The Potential Antitrust Implications of Tying Hardware with AI

Chase Hiatt*

I. INTRODUCTION

Artificial intelligence (AI) has begun to significantly impact many sectors of the economy and everyday life. As generative AI[1] models improve at unimaginable rates, AI will become continually integrated into our daily lives. This will undoubtedly involve integrating AI tools into the technology that millions of people use daily, including PCs, phones, digital watches, and televisions—technology that many people cannot live without. Indeed, some companies are already beginning to do so.[2] Seems great, right? Maybe so, but only time will tell how effective the integration of AI into hardware will be. The software is constantly learning, and developers must continually tweak it in an attempt to avoid letting AI models mislead people into, for instance, using glue to stick cheese to pizza, or eating at least one small rock per day to support digestive health.[3] Nevertheless, "we should expect AI technology to become even more powerful and impactful in the following years and decades."[4]

However, big tech companies may face scrutiny under U.S. antitrust laws for tying their hardware, such as phones, tablets, or computers, with their AI models. Under antitrust principles, a tying arrangement is a type of agreement where a seller agrees to sell a product to a buyer but only if the buyer agrees to purchase an additional, or tied, product.[5] This article analyzes

* University of Chicago Law School '26.

[1] The term "AI" will be used throughout this article, but when this article refers to "AI," it is referring to "generative AI."

[2] *See, e.g.*, Press Release, Apple Intelligence is Available Today on iPhone, iPad, and Mac , APPLE (Oct. 28, 2024), https://perma.cc/2XB3-5GWH.

[3] *See* Jack Kelly, *Google's AI Recommended Adding Glue To Pizza And Other Misinformation—What Caused The Viral Blunders*, FORBES (May 31, 2024, 6:00 AM), https://perma.cc/W7TJ-9QXE.

[4] Charlie Giattino, et al., *Artificial Intelligence*, OUR WORLD IN DATA, https://perma.cc/89GN-4C82 (last visited Jan. 10, 2025).

[5] *See Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 12–14 (1984).

the likelihood of big tech companies facing antitrust scrutiny for forcing consumers to purchase a company's AI tools along with their hardware. The analysis proceeds as follows: Section II.A provides an overview of the Sherman Act in the context of tying arrangements involving AI. Section II.B discusses whether the integration of hardware and AI tools could present a tying arrangement for antitrust analysis. Section II.C concludes by analyzing whether tying arrangements involving hardware and AI should be summarily condemned as *per se* illegal or be analyzed under the rule of reason.

II. ANALYSIS

A. The Sherman Act, AI, and the Possible Routes to Antitrust Scrutiny

There is nothing inherently wrong with monopoly power, but firms run into trouble when they abuse it.[6] Under Section 2 of the Sherman Act, it is unlawful for a single firm to "monopolize."[7] There are two elements to the offense of monopolization: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."[8] Monopoly power is defined as "the power to control prices or exclude competition."[9] Figures from 2023 estimate that the leading AI platform companies are OpenAI with a 39% market share in the generative AI market, Microsoft with 30%, Amazon Web Services (AWS) with 8%, and Google with 7%.[10] Case law provides guidance on whether certain market shares constitute a monopoly, and no AI platform company has sufficient market power to constitute a monopoly today, assuming the above figures are somewhat accurate.[11]

A firm may also face liability under Section 2 of the Sherman Act for attempted monopolization if a firm engages in anticompetitive conduct in an attempt to gain monopoly power.[12] Liability for attempted monopolization requires "(1) that the defendant has engaged in predatory or anticompetitive

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[6] *See* Áine Doris, *Do Monopolies Actually Benefit Consumers?*, CHI. BOOTH REV. (Oct. 13, 2021), https://perma.cc/S6XX-NUSV.

[7] 15 U.S.C. § 2 (2004).

[8] *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966).

[9] *United States v. E.I. Du Pont de Nemours & Co.*, 351 U.S. 377, 391 (1956).

[10] Philipp Wegner, *The Leading Generative AI Companies*, IOT ANALYTICS (Dec. 14, 2023), https://perma.cc/6GDL-BQ9S. Note that Microsoft is OpenAI's largest shareholder and Microsoft's ownership in OpenAI may complicate the market share analysis, but this article will not discuss the market share inquiry.

[11] *See Epic Games, Inc. v. Apple Inc.*, 559 F. Supp. 3d 898, 992 (N.D. Cal. 2021) (finding 55% market share insufficient to constitute monopoly power); *U.S. v. Aluminum Co. of Am.*, 148 F.2d 416, 424 (2d Cir. 1945) (noting over 90% market share is sufficient to establish monopoly power but 33% is insufficient).

[12] *See* 15 U.S.C. § 2 (2004).

conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power."[13] Establishing a dangerous probability of success "requires plaintiffs (1) to define the relevant market and (2) demonstrate that substantial barriers to entry protect that market."[14] This article focuses on the first prong of attempted monopolization, the anticompetitive conduct requirement, which may also demonstrate that a defendant had the specific intent to monopolize. For the sake of brevity, assume that the dangerous probability of success requirement could be satisfied, depending on the market definition, because there are undoubtedly significant barriers to entry that protect the AI market overall.[15]

Additionally, firms may face liability under Section 1 of the Sherman Act for entering a "contract, combination . . . or conspiracy" that is an unreasonable restraint of trade.[16] "The meaning of the term 'contract, combination … or conspiracy' is informed by the basic distinction in the Sherman Act between concerted and independent action that distinguishes § 1 of the Sherman Act from § 2."[17] Section 1 focuses on concerted action in restraint of trade, and Section 2 focuses on both concerted and independent action in restraint of trade.[18] Regardless of whether monopoly power results from concerted or independent action, the result may be equally harmful.[19]

This article's discussion centers on the anticompetitive conduct element of a Section 2 attempted monopolization claim and the unreasonable restraint of trade element of a Section 1 claim, both of which may be satisfied by unlawful tying. There is a difference in the analysis depending on whether a claim may be brought under Sections 1 or 2. For example, if firm X develops their own AI model and vertically integrates it into its own hardware, we have single firm action, which may be actionable under Section 2. On the other hand, if firm X licenses firm Y's AI model to use in firm X's hardware, we have multiple actors engaging in a "contract, combination … or conspiracy," which may be actionable under Section 1. In the former scenario, firm X could face antitrust scrutiny for tying its AI model (the "tied" product) with its hardware (the "tying" product). In the latter, firm X could also face antitrust scrutiny for tying firm Y's AI model (the "tied" product) with firm X's hardware (the "tying" product).

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[13] *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993).

[14] *United States v. Microsoft Corp.*, 253 F.3d 34, 81 (D.C. Cir. 2001).

[15] *See generally* NEIL WEBB, MCKINSEY ANALYTICS, NOTES FROM THE AI FRONTIER: AI ADOPTION ADVANCES, BUT FOUNDATIONAL BARRIERS REMAIN (Nov. 2018), https://perma.cc/T3TX-H2NC. The dangerous probability of success requirement may not be satisfied as AI markets stand today, but as AI technology evolves, the antitrust analysis will too.

[16] 15 U.S.C. § 1 (2004).

[17] *Am. Needle, Inc. v. Nat'l Football League*, 560 U.S. 183, 190 (2010) (citations and quotation marks omitted).

[18] *Id.*

[19] *Id.*

B. The Application of Tying Arrangements to the Integration of Hardware and AI

A tying arrangement is a type of agreement where a seller agrees to sell a product to a buyer but only if the buyer agrees to purchase an additional, or tied, product. "The core concern is that tying prevents goods from competing directly for consumer choice on their merits, *i.e.*, being selected as a result of 'buyers' independent judgement.'"[20] Tying can only exist when two separate product markets have been linked, and whether there are two separate product markets turns on if there is sufficient demand for both products individually.[21] This is called the "consumer demand test."[22] The inquiry requires an examination of "direct and indirect evidence of consumer demand for the tied product separate from the tying product."[23] Direct evidence focuses on whether consumers purchase the tied product from the firm selling the tying product or from other firms when presented with a choice.[24] "Indirect evidence includes the behavior of firms without market power in the tying good market, presumably on the notion that the (competitive) supply follows demand. If competitive firms always bundle the tying and tied goods, then they are a single product."[25]

Before proceeding, it is critical to understand the difference between "tying" and "bundling." In the antitrust context, the terms "tying" and "bundling" are often used interchangeably. But a "bundle," in the classic antitrust context, may refer to a bundled discount, which is found when a firm sells a bundle of goods or services for a lower price than the seller charges for the goods or services purchased individually.[26] Bundling is typically applied when one firm is effectively pushed out of a market by another firm because it does not produce a similarly diverse range of products and cannot offer comparable bundled discounts.[27] Bundling is problematic because an entrant who is at least as efficient as the incumbent may be unable to compete.[28]

On the other hand, the integration of AI and hardware presents a tying issue, not a bundling issue, because the focus is a single sale of the hardware and AI together, not a bundle of such. A tying arrangement would be presented when big tech companies sell a device to a buyer, but only if the buyer agrees to purchase the additional integrated AI tool. But there can only be a tying arrangement if there is separate consumer demand for both hardware and AI

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[20] *Microsoft*, 253 F.3d at 87 (quoting *Jefferson Parish*, 466 U.S. at 13).
[21] *Jefferson Parish*, 466 U.S. at 22.
[22] *Microsoft*, 253 F.3d at 87.
[23] *Id* at 86.
[24] *Id.*
[25] *Id.* (citing *Jefferson Parish*, 466 U.S. at 22).
[26] *See LePage's Inc. v. 3M*, 324 F.3d 141, 155 (3d Cir. 2003).
[27] *See id.*
[28] *Id.*

tools individually. More information would be needed to assess the market for AI tools, but it is likely that there is, or will eventually be, sufficient demand for AI tools separate from the hardware the models operate on.

The AI market is developing at a rapid pace, and some of the most popular AI tools include OpenAI's ChatGPT, Microsoft's Copilot, Google's Gemini, and Anthropic's Claude.[29] Most of the tech giants have already integrated AI tools into their hardware and software. Google integrates Gemini into its Android devices,[30] Apple integrates Apple Intelligence into its devices with the option of adding ChatGPT,[31] and Microsoft integrates ChatGPT into its PCs and Windows software through Copilot.[32]

Under the consumer demand test—used to assess whether there is sufficient demand for both products individually—the direct evidence may indicate that consumers often prefer to purchase AI tools from firms other than the device manufacturer when given a choice. In other words, consumer preferences for AI tools may be separate and distinct from their preferred hardware brands.

For example, consider a loyal Apple iPhone consumer who purchases a new iPhone 16 that comes integrated with Apple Intelligence and ChatGPT. This consumer may well prefer Google's Gemini over Apple Intelligence and ChatGPT. However, this consumer has no option of purchasing an iPhone 16 integrated with Gemini but may download Google Gemini from the App Store separately.[33] Similarly, a loyal Android consumer who purchases an Android integrated with Gemini may be faced with the same issue if he or she prefers ChatGPT.

Although consumers retain the freedom to download competing AI tools regardless of the device purchased,[34] integration offers functionality that standalone apps cannot match. Integrated tools can leverage broader access to on-device data, enabling more personalized and seamless responses. Thus, although consumers are technically free to access competing AI tools, they may face diminished performance and functionality when their preferred AI tool is not integrated into their device.

Moreover, the indirect evidence points to the conclusion that there are separate markets for hardware and AI tools. A court would look to the behavior

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[29] *See* Ellen Glover, *32 Top AI Apps to Know*, BUILT IN (July 29, 2024), https://perma.cc/9VDN-HG7D; Miguel Rebelo, *The best AI productivity tools in 2025*, ZAPIER (Oct. 2, 2024) https://perma.cc/6GVW-LSGR.

[30] Sissie Hsiao, *Gemini makes your mobile device a powerful AI assistant*, GOOGLE (Aug. 13, 2024) https://perma.cc/M8EG-CACR.

[31] Apple, *supra* note 2.

[32] Yusuf Mehdi, *Introducing Copilot+ PCs*, MICROSOFT (May 20, 2024), https://perma.cc/4WR4-VNXK.

[33] *See Google Gemini*, APPLE https://perma.cc/9ZQT-E427 (last visited Jan. 11, 2025).

[34] For this reason, it is unlikely that big tech companies would face liability for anticompetitive exclusivity agreements between hardware companies and AI companies because although big tech companies, such as Apple, may have exclusive agreements with AI companies, such as OpenAI, for integration of the AI tool into the hardware, consumers are still afforded the freedom to download and use other AI tools.

of firms without market power in the hardware market and whether they always bundle hardware and AI tools to determine whether there are separate markets.[35] Although there is a trend in big tech of integrating AI tools into devices, consumers are still presented with the option of disabling AI tools in some cases.[36] It may be the case that all competitive firms will integrate AI into all their devices in the near future and force consumers to use the AI, but we are not there just yet.

More data on consumer demand for AI models and specific hardware would be needed to accurately assess whether the integration of AI and hardware presents a tying arrangement. But assuming there are separate markets for both hardware and AI tools, the integration of both markets may lead to antitrust scrutiny, and it is likely that the consumer demand test could be met.

C. Determining the Appropriate Test: *Per se* Condemnation or Rule of Reason Analysis?

When certain factors are met, courts may condemn tying arrangements as *per se* illegal. But courts should be hesitant to summarily condemn tying arrangements involving new and evolving technologies because they may lack sufficient knowledge to fully understand the possible procompetitive benefits associated with such tying arrangements. Ordinarily, if there is separate consumer demand for two products, the issue of tying turns on whether the seller linking the two product markets (a) has significant market power or (b) offers a unique product that competitors are not able to offer.[37] If either is true, the seller may face *per se* liability because the seller may be exploiting control over the tying product to force the buyer into purchasing the tied product.[38] This control is called "forcing" and often leads to *per se* condemnation.[39] "As the Court explained in *Northern Pac[ific] R[ailroad] Co. v. United States*, 356 U.S. 1, 5 (1958), 'there are certain agreements or practices which because of their pernicious effect on competition and lack of any redeeming virtue are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use.'"[40]

However, if forcing is not present, the rule of reason is used to assess liability. "The rule of reason requires courts to conduct a fact-specific assessment of 'market power and market structure . . . to assess the

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[35] *See Microsoft*, 253 F.3d at 86.

[36] Brenda Stolyar, *How to Turn Off Apple Intelligence on an iPhone, iPad, or Mac*, WIRED (Jan. 27, 2025, 2:41 PM), https://perma.cc/5E3D-C7H2.

[37] *Jefferson Parish*, 466 U.S. at 17–18.

[38] *Id.*

[39] *Id.*

[40] *Cont'l T.V. v. GTE Sylvania*, 433 U.S. 36, 50 (1977).

[restraint]'s actual effect' on competition."[41] This allows courts to "distinguish[] between restraints with anticompetitive effect that are harmful to the consumer and restraints stimulating competition that are in the consumer's best interest."[42]

It is important to note that not all ties are bad.[43] The potential benefits from tying were recognized by the Supreme Court in *Jefferson Parish*[44] and the D.C. Circuit in *Microsoft*.[45] The consumer demand test, as described above, "is a rough proxy for whether a tying arrangement may, on balance, be welfare-enhancing, and unsuited to per se condemnation."[46] Novel business practices, especially in technology markets, should not be conclusively presumed unreasonable and thus illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use.[47] This is because "[t]he Supreme Court has warned that it is only after considerable experience with certain business relationships that courts classify them as *per se* violations . . . ."[48]

As discussed in *Microsoft*, the Supreme Court has not analyzed cases where the tied good was "physically and technologically integrated with the tying good."[49] There, Microsoft argued that its browser, Internet Explorer, and its operating system, Windows, was an integrated physical product and tying the two together "makes the latter a better applications platform for third-party software."[50] Analyzing this argument, the court noted that Microsoft's practices were extremely novel, and it could not be said that the integration and proffered efficiencies ought to be "conclusively presumed . . . unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use."[51]

Although integrating a browser with software may seem different from integrating an AI model with hardware to those in the tech world, the principles established in *Microsoft* shed light on how a court may analyze tying claims involving the integration of AI and hardware. In *Microsoft*, the court confined its application of the rule of reason to the tying arrangement presented.[52] The use of *per se* rules "may produce inaccurate results" and, most

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[41] *Ohio v. Am. Express Co.*, 585 U.S. 529, 541 (2018) (quoting *Copperweld Corp. v. Indep. Tube Corp.*, 467 U.S. 752, 768 (1984)).

[42] *Leegin Creative Leather Prods. v. PSKS, Inc.*, 551 U.S. 877, 886 (2007).

[43] *Microsoft*, 253 F.3d at 87.

[44] 466 U.S. 2 (1984).

[45] 253 F.3d 34, 81 (D.C. Cir. 2001).

[46] *Id* at 87. For a discussion on the efficiencies achievable from tying, *see id* at 87–88.

[47] *Id.* at 90–91 (citing *N. Pac. Ry.*, 356 U.S. 1, 5 (1958)).

[48] *Id* at 90 (citing *Broad. Music, Inc. v. Columbia Broadcasting Sys., Inc.*, 441 U.S. 1, 9 (1979) (quoting *United States v. Topco Assocs.*, 405 U.S. 596, 607–08 (1972))) (quotation marks omitted).

[49] *Id.*

[50] *Microsoft*, 253 F.3d at 90.

[51] *Id* at 90–91 (quoting *N. Pac. Ry.*, 356 U.S. at 5).

[52] *Id.* at 95.

importantly, "might stunt valuable innovation."[53] Applying the *Microsoft* court's reasoning, "because of the pervasively innovative character of [AI markets], tying in such markets may produce efficiencies that courts have not previously encountered and thus the Supreme Court had not factored into the per se rule as originally conceived."[54]

There are likely many procompetitive benefits associated with the integration of hardware and AI that work to enhance consumer experience. The similarities between the issues raised in *Microsoft* and the potential issues that may arise in a case regarding tying hardware with AI tools indicate that, even if all the factors for summarily condemning the practice as *per se* illegal are present, any cases involving such tying arrangement should be analyzed under the rule of reason to ensure accuracy and to ensure that innovation is not hindered.

III. CONCLUSION

Although big tech companies may "force" consumers to purchase AI tools with their hardware, the practice should not be summarily condemned and ought to be analyzed under the rule of reason. Consumers are still afforded the option to choose their preferred AI tool regardless of the AI tool integrated into their device. Today, many consumers likely have no preference at all when it comes to choosing which AI tool to use. Because of this, there may not be separate demand for AI tools distinct from hardware just yet. But AI will become increasingly integrated into our daily lives as the technology develops and as society becomes more comfortable navigating and operating the tools. We are likely not far off from living in a world where consumers will have a strong preference between different AI tools. As AI technology develops and consumers become more comfortable with the technology, the legal analysis of the market will undoubtedly change. As such, courts should analyze tying claims and possibly many other antitrust claims involving AI tools under the rule of reason to ensure accuracy and promote ongoing innovation.

[53] *Id.* at 92.
[54] *Id.* at 93.