for existing Kodak customers.”).

ferred for free, which may further reduce the ability for customers to be locked in since they could switch to a competitor at very low cost.

However, courts have expanded *Kodak's* conception of switching costs to recognize other costs that could lock customers into a product. In *In re Dealer Management Systems Antitrust Litigation*,⁸⁶ for example, the plaintiff alleged that the defendant, a provider of dealer management systems (“DMSs”) for car dealerships (*i.e.*, software to manage data related to car sales), conspired with a third party to eliminate access to its DMS by agreeing to impede independent data integrators from accessing the system.⁸⁷ The plaintiff’s allegation of an aftermarket for data integration services limited to the defendant’s DMS survived a motion to dismiss. The court held that there were sufficient allegations of lock-in because of the “significant logistical challenges” and opportunity cost of switching to a new DMS.⁸⁸ Switching would entail a year of preparation, re-training staff, and testing, in addition to the time such efforts would take away from making sales.⁸⁹ The court therefore endorsed a wider concept of switching costs than simply the price of the foremarket good, suggesting that it may be possible prove that customers are locked-in to the foremarket by pointing to costs other than the up-front cost of accessing the foremarket. This broader viewpoint regarding switching costs has been implicitly endorsed in non-aftermarket contexts, as well: namely, the recent Facebook litigation.⁹⁰

D. Single-Brand Aftermarkets with Multiple Producers

While many aftermarket cases involve aftermarkets over which a defendant asserts complete control,⁹¹ the doctrine does not make unviable aftermarkets with multiple producers. Traditionally, courts have often held that defendants who possess a 60% market share or higher

86. *In re Dealer Mgmt. Sys. Antitrust Litig.*, 360 F. Supp. 3d 788 (N.D. Ill. 2019).

87. *Id.* at 794–96.

88. *Id.* at 804.

89. *Id.*

90. Fed. Trade Comm’n v. Facebook, Inc., 581 F. Supp. 3d 34, 51 (D.D.C. Jan 11, 2022) (“[The Amended Complaint] states that Facebook executives recognized that one of the most important ways we can make switching costs very high for users - if we are where all users’ photos reside[, it] will be very tough for a user to switch if they can’t take those photos and associated data/comments with them. The FTC also notes that these switching costs can increase over time — a ‘ratchet effect’ — as each user’s collection of content and connections, and investment of effort in building each, continually builds with use of the service. . . . Taken together, those allegations are sufficient at this early stage in the litigation.”).

91. See, e.g., *In re Dealer Mgmt. Sys.*, 360 F. Supp. 3d 788 (N.D. Ill. 2019); *Datel Holdings Ltd. v. Microsoft Corp.*, 712 F. Supp. 2d 974 (N.D. Cal. 2010).

in a relevant market are presumed to have market power, assuming that there are sufficiently high barriers to entry that make this share durable.⁹² In many aftermarket cases, defendants often possess near-100% shares in their relevant aftermarkets, therefore allowing courts to assume that the defendants would possess market power under the traditional framework.

However, it is possible that the presence of multiple producers in an aftermarket could change the market power analysis. Consider if, instead of preventing all ISOs from purchasing replacement parts, Kodak implemented a policy preventing all but a select set of ISOs from purchasing its replacement parts. Despite the options being limited, customers would now have some alternatives to Kodak when seeking repair services. The presence of competition in the equipment foremarket, combined with a potentially viable competitor to switch to in the service aftermarket, could suggest that Kodak no longer possessed market power in the aftermarket.

Despite this hypothetical scenario, courts have concluded that the standard market power analysis does not change in the aftermarket context. The Supreme Court itself recognized that “on the occasions when the Court has considered tying in derivative aftermarkets . . . it has not adopted any exception to the usual antitrust analysis, treating derivative aftermarkets as it has every other separate market.”⁹³ Indeed, after the *Kodak* remand proceeded through the District Court, the Ninth Circuit held that it was not unreasonable for the jury to conclude that Kodak controlled over 65% of the parts aftermarket, even though Kodak did not exhibit complete control.⁹⁴ This market share, combined with evidence that plaintiffs satisfied the *Kodak* factors, suggested that Kodak possessed aftermarket market power.

92. See, e.g., *Fed. Trade Comm’n v. AbbVie Inc.*, 976 F.3d 327, 373–74 (3d Cir. 2020) (stating that a 60% market share is sufficient); *Image Tech. Servs. v. Eastman Kodak Co.*, 125 F.3d 1195, 1206 (9th Cir. 1997) (“Courts generally require a 65% market share to establish a prima facie case of market power.”).

93. *Eastman Kodak Co. v. Image Tech. Svcs., Inc.*, 504 U.S. 451, 479 n.29 (1992). See also *In re Keurig Green Mountain Single-Serve Coffee Antitrust Litig.*, 383 F. Supp. 3d 187, 228 n.23 (S.D.N.Y. 2019) (reiterating the same principle).

94. *Image Tech. Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195, 1207 (9th Cir. 1997) (“Kodak correctly argues that the ISOs never precisely quantified Kodak’s parts market shares. In his closing, counsel for the ISOs based Kodak’s market share on its 30% manufacturing share, its 20% share controlled by tooling clauses and an unquantified share of production which was restricted by engineering clauses. Nonetheless, given the state of the record, a reasonable jury could conclude that Kodak had a share of the markets for photocopier and micrographic equipment parts of 65% or more.”).

III.

APPLYING *Kodak* to Digital Platforms

As the above discussion suggests, courts have rarely evaluated aftermarket market power in the context of digital platforms, or technology products more widely. Whether these products could be subject to antitrust scrutiny with such a theory is an open question that implicates the aftermarket theory's economic and legal underpinnings. Economic critiques, for example, suggest that because various services provided by digital platforms increase the value of the primary product, operators of these platforms face a fundamentally different economic calculus when deciding whether to increase aftermarket prices.⁹⁵ These critics suggest that the profit-maximizing price in aftermarkets of digital platforms may not increase if the platform possessed market power, thus minimizing any anticompetitive effects.⁹⁶ Despite this argument, the case studies presented below will demonstrate that, assuming certain public facts to be true, the standard aftermarket framework can be applied to some digital platforms.

A. *App Stores*i. *Relevant Facts and Conduct*

The digital platforms that have received the most attention from courts and commentators when discussing aftermarket market power are the app stores on various mobile operating systems (“OSs”). Both Apple and Google—the two largest mobile device OS providers in the United States⁹⁷—operate stores through which customers may download apps onto their smartphones. In different lawsuits, both Apple and Google are alleged to have illegally protected their respective monopolies over app distribution on their OSs by making it difficult to load apps through means other than their app stores, a process called “sideloading.”⁹⁸ The plaintiffs in these suits have also alleged that both companies have illegally protected their monopolies over in-app payment processing systems.⁹⁹

95. See John M. Yun, *App Stores, Aftermarkets & Antitrust*, 53 ARIZ. STATE L. J. 1283 (2022).

96. *Id.* at 1311.

97. *Mobile Operating System Market Share United States of America*, STATCOUNTER, <https://gs.statcounter.com/os-market-share/mobile/united-states-of-america/#yearly-2009-2022> (last visited Nov. 3, 2022).

98. See *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898 (N.D. Cal. 2021); First Amended Complaint at 27, *Utah v. Google LLC*, No. 21-5227 (N.D. Cal., Nov. 1, 2021).

99. *Epic*, 559 F. Supp. 3d at 923; First Amended Complaint at 54, *Google*, No. 21-5227.

In particular, Apple, whose OS is named iOS, does not allow app stores other than Apple's to be loaded onto its phones. Additionally, Apple requires developers who intend to offer their app through the Apple app store to (1) "[c]reate apps for Apple products which could only be distributed through the App Store,"¹⁰⁰ (2) require that any payments made inside an app be conducted through Apple's in-app payment system,¹⁰¹ and (3) submit their apps for review by Apple to ensure that the app meets the contractual requirements.¹⁰² Apple also updated its App Store guidelines to mandate that "[d]igital purchases for content that is experiences or consumed in an app" use its in-app payment system.¹⁰³ For example, this rule captures in-app purchases of advertisements being displayed in that same app (such as sales of promoted social media posts), but not in-app purchases of advertisements that are intended to be posted on a different app (such as sales made in campaign management apps).¹⁰⁴ This change entitles Apple to a 30% cut of all expenditures.¹⁰⁵

Google, whose OS is named Android, ostensibly allows sideloading, but is alleged to have engaged in conduct that is effectively equally as restrictive. Particularly, plaintiffs allege that Google erected barriers to entry for competing app distribution platforms by: (1) discouraging customers from sideloading with deceptive warnings;¹⁰⁶ (2) requiring Android phone manufacturers (i.e., original equipment manufacturers, or "OEMs") to advertise similar warnings;¹⁰⁷ (3) preventing competing app distribution platforms from being listed on the Play Store;¹⁰⁸ (4) preventing companies that distribute apps through the Play Store from using Google's powerful advertising tools to promote alternative app stores;¹⁰⁹ and (5) contractually requiring and finan-

100. *Epic*, 559 F. Supp. 3d at 943.

101. *Id.* at 944.

102. *Id.* at 943.

103. *App Store Review Guidelines*, APPLE, §3.1.3(g), <https://developer.apple.com/app-store/review/guidelines/#business> (last updated Oct. 24, 2022).

104. *Id.* See also Thomas Germain, *In Another Blow to Meta, Apple Demands 30% Cut From Promoted Social Posts*, GIZMODO (Oct. 26, 2022, 1:55 PM), <https://gizmodo.com/apple-facebook-boosts-promoted-social-posts-payment-1849698467> [<https://perma.cc/LXE5-WBYJ>]; Jason Aten, *Apple Quietly Rolled Out a Change That Could Be the End of Facebook*, .INC (Oct. 26, 2022), <https://www.inc.com/jason-aten/apple-quietly-rolled-out-a-change-that-could-be-end-of-facebook.html> [<https://perma.cc/4RW8-ERGW>].

105. See Germain, *supra* note 104.

106. First Amended Complaint at 29–36, *Google*, No. 21-5227.

107. *Id.* at 36–37.

108. *Id.* at 37–38.

109. *Id.* at 38–39.

cially incentivizing OEMs to prioritize the Play Store over competing distribution platforms when adapting Android to their devices.¹¹⁰

While the conduct varies slightly between Apple and Google, both of their policies are alleged to have similar anticompetitive effects. These policies are alleged to have stifled the development of app distribution platforms with different business models, which might benefit customers in unique ways.¹¹¹ Moreover, while many apps are offered free of charge, these policies are alleged to have increased app prices by artificially inflating Apple's and Google's commissions on purchases made through the app store.¹¹² Finally, Apple's in-app payment system policies could allow the company to add a revenue stream simply by forcing some advertisement buyers to use an Apple product in order to advertise on the iPhone, rather than through any additional product development.¹¹³

ii. Aftermarket for App Distribution Through Each OS

Both sets of allegations depend on the plaintiffs establishing that app distribution on Apple's iOS or Google's Android are aftermarkets in which these companies possess market power. Indeed, the recent lawsuits against Apple and Google pursued this strategy.¹¹⁴ As with all attempts to define an antitrust market, plaintiffs must allege a market that matches the economic realities of the industry.¹¹⁵ While Epic failed to convince the trial court of its aftermarket theory in its suit

110. *Id.* at 41–44.

111. *See id.* at 53 (“Google’s anticompetitive conduct harms consumers by, inter alia, impeding competition among app distributors, which would otherwise innovate new models of app distribution and offer consumers alternatives to the Google Play Store.”); *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 995 (N.D. Cal. 2021).

112. *See Epic*, 559 F. Supp. 3d at 996; First Amended Complaint at 53, *Google*, No. 21-5227.

113. *See Aten*, *supra* note 104 (“Apple isn’t offering any new API or underlying technology that makes boosted content a better advertising business. It’s just collecting rent for the privilege, something it has never done before for this type of transaction. In fact, during Apple’s trial with Epic Games, Phil Schiller made a point during his testimony that the company had never taken a share of developer ad revenue.”).

114. *See Epic*, 559 F. Supp. 3d at 954–55 (rejecting a foremarket for Apple’s iOS and aftermarkets for app distribution and in-app payments on iOS); First Amended Complaint at 22–23, *Google*, No. 21-5227 (alleging a foremarket for mobile phone sales and an aftermarket for app distribution on Android).

115. *Cf. Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2285 (2018) (“[T]he relevant market is defined as the area of effective competition. . . . But courts should ‘combin[e]’ different products or services into ‘a single market’ when ‘that combination reflects commercial realities.’”) (quoting *United States v. Grinnell Corp.*, 384 U.S. 563, 572 (1966)).

against Apple because it did not reflect economic realities,¹¹⁶ these lawsuits offer helpful examples demonstrating the factual and legal strategy plaintiffs must pursue to successfully plead aftermarket market power. This section identifies the relative merits of an aftermarket theory between Apple's and Google's business model, focusing first on whether consumers are knowingly restricting their choices, then applying the *Kodak* framework and the additional layers I identify in Section II.

Apple's and Google's slightly different approaches to app distribution through their respective OSs demonstrate where a theory of aftermarket market power could face hurdles. For example, a plaintiff would likely be more successful arguing that Google possesses market power over Android app distribution than Apple does over iOS app distribution because of the structure of the Apple ecosystem. As *Newcal* reiterates, customers must not "knowingly enter" into contracts that restrict their options for downloading applications.¹¹⁷ However, Apple customers are well aware of the company's closed ecosystem and inability to sideload applications, and Apple openly acknowledges these restrictions.¹¹⁸ Apple, therefore, has a strong argument that customers knowingly consent to restrictions placed on app distribution when purchasing an Apple mobile device. If so, plaintiffs could not prove aftermarket market power.

However, an advertiser plaintiff might more successfully demonstrate that Apple controls an aftermarket for in-app purchasing that is derivative of a mobile phones foremarket. Apple's recent updates to its IAP policy could be construed as a bait-and-switch for advertisers or publishers who initially agreed to buy or sell advertisements on Apple phones free of Apple's financial cut. Apple's Phil Shiller even

116. *Epic*, 559 F. Supp. 3d at 955 ("In terms of substance, the Court agrees . . . that plaintiff's identification of a 'foremarket' for Apple's own operating system is 'artificial.' The proposed foremarket is entirely litigation driven, misconceived, and bears little relationship to the reality of the marketplace. . . . Given the Court's rejection of the foremarket theory, the aftermarket theory fails as it is tethered to the foremarket.").

117. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038, 1048 (9th Cir. 2008).

118. See, e.g., Chris Duckett, *Tim Cook Claims Sideloaded Apps Would Destroy Security and Privacy of iOS*, ZDNET (June 16, 2021), <https://www.zdnet.com/article/tim-cook-claims-sideloaded-apps-would-destroy-security-and-privacy-of-ios/> [https://perma.cc/3CC9-NHDT] (summarizing an interview with Tim Cook, Apple's CEO, that discussed Apple's concerns with allowing sideloading on iOS); Michael Cowling & James Burt, *The Ethics of Apple's Closed Ecosystem App Store*, THE CONVERSATION (June 28, 2018, 9:53 PM), <https://theconversation.com/the-ethics-of-apples-closed-ecosystem-app-store-99024> [https://perma.cc/5WN2-BV85] ("Unlike competing android devices, however, you can't load apps onto an iPhone unless you get them from the official App Store.").

doubled down on the earlier policy in the *Epic* trial.¹¹⁹ Apple's change in policy, therefore, looks similar to that which happened in *Kodak*. Such a finding would not resolve the question of any justifications for the change, but it demonstrates that plaintiffs could consider relying on *Kodak* to challenge allegedly anticompetitive restrictions.

Apple's contractual restrictions on the app store also do not exist under Google's model, therefore allowing plaintiffs to proceed to the remainder of the *Kodak* analysis. Beginning with the main holding of *Kodak*, plaintiffs must demonstrate that customers face information barriers and switching costs. Lifecycle pricing could include the cost of purchasing apps, which may be difficult to estimate as purchasing decisions change.¹²⁰ If so, customers would face information barriers that could allow Google to exploit customers in the Android app distribution market. Customers likely also face significant switching costs because Google phones cost hundreds of dollars and switching away from Android requires learning and adapting to an entirely new OS.¹²¹ A court would likely agree that these switching costs demonstrate that Google has the incentive and ability to exercise its market power if these switching costs are higher than the supracompetitive app prices customers are alleged to accept.¹²²

While information barriers and switching costs are present in the Android app distribution market, several factors complicate this basic story. First, are information barriers sufficiently strong to satisfy *Kodak*? In *Kodak*, the Court explained that customers faced significant barriers to the successful lifecycle pricing of a photocopier because of the many uncertain pricing variables, which caused them to enter into restrictive contractual relationships that they otherwise would have avoided.¹²³ Here, the estimation of lifecycle costs appears to be simpler: customers must estimate the cost of purchasing apps and making purchases within apps. Indeed, few customers actually spend any

119. See *supra* note 113.

120. See First Amended Complaint at 24, *Utah v. Google LLC*, No. 21-5227 (N.D. Cal., Nov. 1, 2021) (“[C]onsumers cannot reliably predict all of the future apps or inapp content they may eventually purchase. Even if some consumers believe they can do so, their preferences and patterns of app usage can change over the device’s life, especially as new apps and app functionalities emerge.”).

121. *Id.* at 23.

122. See Section II.C.

123. *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 473 (1992) (“The necessary information would include data on price, quality, and availability of products needed to operate, upgrade, or enhance the initial equipment, as well as service and repair costs, including estimates of breakdown frequency, nature of repairs, price of service and parts, length of “downtime,” and losses incurred from downtime.”).

money making either of these classes of purchases. While a public analysis of Google users' purchasing patterns is not well-developed, 81.4 % of Apple users did not make any purchases in the app store or in-app, and less than 0.5 % of Apple accounts generated 53.7 % of all app store billings.¹²⁴

However, if plaintiffs can demonstrate that information barriers include factors that are broader than cost alone, they may still be able to satisfy this prong of *Kodak*. Customers may value the ability to sideload for reasons other than lower prices. For example, they may realize that they prefer different approaches to data protection or app review than the Google Play store offers. If so, these concerns are more difficult to predict or forecast, similar to the difficulties *Kodak's* customers faced when forecasting lifecycle costs. Google's customers may therefore make choices that are equally as uninformed as *Kodak's* customers, but on different dimensions.

Second, plaintiffs must navigate the circuit split regarding whether a change in policy must be demonstrated. If the aftermarket analysis requires a change in policy, it may be difficult to succeed on this theory. Plaintiffs in *Utah v. Google* have not alleged that Google changed its approach to sideloading after a class of customers purchased Google phones. Therefore, courts requiring such a change would likely absolve Google of any responsibility.

Courts that accept the *Xerox* approach,¹²⁵ however, are more likely to agree that Google possesses market power in the Android app distribution aftermarket. For example, the *Utah v. Google* plaintiffs allege that Google has intentionally deceived customers when describing the Play Store's "openness," and does not widely publicize their 30% commission on Play Store purchases.¹²⁶ Borrowing the language

124. *Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 954 (N.D. Cal. 2021) ("[M]edium spenders (\$15-\$450/quarter) and low spenders (<\$15/quarter), constituting 7.4% and 10.8% of all Apple accounts, accounted for 41.5% and 4.9% of all App Store billing, respectively."). Moreover, a 2016 study suggests that less than 5% of Android users spend money on in-app purchases at least once per month. *New Report on Global In-App Spending Habits Finds that Asian Consumers Spend 40% More in Apps Than the Rest of The World*, APPSFLYER (June 30, 2016), <https://www.appsflyer.com/company/newsroom/pr/global-app-spending-habits-report/> [<https://perma.cc/GK84-WLQT>].

125. *Xerox* holds that plaintiffs must demonstrate that information barriers "undermined [consumers'] ability to know that the aftermarket" product was supracompetitively priced *or* that there was a policy change. *Xerox Corp. v. Media Scis., Inc.*, 660 F. Supp. 2d 535, 547 (S.D.N.Y. 2009).

126. First Amended Complaint at 24, *Utah v. Google LLC*, No. 21-5227 (N.D. Cal., Nov. 1, 2021) ("Nonetheless, consumers might attempt to factor Google's conduct into their decisions to move away from Android, but Google has inhibited consumers' ability to make that informed choice. Most consumers are unaware of Google's

from *Xerox*, this conduct certainly “undermined [customers’] ability” to understand their restricted choice in the aftermarket.¹²⁷

Third, while they are unlikely to succeed, Google may argue that the app store is a feature of a mobile device rather than a derivative product.¹²⁸ However, the facts explained above suggest the opposite. Numerous features of app stores demonstrate that they are a separate yet derivative product from Android-supported mobile devices, including that customers may download apps from sources other than the Play Store if they choose to and that OEMs are contractually restricted from prioritizing other app stores to the same degree as the Play Store.

Finally, Google may argue (as some academics have argued) that it is irrelevant whether plaintiffs show that the Android app distribution market is a valid aftermarket because the prices customers would pay would not change with lower commissions. Professor John Yun argues that because app stores add value to the customers’ OS experience and have near-zero marginal cost (i.e., it is very cheap to distribute additional apps), the commission rate has “no impact” on the prices users pay.¹²⁹ Therefore, any antitrust regulation will not change the prices customers face.

Such an argument should not discourage antitrust enforcement. Assuming this argument is true (which is highly contestable), this defense focuses solely on price impacts, despite plaintiffs’ allegations that app store monopolization reduces customers’ access to unique business models that could upend a commission-based app store altogether. Consequently, if plaintiffs can adequately demonstrate that information barriers and switching costs are sufficiently high and that a change in policy is unnecessary to satisfy *Kodak*, plaintiffs are likely to prevail in demonstrating that Google possesses market power in the Android app distribution aftermarket.

B. Cloud Services

i. Relevant Facts and Conduct

A second industry that demonstrates the many questions that arise when applying *Kodak* to digital platforms is cloud services.

supracompetitive commissions, which Google does not publicize or itemize on its Play Store billing statements. Google likewise conceals the anticompetitive technological and contractual constraints that give the Google Play Store an unfair competitive advantage in Android app distribution.”).

127. *See id.*

128. *See* Section II.B.

129. Yun, *supra* note 95, at 1289.

Cloud services platforms allow companies to rent server infrastructure for storage, computation, and networking of data. The cloud infrastructure market is dominated worldwide by four companies: Amazon (through its Amazon Web Services (“AWS”) platform), Alibaba (although Alibaba’s presence in the United States is small), Microsoft (through its Microsoft Azure platform), and Google (through its Google Cloud Platform (“GCP”) product), with AWS commanding by far the largest market share.¹³⁰

Supplementary to cloud infrastructure services, these companies also offer numerous proprietary and third-party software services specific to the platform to perform additional tasks. Such services include, for example, database software, machine learning tools, and networking tools.¹³¹ Many companies (*i.e.*, independent software vendors, or “ISVs”) produce services that compete with each cloud infrastructure platform’s own proprietary services.¹³²

According to a 2020 report by the House of Representatives Subcommittee on Antitrust, Commercial, and Administrative Law (the “House Report”), ISVs in the markets for these supplementary services have complained about various conduct by AWS.¹³³ These concerns focus on three features of the industry: data egress fees, contracting structure, and product development. Data egress fees are the fees cloud providers charge for sending data to different classes of

130. *Gartner Says Worldwide IaaS Public Cloud Services Market Grew 40.7% in 2020*, GARTNER (June 28, 2021), <https://www.gartner.com/en/newsroom/press-releases/2021-06-28-gartner-says-worldwide-iaas-public-cloud-services-market-grew-40-7-percent-in-2020> [https://perma.cc/53RK-4TUM]; Alexandra Alper, *Exclusive: U.S. examining Alibaba’s cloud unit for national security risks – sources*, REUTERS (Jan. 19, 2022, 2:58 PM), <https://www.reuters.com/technology/exclusive-us-examining-alibabas-cloud-unit-national-security-risks-sources-2022-01-18/> [https://perma.cc/KP6G-NXBK] (“Alibaba’s U.S. cloud business is small, with annual revenue of less than an estimated \$50 million, according to research firm Gartner Inc.”).

131. *See Cloud Products*, AMAZON WEB SERVICES, <https://aws.amazon.com/products> for a complete list of AWS’s supplementary services.

132. *See CLOUDFLARE*, <https://www.cloudflare.com> (last visited Nov. 3, 2022).

133. *See MAJORITY STAFF OF H. COMM. ON THE JUDICIARY, SUBCOMMITTEE ON ANTITRUST, COMMERCIAL AND ADMIN. LAW, 116TH CONG., INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, MAJORITY STAFF REP. AND RECOMMENDATIONS (2020)*. While competitors have voiced complaints about cloud providers’ conduct, many customers are often ambivalent or enthusiastic about recent developments in the cloud industry. *See Tom Krazit, AWS Has Avoided Antitrust Scrutiny So Far. Here’s How That Could Change.*, PROTOCOL (Feb. 12, 2021), <https://www.protocol.com/enterprise/aws-amazon-cloud-antitrust> [https://perma.cc/4P4A-KWEL] (“Given that so far most cloud customers have been happy to move their data into the new services provided by the Big Three, complaints about egress fees mainly come from companies that want to use more than one cloud provider.”).

recipients.¹³⁴ While cloud providers do not charge customers for transferring data *into* its cloud infrastructure, they do charge for transferring data *outside* their networks.¹³⁵ The House Report and public complaints by Cloudflare, a networking ISV, suggest that this fee structure allows cloud providers to anticompetitively lock customers into their cloud infrastructure products.¹³⁶

Second, some have argued that cloud providers' contracting practices illegally favor proprietary products.¹³⁷ Cloud providers traditionally offer their cloud infrastructure products through a subscription model.¹³⁸ However, the House Report found that customers' contracts with cloud providers often last three to five years.¹³⁹ An exemplar contract shows that AWS offers pricing concessions and the agreement

134. See *Overview of Data Transfer Costs for Common Architectures*, AMAZON WEB SERVICES (June 30, 2021), <https://aws.amazon.com/blogs/architecture/overview-of-data-transfer-costs-for-common-architectures/> [<https://perma.cc/F94R-SG3N>] (describing AWS's egress fee structure); *Bandwidth Pricing*, MICROSOFT AZURE, <https://azure.microsoft.com/en-us/pricing/details/bandwidth/#pricing> (last visited Nov. 3, 2022).

135. Data is stored within a specific AWS Region, and egress fees are incurred when data is transferred to a different AWS region. See *Overview of Data Transfer Costs*, *supra* note 134.

136. See INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133, at 119; Thomas Claburn, *Cloudflare Slams AWS Egress Fees to Convince Web Giant to Join its Discount Data Club*, THE REGISTER (July 24, 2021, 12:07 AM), https://www.theregister.com/2021/07/24/cloudflare_aws_egress_fees/ [<https://perma.cc/H8PA-6FWD>] (“The implication is this pricing model deters companies dependent on AWS from choosing to move their data and business elsewhere, even though Google and Microsoft also charge for data egress. ‘The only rationale we can reasonably come up with for AWS’s egress pricing: locking customers into their cloud, and making it prohibitively expensive to get customer data back out,’ they said.”).

137. See INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133, at 118 (“Subcommittee staff has identified several common techniques infrastructure providers use to initially lock-in customers, including contract terms, free tier offerings, and egress fees. The first is long-term contracts. In several responses to the Committee’s requests for information, third parties explained they have contracts lasting from 3-to-5 years with the infrastructure providers.”); Greg Noone, *Is the cloud computing market anti-competitive?*, TECH MONITOR (Jan. 13, 2022), <https://techmonitor.ai/technology/cloud/is-cloud-computing-market-anti-competitive-anti-trust> [<https://perma.cc/J2WU-JBK2>] (“Other anti-competitive practices cited by critics of hyperscale providers include overly long contracts, bundling – in which software packages are combined with infrastructure provision at a lower premium, pricing IaaS-only providers out of the market – and self-preferencing, which can see new and complex licensing requirements and audits imposed on customers who abstain from buying said bundle.”).

138. *Pricing*, AMAZON WEB SERVICES, <https://aws.amazon.com/pricing> (last visited Nov. 3, 2022); *Azure Pricing*, MICROSOFT AZURE, <https://azure.microsoft.com/en-us/pricing> (last visited Nov. 3, 2022).

139. INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133, at 118.

by the customer to a minimum spending commitment.¹⁴⁰ These contracting terms may prevent companies that provide these supplementary services from competing for customers.

Finally, critics have complained that cloud providers rely upon their control over cloud infrastructure services to determine which third-party services to copy.¹⁴¹ Companies have publicly characterized this conduct as “strip-mining” open-source ISVs for cloud providers’ gain, which is particularly successful because of the previously-mentioned contracting practices.¹⁴² Such conduct may help cloud providers gain market power in nascent markets for supplementary services.

ii. Aftermarkets for Platform-Specific Supplementary Services

The previously mentioned conduct implicates monopolization of various markets for supplementary services on each platform’s cloud infrastructure (i.e., database services provided through Microsoft Azure), in addition to claims of monopolization in the infrastructure market itself. Whether a plaintiff could successfully allege that a cloud services platform could exercise aftermarket market power for software services specific to the platform turns on many of the issues discussed previously, including whether the subscription model creates sufficiently high switching costs and if information barriers are strong enough despite the pricing information cloud providers supply.

Potential plaintiffs must first demonstrate the core *Kodak* factors. Cloud customers may face barriers to determining the lifecycle costs of cloud services, as customers may be unable to forecast future demand for storage and computational services in addition to future de-

140. See Krazit, *supra* note 133; MiX Telematics Ltd, Annual and Transition Report of Foreign Private Issuers (Form 20-F), Exhibit 4.20 (Jul. 7, 2017), <https://www.sec.gov/Archives/edgar/data/1576914/000162828017007056/exhibit421-mix-awsaddenduma.htm> [<https://perma.cc/F4Q7-9Y52>].

141. See Krazit, *supra* note 133 (“Self-preferencing can take on several forms. Data is one: AWS has an enormous amount of data on how its customers are using both its own and third-party cloud services on its platform, and critics have charged that it can use that data to launch competing services.”); Tom Krazit, *‘It’s Not OK’: Elastic Takes Aim at AWS, at The Risk of Major Collateral Damage*, PROTOCOL (Jan. 21, 2021), <https://www.protocol.com/enterprise/about/aws-targeted-by-elastic> [<https://perma.cc/M2UM-NS8D>] (describing the response Elastic, a caching service, took to protect its open-source product from copying by AWS).

142. See, e.g., INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133, at 120; Daisuke Wakabayashi, *Prime Leverage: How Amazon Wields Power in the Technology World*, N.Y. TIMES (Dec. 16, 2019), <https://www.nytimes.com/2019/12/15/technology/amazon-aws-cloud-competition.html> [<https://perma.cc/RH9V-SL8U>]; Ben Thompson, *AWS, MongoDB, and the Economic Realities of Open Source*, STRATECHERY (Jan. 24, 2019), <https://stratechery.com/2019/aws-mongoddb-and-the-economic-realities-of-open-source/> [<https://perma.cc/AYV9-4JKA>].

mand for supplementary services. Egress fees also increase the unpredictability of future cloud costs. Similarly, switching costs could be significant. The House Report outlines multiple sources of switching costs: (a) egress fees from transferring customers' data from one cloud infrastructure platform to another, and (b) adapting a customers' code base to a new platform, due to the high cost of contractual commitments to cloud providers and the technical challenge of adapting customers' data infrastructure to a new cloud provider.¹⁴³

However, plaintiffs alleging a platform-specific cloud software services aftermarket must clear several hurdles to satisfy the *Kodak* doctrine. First, traditional switching costs may be low if cloud infrastructure services are offered on a subscription basis. But two features of cloud infrastructure purchasing vitiate this concern: (a) customers that agree to long-term deals must pay cloud providers their spending commitment whether or not they would like to switch to another provider,¹⁴⁴ and (b) as recognized in *Dealer Management Systems*, switching costs in this context encompass a broader range of costs than simply price—including the time and money it takes to transition to a new system.¹⁴⁵

Second, courts may be wary of accepting that market power is possible in the aftermarket for supplementary services if a cloud provider did not force customers to use its proprietary services after customers agreed to purchase the core infrastructure. Because customers sign long-term contracts that likely require significant negotiation, courts may be inclined to believe that customers are aware of the limitations placed on them at the time of signing.¹⁴⁶ Indeed, it appears that cloud providers may in fact *help* customers calculate the lifecycle costs of using its infrastructure by providing a calculator for this purpose.¹⁴⁷ Unless a plaintiff could uncover evidence that cloud providers have increased their self-preferencing in an aftermarket for customers already on their platform, these facts would likely fail to prove an aftermarket where courts require a change in policy.

A plaintiff may face similar difficulties under the more lenient *Newcall/Xerox* approach. The above facts suggest that customers may “knowingly enter” into restrictive contracts when they agree to long-

143. INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133, at 118–19.

144. *See supra* note 140.

145. *See supra* note 86 and accompanying text.

146. *See* Section II.A.

147. *See e.g.*, *Calculator*, AMAZON WEB SERVICES, <https://calculator.aws/> (last visited Nov. 3, 2022).

term contracts that bundle all products together.¹⁴⁸ However, courts may be more receptive to an aftermarket theory if a plaintiff can demonstrate that despite their long-term contracts and ability to seek assistance when calculating cloud costs, customers still cannot estimate lifecycle costs. For example, AWS's calculator may be insufficiently precise to accurately forecast infrastructure usage and which supplementary services a customer may need, particularly as cloud technology and customers' business models evolve. This, combined with complaints that cloud providers obscures the degree to which its services are different than ISV competitors, may satisfy a court that information barriers are sufficiently high.¹⁴⁹

Cloud providers would likely argue that sophisticated customers discipline prices across the cloud ecosystem.¹⁵⁰ It is possible that customers who negotiate the largest contracts with the cloud providers inform the entire market. Indeed, the recent complaints about AWS's allegedly excessive data egress fees caused AWS to expand the volume of data that could be transferred without charge.¹⁵¹ However, most of these contracts appear to be confidential—therefore limiting the information unsophisticated customers may gain from these negotiations—and AWS's response might be insufficient. Such complications must be resolved by a court.

Moreover, individualized contracting may allow cloud providers to price discriminate between sophisticated and unsophisticated customers, therefore preserving cloud providers' ability to exploit some customers.¹⁵² It is unclear what percentage of cloud providers' customers negotiate individualized contracts that specify contract length and spending commitments. However, it may be profitable for cloud providers to impose supracompetitive prices on customers that do not negotiate their own contracts if the profit from doing so outweighs any reputational costs or lost business these providers would suffer.

Third, courts may not consider the alleged aftermarket services to be derivative of cloud infrastructure services if customers could obtain

148. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038, 1048 (9th Cir. 2008).

149. *Cf.* notes 126–27 and accompanying text.

150. *See Eastman Kodak Co. v. Image Tech. Svcs., Inc.* 504 U.S. 451 (1992). Kodak argued that education by sophisticated customers or price discrimination would vitiate any information barriers. *Id.* at 473–75. Although the Court ultimately disagreed with Kodak's price discrimination theory in this case because Kodak itself was able to differentiate between customers, it did not reject the theory altogether. *Id.*

151. Paul Sawers, *Amazon's AWS Expands Free 'Egress' Data Transfer Limits*, VENTUREBEAT (Nov. 25, 2021, 10:43 AM), <https://venturebeat.com/2021/11/25/amazons-aws-expands-free-egress-data-transfer-limits/> [<https://perma.cc/XCQ9-ZNEX>].

152. *See Kodak*, 504 U.S. at 475.

the services specific to the platform outside of the platform's ecosystem (e.g., security services that operate on multiple cloud providers). Recently, some customers have expressed an interest in being able to use multiple cloud providers at once (this is known as a "multicloud" strategy), and ISVs have developed products to facilitate a multicloud approach.¹⁵³ For example, customers may be able to use a database software that is easily portable to a different platform's cloud infrastructure. If so, these potential aftermarket products may not satisfy the *Newcal* requirement that the aftermarket "would not exist without" the foremarket.¹⁵⁴ However, there is some evidence that even those products that allow for a multicloud approach require some customization to each provider's cloud infrastructure.¹⁵⁵ Moreover, even those customers that adopt a multi-cloud strategy often avoid splitting a single task across different clouds.¹⁵⁶ These features suggest that while an aftermarket service may be accessible on a platform other than that which a customer uses for infrastructure, customers may not consider those options as realistic.

These complications demonstrate that a plaintiff wanting to bring an antitrust lawsuit against a cloud platform based on a theory of aftermarket market power must clear many factual hurdles. While this

153. See, e.g., R. Scott Raynovich, *Multicloud Networking is the Next Big Cloud Market*, FORBES (Oct. 25, 2022, 2:37 PM), <https://www.forbes.com/sites/rscottraynovich/2022/10/25/multicloud-networking-is-the-next-big-cloud-market-pt-1/?sh=68c9e3f37ecc> [<https://perma.cc/9RAC-ZTZW>]; Krazit, *supra* note 127 (noting that companies seeking a multicloud approach have complained about cloud providers' conduct); Brent Ellis, *Multicloud is Hard, But Single-Cloud Failures Make it Necessary for Enterprises*, FORRESTER (Dec. 7, 2021), <https://www.forrester.com/blogs/multicloud-is-hard-but-single-cloud-failures-make-it-necessary-for-enterprises/> [<https://perma.cc/CB5S-LGQZ>].

154. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038, 1049 (9th Cir. 2008).

155. See INVESTIGATION OF COMPETITION IN DIGITAL MARKETS, *supra* note 133133, at 119 ("Several market participants spoke to the challenges of finding cloud developers that know the underlying technology of multiple cloud infrastructures as a barrier to both switching, either from one cloud to another or to set up multi-cloud operations. As one third party describes, 'businesses often have to calibrate a complex set of technical frameworks, settings, and customized interfaces to adapt their business to the potentially unique way the cloud storage provider has chosen to operate their service.'"); Krazit, *supra* note 133 ("But companies that want to implement multicloud strategies also suffer from the fact that each cloud provider has a slightly different way of doing things, and there can be quite a learning curve when an AWS shop tries to get up and running on Microsoft Azure, and vice versa.").

156. Shaun O'Meara, *Multicloud Challenges and Solutions*, THE NEW STACK (Mar. 24, 2021, 9:00 AM), <https://thenewstack.io/multicloud-challenges-and-solutions/> [<https://perma.cc/572T-MSY8>] ("The most common and simplest model involves separating the components (application layers) so that each distinct component is deployed on a single provider, with the whole application spread across multiple clouds.").

theory is not dead on arrival, it faces multiple obstacles that plaintiffs in the app store cases do not.

C. *Digital Ecosystems*

While the above examples demonstrate how an aftermarket theory may be applied to specific digital platforms, some scholars have an even more creative approach. Some antitrust scholars in Europe have posited that an aftermarket theory could be relied on to regulate the entire ecosystem of a digital platform, rather than individual products within them.¹⁵⁷

Consider, for example, the Google ecosystem. Google offers numerous products that individuals rely on spanning various functions, including e-mail, search, mobile devices, and navigation. Each of these products contribute to network effects across the ecosystem that exponentially increase the value of the system it attracts more users, increasing engagement and therefore advertising revenue. Facebook operates in a similar manner through different products, including “Facebook Blue” (the news feed), Instagram, and WhatsApp—all of which drive engagement with the ecosystem. The network effects these platforms generate may lock users into the ecosystem as a whole.¹⁵⁸ Each of the products these companies offer could be competing both as “stand-alone products” or “as part and parcel of a comprehensive digital ecosystem.”¹⁵⁹

Under this second conception, plaintiffs could characterize the digital ecosystem as the foremarket with each product as an aftermarket of it. Scholars argue that this approach better approximates the “multiple competitive dynamics” of digital platforms.¹⁶⁰ This concept would require courts to accept that because digital platforms’ individual products enhance each other, the sum of all the products create an experience that customers are buying in to. Consequently, platforms compete for users across multiple layers, and only

157. See Viktoria H.S.E. Robertson, *Antitrust Market Definition for Digital Ecosystems*, CONCURRENCES, May 1, 2021, at 7–8.

158. *Id.* See also Jacques Crémer, Yves-Alexandre de Montjoye & Heike Schweitzer, *Competition Policy in the Digital Era*, EUROPEAN COMMISSION 48 (2019), <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> [<https://perma.cc/BB7R-8Z8H>] (“From a consumer’s perspective, markets for specific products or services will persist. But where the firms’ lock-in strategies are successful, and consumers are drawn into ecosystems which they find difficult to leave, ecosystem-specific aftermarkets may need to be defined.”).

159. Robertson, *supra* note 157, at 8.

160. *Id.* (quoting Caio Mario da Silva Pereira Neto & F. Lancieri, *Towards a Layered Approach to Relevant Markets in Multi-Sided Transaction Platforms*, 83 ANTITRUST L.J. 429, 436 (2020)).

viewing the foremarket as a digital ecosystem would allow courts to understand the “full picture” of competition between them.¹⁶¹

Defining a foremarket to be a digital ecosystem may better reflect the nature of digital platforms, but it presents a host of issues that the *Kodak* doctrine has not resolved. Primarily, plaintiffs must convince a court that a foremarket for a digital ecosystem is an appropriate antitrust market. While this type of market definition question is not the subject of this paper, such an attempt would be a departure from a historical preference to keep antitrust markets narrowly defined.¹⁶² Additionally, plaintiffs must demonstrate that each individual product is derivative and “wholly derivative” of the ecosystem,¹⁶³ which may be difficult to prove with products that could operate independently (e.g., an e-mail service). Nonetheless, this proposal merits further consideration.

CONCLUSION

With little further development, the *Kodak* doctrine can be a tool used to enforce the antitrust laws against digital platforms, even though the issue of market power in single-brand aftermarkets has only been addressed once by the Supreme Court. The core structure *Kodak* develops—demonstrating information barriers and switching costs—can be applied to platforms like app stores and cloud computing. However, whether plaintiffs must demonstrate a change in policy will become a key question as plaintiffs bring cases resting on an aftermarket theory. Moreover, ambitious applications of an aftermarket theory to digital ecosystems will require a significant legal reconceptualization of how digital platforms compete.

161. *Id.*

162. *See, e.g.,* *Times-Picayune Pub. Co. v. United States*, 345 U.S. 594, 612 n.31 (1953) (“For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose ‘cross-elasticities of demand’ are small.”); *see also* *FTC v. Arch Coal, Inc.*, 329 F. Supp. 2d 109, 116 (D.D.C. 2004) (“Relevant market analysis is based on the ‘narrowest market’ principle.”).

163. *Newcal Indus., Inc. v. Ikon Off. Sol.*, 513 F.3d 1038, 1049 (9th Cir. 2008).

