Ensuring Antitrust Actually Promotes Competition in the Digital Economy: Evaluating Proposed Remedies in the Google Case[1]

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Executive Summary

The technology sector is experiencing an unprecedented surge in antitrust scrutiny, with federal regulators adopting increasingly radical approaches toward leading technology companies. This shift marks a fundamental transformation in how U.S. authorities address competition and view commercial success in the digital economy. In this paper,

- We examine the dynamics that shape digital competition and find that sustained R&D investment —along with the provision of integrated, often free, products—has been a core dimension of competition in digital markets.
- We evaluate the likely impact of the proposed remedies in the Google case on consumers, innovation, and market structure as a representative example of US antitrust enforcement. We conclude that even if these remedies succeed in curbing the conduct deemed unlawful, they will result in net harm: undermining competitive dynamics, weakening best-in-class products, and reducing investment, innovation, and consumer benefits.
- We ultimately conclude that many of the proposed remedies warrant significant reconsideration to better balance the goals of competition, innovation, and consumer welfare—and to safeguard American leadership in the technology sector.

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I. Introduction

The technology sector is experiencing an unprecedented surge in antitrust scrutiny, with federal agencies proposing increasingly more interventionist and intrusive regulations (see the appendix for a list of ongoing government filed antitrust cases in the U.S. against leading technology firms). This shift represents a fundamental transformation in how U.S. authorities address competition in the digital economy. The scope and intensity of these regulatory enforcements raise important questions about whether such measures would fundamentally undermine competitive dynamics by breaking up certain players and rewarding others. For this reason, less restrictive alternatives to proposed remedies might actually achieve a desired competitive outcome while preserving the efficiencies, benefits, and innovation that have driven the growth of these digital firms while protecting consumer welfare in the digital economy.

The scope of regulatory action spans the entire technology landscape, with every leading American technology firm facing an unprecedented wave of new rules imposed by government agencies aimed at reshaping market competition.

In September 2023, the Federal Trade Commission, supported by 17 state attorneys general, initiated a landmark monopolization case against Amazon. The complaint centers on the company's alleged anticompetitive practices in online retail, particularly challenging its seller policies regarding pricing and fulfillment services.[2] This enforcement momentum continued into March 2024, when the Justice Department and 16 states filed a suit against Apple, asserting that the company's selective developer restrictions and ecosystem control have stifled innovation and increased consumer costs.[3]

Meta's social networking prominence has also drawn regulatory attention, with the FTC pursuing a groundbreaking case to potentially unwind the company's acquisitions of Instagram and WhatsApp.[4] This action, which entered a crucial phase in 2024, represents a novel approach to addressing market concentration through the retrospective examination of strategic acquisitions.[5] Other public investigations of technology companies and lawsuits are underway and include Nvidia, Apple, and Microsoft.

Similarly, Google faces multiple antitrust challenges, including the DOJ's case regarding its search business practices. In August 2024, U.S. District Judge Amit P. Mehta delivered a significant but narrow liability ruling, finding that Google had "exploited its market dominance

[2] Federal Trade Commission, "FTC Sues Amazon for Illegally Maintaining Monopoly Power," 09/26/2023, https://www.ftc.gov/news-events/news/press-releases/2023/09/ftc-sues-amazon-illegally-maintaining-monopoly-power.
[3] U.S. Department of Justice, "Justice Department Sues Apple for Monopolizing Smartphone Markets," 03/21/2024, https://www.justice.gov/archives/opa/pr/justice-department-sues-apple-monopolizing-smartphone-markets.
[4] Federal Trade Commission, "Facebook, Inc., FTC v.," 09/12/2024, https://www.ftc.gov/legal-library/browse/cases-proceedings/191-0134-facebook-inc-ftc-v.
[5] Jan Wolfe, "Big Tech Braces for Wave of Antitrust Rulings in 2024," 01/01/2024, The Wall Street Journal, https://www.wsj.com/tech/big-tech-braces-for-wave-of-antitrust-rulings-in-2024-860f0149.

to stomp out competitors."[6] This ruling was focused on certain Google distribution agreements while at the same time acknowledging Google offers "…the industry's highest quality search engine, which has earned Google the trust of hundreds of millions of daily users."[7]

Yet, the Justice Department's proposed remedies following this ruling reflect an overly ambitious regulatory vision that appears to go far beyond the court's findings.[8] The proposals include potential structural separation requirements—forcing Google to divest its Chrome browser, and potentially also its Android operating system (products that were not directly the subject of the litigation). Additionally, the remedies would mandate technology and data sharing that not only draws parallels to telecommunications regulation from the 1990s, but also may enable competitors to clone Search.[9] Google also would need to terminate its default search engine agreements with device manufacturers, browser creators, and others, including its agreement with Apple, an arrangement that provided Apple $20 billion in 2022.[10]

The remedies proposed in the Google Search case offer a preview of the structural and regulatory outcomes the U.S. government is pursuing across a range of monopolization cases in the technology sector. Notably, the substantial leap from the narrow allegations to overly broad remedies—such as the potential divestiture of Chrome and Android or the effective replication of Search (e.g., Hovenkamp, 2024b)—suggests that similarly aggressive measures may be pursued in other cases, even when findings of liability are limited in scope. These remedies warrant careful examination, as they may establish new enforcement standards for the technology sector and shape the structure of the digital economy. A rigorous evaluation can help assess whether less restrictive alternatives might achieve the desired competitive outcomes and consumer welfare protections, while posing fewer risks to the efficiencies and innovation incentives that have fueled America's exceptional growth in the digital economy. In the global race for technological leadership—especially with China— missteps could carry significant costs.

The goal of this white paper is to move beyond theoretical debates and assess the real-world implications of regulatory interventions in the digital economy. We begin by examining the forces that shape digital competition and then evaluate the remedies proposed in the DOJ's case against Google as a representative example. In doing so, we assess their likely impact on

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[6] Jan Wolfe & Miles Kruppa, "Google Loses Antitrust Case Over Search-Engine Dominance," The Wall Street Journal, 08/05/2024, https://www.wsj.com/tech/google-loses-federal-antitrust-case-27810c43.

[7] United States, et al. v. Google, LLC, No. 20-cv-3010 (APM) (D.D.C. Aug. 5, 2024), Dkt. No. 1033 at 6.

[8] Of note, case law views overly broad remedies in tech markets with suspicion. See United States v. Microsoft Corp., 253 F.3d 34, 106 (D.C. Cir. 2001) "Mere existence of an exclusionary act does not itself justify full feasible relief against the monopolist to create maximum competition… Rather, structural relief, which is 'designed to eliminate the monopoly altogether ... require[s] a clearer indication of a significant causal connection between the conduct and creation or maintenance of the market power.' … Absent such causation, the antitrust defendant's unlawful behavior should be remedied by 'an injunction against continuation of that conduct.'") (internal citations omitted). More generally, see NCAA v. Alston, 594 U.S. 69, 106 (2021) (("[w]hen it comes to fashioning an antitrust remedy, … caution is key," as "markets are often more effective than the heavy hand of judicial power when it comes to enhancing consumer welfare.").

[9] See, for example, Jackson, Fiona, "Google's DoJ Antitrust Trial: CEO Says Sharing Search Data Would Be 'De Facto Divestiture'," https://www.techrepublic.com/article/news-google-doj-antitrust-trial-sundar-pichai/

[10] Thomas Lenard & Scott Wallsten, "Antitrust Officials Want to Sell Google for Parts," WSJ Opinion, 12/03/2024, https://www.wsj.com/opinion/google-is-being-sold-for-parts-antitrust-lawsuit-justice-department-e3fbb52c.

consumers, innovation, and market structure. Our analysis finds that many of the proposed remedies are untested in competitive markets, would impair products that are favored by consumers, and would lead to free riding and eliminate provisions of free products. We conclude that these remedies warrant significant reconsideration to better balance the goals of competition, innovation, and consumer welfare—and to preserve American leadership in the technology sector.

II. Economics of Digital Competition

Digital technologies have introduced new ways of delivering value and enabled businesses to compete more effectively, generating substantial economic benefits for consumers. Unlike traditional antitrust concerns—where dominant firms are thought to lose the incentive to innovate—the data in this report show that leading digital companies remain highly driven to innovate. Moreover, because many digital services are interconnected and operate within broader ecosystems, antitrust remedies could inadvertently harm consumers if they fail to account for these interdependencies.

In Section II.A, we discuss the prevalence of free digital services made possible by ad-supported business models. Section II.B explains how product integration is a key dimension of competition among digital platforms and digital ecosystems. Lastly, Section II.C details how leading digital service providers face competitive pressures to continually invest in innovation.

II.A. Free Digital Services

Digital companies frequently connect distinct user groups—such as consumers, advertisers, service providers, and developers—who benefit from each other's participation. These dynamics give rise to pricing strategies where one side (typically consumers) may receive services at zero price, while the costs are borne by another side (such as advertisers) (e.g., Seamans and Zhu, 2014). This "zero-price" phenomenon presents challenges to traditional competitive analyses, which commonly focus on price-based metrics in a single segment of the market (e.g., search providers) and entirely ignore any benefits to other segments (e.g., users or advertisers) (Calvano & Polo, 2020; Tirole, 2023).

Ad-supported business models have become ubiquitous, fueling the rapid growth of digital firms including Facebook, Google, TikTok, Snapchat, and Spotify. Research indicates that consumers generally enjoy substantial welfare gains from zero-priced digital services.[11] Contrary to the common assumption that advertisements negatively impact user experience, recent research highlights their informational value. For example, Sahni & Zhang (2023) found that reducing mainline search advertisements decreased user engagement, suggesting that ads can help users discover emerging or lesser-known websites that have not yet gained visibility in organic search results.

[11] Brynjolfsson, E., Collis, A., & Eggers, F. (2019). Using massive online choice experiments to measure changes in well-being. *Proceedings of the National Academy of Sciences*, *116*(15), 7250-7255.

Notably, even companies traditionally reliant on subscription fees have adopted ad-supported tiers to expand their user base and revenue streams. HBO Max launched its advertising-supported option in June 2021. Netflix introduced its ad-supported subscription in November 2022, followed shortly by Disney+ in December 2022. Amazon Prime Video—previously ad-free—began incorporating advertisements in January 2024. Companies like Peacock, Paramount+, and Hulu have long utilized hybrid models, effectively balancing subscription and ad-supported options to optimize audience engagement and revenue.[12]

The rise of zero-price digital services has shifted competitive dynamics from price toward non-price attributes such as quality, user experience, and the appeal of complementary offerings. In response, leading technology firms invest heavily in personalized recommendations, intuitive user interfaces, data-driven content curation, and the seamless integration of complementary services. These innovations, enabled by substantial investments in AI and user analytics, help create competitive advantages that are less vulnerable to price-based disruptions. Moreover, these firms have strong incentives to curate the content and participants on their platforms, often excluding lower-quality providers to protect their brands and maintain a high-quality user experience (e.g., Liu et al., 2024). Consequently, while exclusionary practices such as exclusive dealing or refusals to deal often raise clear antitrust concerns in traditional markets—due to their potential to reduce competition, lower quality, and inhibit innovation—their effects in the context of multisided digital platforms are far less straightforward.

The benefits of the ad-supported business model are significant. By lowering financial barriers, this model promotes digital inclusivity and democratizes access to high-quality digital services across a broad range of socioeconomic groups (Tirole, 2023). The gaming sector illustrates this trend clearly: the growing popularity of free-to-play games reflects this democratization. In a YouGov survey of nearly 20,000 gamers, 48% preferred free-to-play games, with 35% citing the high cost of premium games as a key factor.[13]

Beyond accessibility, the ad-supported model also enhances market efficiency. Targeted advertising, as shown in studies by Bergemann & Bonatti (2024) and Sun et al. (2024), improves the matching of consumers with relevant products, reducing search costs and promoting more efficient economic allocation. In particular, Sun et al. (2024) demonstrate through a field experiment on Alibaba that targeted ads can empower small businesses by enabling cost-effective marketing, thereby strengthening competition and supporting entrepreneurship.

II.B. Ongoing Product Improvements and Integration

Digital companies frequently create ecosystems encompassing first-party offerings and third-party complements. The inherent value of these digital companies largely arises from intra-firm service complementarities, where the total value to consumers (and the firm) is greater when two

[12] Variety, "How the Ad-Supported Streaming Era Is Transforming the Ways Brands Reach Audiences," 03/12/2024, https://variety.com/2024/biz/news/how-ad-supported-streaming-era-transforming-ways-brands-reach-audiences-1235932272/.

[13] Alexander Lee, "Why gamers are flocking from premium titles to free-to-play, ad-supported games in this unstable economy," DIGIDAY, 01/12/2023, https://digiday.com/marketing/why-gamers-are-flocking-from-premium-titles-to-free-to-play-ad-supported-games-in-this-unstable-economy/.

or more products are integrated and jointly offered by the same firm. Removing products from their ecosystems often significantly diminishes their utility and market appeal, weakening network effects, data synergies, and seamless user experiences.

There are numerous examples of intra-firm complementary services. For example, Ping An, China's largest insurer, successfully integrated insurance services with comprehensive healthcare solutions via its "Good Doctor" platform. The platform provides 24/7 access to approximately 10,000 doctors, pharmacies, and hospitals, serving over 62 million customers monthly by 2019. Nearly 37% of Ping An customers used more than one of its services that year. The interconnectedness of insurance and healthcare services created a synergy that would be impossible if these offerings existed in isolation.[14]

Similarly, Uber's integration with public transportation systems, such as in Denver, enables users to plan and book multi-modal journeys directly through the Uber app. This type of cross-modal integration helps solve consumer pain points that neither party could fully address in isolation.[15]

In Latin America, Mercado Libre tackled low trust in e-commerce by launching its own in-house payment system, Mercado Pago. Originally designed to facilitate transactions in the marketplace, it has since grown into a standalone fintech powerhouse. As of 2023, it accounts for 41% of the company's total revenue. By addressing an ecosystem constraint—payments—it unlocked growth across its core e-commerce business.[16]

Consumers benefit from digital services being part of a broader ecosystem, which encourages companies to integrate offerings in order to compete for user engagement. This integration supports the expansion of free-to-use digital services, as multiple services within the same ecosystem can be cross-subsidized by another "side" of the market—such as advertising—or by related subscription-based offerings. However, these interdependencies complicate efforts to analyze the economics of any single service in isolation, as its viability and value are often tightly linked to other components within the ecosystem.

These economic realities are especially important when evaluating antitrust remedies such as structural separation, restrictions on product integration, or bans on self-preferencing. For instance, services that can be offered for free to consumers as part of an ecosystem supported by advertising may struggle to sustain themselves independently outside of that ecosystem. Without cross-subsidization, such services may be unable to match the perceived quality of competitors, undermining their viability. Many digital services rely on integration with a broader ecosystem to cover their operating costs, making structural remedies less about fostering competition and more about reshuffling services—ultimately resulting in regulatory choices that resemble central planning and risk arbitrarily picking winners and losers.

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[14] Ina M. Sebastian, Peter Weill, and Stephanie L. Woerner, "Driving Growth in Digital Ecosystems," MIT Sloan Management Review, 08/18/2020, https://sloanreview.mit.edu/article/driving-growth-in-digital-ecosystems/.
[15] Disha Gupta, "What Is a Digital Ecosystem? Benefits, Examples, Types," whatfix, 12/23/2024, https://whatfix.com/blog/what-is-a-digital-ecosystem-and-how-can-it-help-your-business/.
[16] Peter Westberg, "Mercado Libre: The Digital Backbone of Latin America," Quartr, 01/03/2025, https://quartr.com/insights/company-research/mercado-libre-the-digital-backbone-of-latin-america.

II.C. Competition for User Engagement

All digital services ultimately compete for the same scarce resource: user attention. Regardless of their services or monetization models—whether subscription-based, ad-supported, or hybrid—what drives value is user engagement, which directly translates into revenue, especially through advertising.

Because attention is finite, this competition extends beyond direct rivals to include companies in adjacent or even unrelated sectors. The U.S. video streaming market illustrates this dynamic. Netflix (subscription), YouTube (ad-supported), and Hulu (hybrid) once followed clearly distinct models. But as new entrants like Disney+, Peacock, and Max emerged, companies adapted by offering more flexible tiers. YouTube introduced Premium to cater to users who prefer no ads, while Netflix, Disney+, and Amazon Prime Video all launched ad-supported options to attract more price-sensitive users.[17] These shifts reflect a broader trend: companies increasingly let users pay with either money or attention to retain engagement.

This battle for attention is not limited to streaming. A 2021 outage at China's Bilibili—a major video-sharing platform—led to a surge in traffic to ACFun (another anime- and youth-focused video site), Douban (a social platform for rating and discussing books, movies, and music), and Jinjiang (a leading online fiction platform, especially popular among female readers).[18] [19] The result was a chain reaction of outages, revealing how users quickly shift across different digital services—regardless of category—when their preferred option becomes unavailable.

TikTok underscores how platforms from one domain can disrupt others by commanding attention. Originally focused on short-form video, TikTok has drawn viewers and creators away from YouTube, diverted social media engagement from Facebook and Instagram, and even influenced product discovery in ways that challenge Amazon. It now competes across entertainment, social networking, and e-commerce—demonstrating how attention can redefine market boundaries.

This trend continues with innovations like ChatGPT, which challenges traditional search engines like Google by offering a conversational, intuitive way to access information. As digital services blur boundaries and evolve, the fight for user attention will only intensify—making all companies, regardless of sector, potential competitors.

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[17] Tom Knight, "Netflix, Sony, and The Streaming Wars.", 09/13/2021, https://www.nottingham.ac.uk/clas/documents/final-year-prizes/2021/netflix-sony-and-the-streaming-wars-by-thomas-knight.pdf

[18] Tracy Qu, "Anime streaming site Bilibili goes down briefly, driving China's Gen Z crazy on other social media", SCMP, 07/14/2021, https://www.scmp.com/tech/big-tech/article/3141043/anime-streaming-site-bilibili-goes-down-briefly-driving-chinas-gen-z

[19] Sina Technology, "Bilibili, AcFun, and Douban all went down? 'Bilibili Outage' trending on hot search. Netizens: Just a second ago I was about to give the triple-like," Sina, 07/13/2021, https://finance.sina.com.cn/tech/2021-07-13/doc-ikqcfnca6677534.shtml

II.D. Competitive Pressures to Innovate

II.D.1. Threats to core service

Rapid innovation is a hallmark of digital competition; it takes place because incumbent digital firms face competitive threats to their core business which requires them to continually invest in new technologies, novel business models, and evolving customer experiences.

Low switching costs and the ease of switching between digital firms intensify this pressure. Consumers can effortlessly toggle between social networks, search engines, or e-commerce sites across devices (Crandall & Hazlett, 2023). Even with network effects, incumbents are vulnerable; research shows that these effects alone are not enough to protect otherwise dominant firms (e.g., Zhu & Iansiti, 2019).

The evolution of internet traffic illustrates this well. Instagram, then TikTok, and more recently ChatGPT, each triggered major shifts in online engagement.

Instagram transformed casual browsing into a visual shopping journey, blurring social interaction and commerce. What began as a photo-sharing app evolved into a discovery platform where users found and bought products through curated images.[20] This shift fueled the rise of Instagram-native brands like Huda Beauty, which built global audiences through visual storytelling. Instagram's algorithmic feed, shoppable tags, and "buy now" buttons turned passive scrolling into an immersive commercial experience. Today, 80% of users follow businesses, and 76% of teens (ages 13–17) use Instagram, compared to 66% on Facebook—showing Instagram's dominance among younger users.[21] [22]

TikTok took this further, introducing an algorithm-driven, short-form video format that changed how users discover content. Unlike traditional platforms where creators build audiences over time, TikTok's algorithm lets new creators reach wide audiences instantly. This model drove engagement to new levels—U.S. users aged 18–24 now spend an hour daily on TikTok, twice as long as on Instagram and five times more than on Facebook. TikTok's influence has forced rivals to adapt, spawning features like Instagram Reels, YouTube Shorts, and Spotify's video clips.[23] Now, with TikTok Shop (launched in the U.S. in 2023), the platform is expanding into social

[20] Keith Kakadia, "How Has Instagram Changed the Social Media Game Over Time?", Sociallyin, 07/14/2024, https://sociallyin.com/blog/how-instagram-changed-the-social-media-game/#:~:text=Perhaps%20most%20significantly%2C%20Instagram%20has%20impacted%20how,curate%20representations%20of%20themselves%20for%20public%20consumption.

[21] Brandastic, "How Instagram is changing Social Media", 10/05/2018, https://brandastic.com/blog/how-instagram-is-changing-social-media/

[22] Emily Cashen, "The Instagram effect: how social media is fashioning modern retail", World Finance, https://www.worldfinance.com/markets/the-instagram-effect-how-social-media-is-fashioning-modern-retail

[23] The Economist, "How TikTok broke social media", 03/21/2023, https://www.economist.com/business/2023/03/21/how-tiktok-broke-social-media

commerce, aiming to control the entire customer journey from discovery to purchase within a single app.[24]

Similarly, the rise of ChatGPT is reshaping online behavior and disrupting search. Unlike traditional search engines, ChatGPT allows users to ask natural language questions and get conversational answers. By late 2024, ChatGPT was referring traffic to over 30,000 unique domains, boosting visits to education, tech, and software sites. While traditional search queries average 4.2 words, ChatGPT prompts average 23—and 70% fall outside typical search categories.[25] A study of SearchGPT, a product combining AI with search, showed that e-commerce sites receive 12.65% of outbound traffic, with Amazon getting 9.13%. As consumers turn to AI chatbots for product discovery, marketing is shifting from click optimization to "winning the mention," requiring brands to focus on reputation, storytelling, and broader online presence.[26]

These disruptions are not unique to the U.S. Globally, the assumption that incumbents are protected by structural advantages is also breaking down.

Alibaba's fall from dominance in China highlights this reality. Once poised to become the country's first trillion-dollar company, Alibaba lost its top spot in late 2023 to PDD Holdings (Pinduoduo's parent company).[27] While regulation played a role, the deeper cause was Pinduoduo's innovative model: it combined social commerce, gamification, and group buying, targeting rural and price-sensitive consumers.[28] Pinduoduo used WeChat's infrastructure to turn shopping into a social event, letting users "team up" for discounts.[29] In contrast, Alibaba focused on premium markets. The result: a dramatic power shift, with Alibaba and JD.com forced to respond with price matching, subsidies, and platform redesigns.[30]

A similar disruption happened in Hong Kong's food delivery market. Meituan's KeeTa, launched just one year earlier, broke the duopoly of Foodpanda and Deliveroo. By March 2024,

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[24] Madeleine Schulz, "TikTok Shop's make-or-break year", VOGUE Business, 01/12/2024, https://www.voguebusiness.com/story/technology/tiktok-shops-make-or-break-year

[25] Danny Goodwin, "ChatGPT growing as a traffic referrer, reshaping search behavior: Report", Search Engine Land, 02/04/2025, https://searchengineland.com/chatgpt-growing-traffic-referrer-changing-search-behavior-451525

[26] Stuart Dyos, "Digital marketing used to be about clicks, but the rise of ChatGPT means it's 'now all about winning the mentions'", Fortune, 05/10/2025, https://fortune.com/2025/05/10/search-engine-optimization-seo-marketing-llm-chatgpt-apple-google-online-shopping-brand-visibility/

[27] Charlotte Yang & Jane Zhang, "Alibaba's Value Dips Below Upstart PDD's in Landmark for China," Bloomberg, 11/30/2023, https://www.bloomberg.com/news/articles/2023-11-30/alibaba-s-value-dips-below-upstart-pdd-s-in-landmark-for-china

[28] Rebecca Sentence, "The rise of Pinduoduo: How a group buying app grew to rival Alibaba," Econsultancy, 03/31/2024, https://econsultancy.com/pinduoduo-growth-story-china-ecommerce/

[29] Daisuke Wakabayashi & Claire Fu, "The Chinese Site That Rewired Online Shopping," The New York Times, 04/22/2024, https://www.nytimes.com/2024/04/22/business/china-pinduoduo-temu.html

[30] Kavout, "JD.com, Alibaba, and Pinduoduo: Competing for Dominance in China's Evolving E-commerce Arena," 10/08/2024, https://www.kavout.com/market-lens/jd-com-alibaba-and-pinduoduo-competing-for-dominance-in-chinas-evolving-e-commerce-arena

KeeTa had captured 44% of all food delivery orders.[31] [32] Its success stemmed from a data-driven, phased rollout—starting in dense areas and expanding outward—combined with aggressive pricing (about 40% lower than competitors), subsidies, and service innovations like self-pickup and on-time guarantees.[33] [34] KeeTa's strategy, echoing Pinduoduo's in China, shows how tech platforms can quickly gain ground by tailoring business models and operational tactics to local market conditions.

II.D.2. Limits to diversification for incumbents

While diversifying services can enhance consumer value and ultimately the competitiveness of a firm, incumbents often face limits in doing so.

In e-commerce, Mercado Libre has successfully outperformed Amazon and Walmart in Latin America by building a comprehensive ecosystem tailored to the unique needs of the region. While Amazon approached Latin America with its standardized global playbook, Mercado Libre recognized early on that success required solving fundamental regional problems: underdeveloped logistics infrastructure, low banking penetration, and limited access to credit.[35] The company built proprietary solutions including Mercado Pago (payments), Mercado Envios (logistics), and Mercado Credito (lending), creating an integrated ecosystem that addressed these market-specific barriers.[36] This strategy has yielded impressive results: Mercado Libre has outperformed Amazon stock by 7% in 2024, is the market leader in sales across Brazil, Argentina, Mexico, and other Latin American countries, and serves over 218 million customers across 18 nations.[37] [38] Perhaps most telling is Amazon's decade-long struggle in Mexico, where

[31] Sarah Zheng, "Meituan Becomes No. 2 Hong Kong Food Service Months After Debut," Bloomberg, 01/08/2024, https://www.bloomberg.com/news/articles/2024-01-08/meituan-becomes-no-2-hong-kong-food-service-months-after-debut

[32] Charlie Sheng, "Hong Kong Food Delivery Market: A New Triopoly," measurable.ai, 05/06/2024, https://blog.measurable.ai/2024/05/06/hong-kong-food-delivery-market-share-a-new-triopoly-foodpanda-deliveroo-keeta/

[33] Sun Yanran & Ding Yi, "In Depth: Meituan Hopes Middle East Expansion Will Deliver Growth," Caixin Global, 02/14/2025, https://www.caixinglobal.com/2025-02-14/in-depth-meituan-hopes-middle-east-expansion-will-deliver-growth-102288264.html

[34] Sheilia Chang, "Meituan's KeeTa joins Hong Kong's food delivery race — but analysts are skeptical," CNBC, 07/03/2023, https://www.cnbc.com/2023/07/04/meituan-keeta-in-hong-kongs-food-delivery-race-analysts-are-skeptical.html

[35] Cale Guthrie Weissman, "How MercadoLibre's longterm investments are helping it beat Amazon," ModernRetail, 05/10/2021, https://www.modernretail.co/retailers/how-mercado-libres-longterm-investments-are-helping-it-beat-amazon/#:~:text=The%20focus%20in%20the%20beginning,with%20little%20or%20no%20credit.

[36] Peter Westberg, "Mercado Libre: The Digital Backbone of Latin America," Quartr, 01/03/2025, https://quartr.com/insights/company-research/mercado-libre-the-digital-backbone-of-latin-america

[37] Kate Rooney, "Meet the Latin American e-commerce platform that's outperforming Amazon this year," CNBC, 09/24/2024, https://www.cnbc.com/2024/09/24/this-latin-american-e-commerce-platform-is-beating-amazon-in-2024-.html

[38] Graciela Martin, "Inside Latin America's $90 Billion E-tailer Mercado Libre," BoF, 08/20/2024, https://www.businessoffashion.com/articles/global-markets/inside-latin-americas-90-billion-e-tailer-mercado-libre/

despite significant investment, it has only managed to reach the number three position in the market.[39]

As another example, both Mercado Libre and Amazon are facing challenges from emerging e-commerce platforms with a Chinese background like Shein, Temu, and TikTok Shop. These Chinese platforms have captured significant market share in overseas markets by connecting Chinese factories directly to global consumers, effectively removing traditional supply chain intermediaries. This enables these Chinese companies to offer significantly lower prices while maintaining viable margins, creating a distinct competitive advantage that established local retailers struggle to counter. And their innovations extend beyond supply chain optimization to creating highly engaging mobile-first shopping experiences that gamify the purchasing process with spinning wheels, flash deals, and constant incentives—making shopping not just transactional but entertaining. Recent holiday sales data confirms this trend, with TikTok Shop achieving an extraordinary 222.9% year-over-year growth during the 2024 holiday season. Temu grew 18.9% and Shein 17.4% year-over-year during the same period, significantly outpacing traditional retailers, even as established e-commerce players like Amazon managed just 5.8% growth during the holidays.[40]

II.D.3. LLMs and the future of search

Large language models (LLMs), such as ChatGPT, present new competitive challenges to Google's user engagement via its search engine. By enabling synthesized, conversational responses to user queries, LLMs fundamentally alter traditional information retrieval, prompting speculation about Google's potential vulnerability to disruption akin to Kodak's historical decline.[41] It is important to note how quickly LLM-based search developed with ChatGPT shifting from app to platform in the span of a few months and with the quickest ever milestone achievement of reaching 100 million active users in just two months.

Incumbents, as a result, must innovate to maintain their relevance. Yet, innovation is inherently risky and uncertain. Even the most successful tech firms experience high failure rates. Google, despite many successful products, has shut down hundreds of ventures, including Google+ (a social networking platform), Google Buzz (a microblogging and messaging tool similar to Twitter), Google Glass (augmented reality glasses controlled by voice and gestures), Project Loon (an initiative providing internet access through high-altitude balloons), and Google Wave (a collaborative online workspace).[42] These examples reflect the high experimentation and failure rates typical of innovation-driven industries.

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[39] Cale Guthrie Weissman, "How MercadoLibre's longterm investments are helping it beat Amazon," ModernRetail, 05/10/2021, https://www.modernretail.co/retailers/how-mercado-libres-longterm-investments-are-helping-it-beat-amazon/#:~:text=The%20focus%20in%20the%20beginning,with%20little%20or%20no%20credit.

[40] Beth Ann Kaminkow, "How TikTok, Temu and Shein Will Win the Holidays," Forbes, 11/11/2024, https://www.forbes.com/sites/bethannkaminkow/2024/11/11/how-tiktok-temu-and-shein-will-win-the-holidays/

[41] https://www.morningstar.com/news/marketwatch/2025033137/is-google-the-next-kodak-alphabets-stock-drop-prompts-tough-questions.

[42] https://www.failory.com/blog/google-failed-products.

On the flip side, Google's "high variance" innovation strategy and experimentations have also produced some core AI technologies including, for example, Google Brain's introduction and public release in 2017 of the Transformer Architecture that powers modern AI models such as GPT-4 and most other chatbots.[43] Subsequently, Google researchers operationalized transformers at internet scale with BERT (2018) and LaMDA/Gemini (2021-24), each representing a leap forward in contextual understanding and text generation. Ultimately, the contemporary digital economy is characterized by fluid market boundaries, rapid experimentation, and ongoing reinvention.

Table 1: R&D Spend by Leading Technology Companies

Company	R&D Spend, trailing twelve months period ending on March 31, 2024	R&D Spend, % of Gross Profit
Amazon	$85.6B	30%
Alphabet (Google)	$45.9B	25%
Meta (Facebook)	$39.1B	34%
Apple	$30.4B	17%
Microsoft	$28.2B	17%
Nvidia	$8.7B	16%
Broadcom	$6.4B	27%
ASML	$4.4B	30%
Tesla	$4.4B	26%

Source: "Big Tech's big R&D bill," July 2024, https://www.trendlinehq.com/p/big-techs-big-r-and-d-bill

Table 1 shows the R&D spending of leading technology companies. The leading technology companies are among the top in terms of spending on R&D. In fact, the top five R&D spenders in technology are the top five overall, even outspending all major pharmaceutical companies.[44] R&D spending by leading technology firms has grown at an impressive 22% annualized rate from 2015 to 2023, though growth slowed to just 7.2% in 2024 during what was termed the "Year of efficiency" for these companies.[45]

In 2025, these leading technology companies plan for capital expenditures of over $320 billion on artificial intelligence, representing a significant increase from their combined $246 billion capital expenditure in 2024, which was already up 63% from 2023.[46]

These data show that leading digital firms are heavily investing in innovation, indicating robust innovation incentives. Hence, contrary to traditional antitrust concerns about diminished

[43] Google Research, "Attention Is All You Need," https://research.google/pubs/attention-is-all-you-need/.

[44] Buntz, B., "Top 15 R&D Spenders of 2024," R&D World, https://www.rdworldonline.com/top-15-rd-spenders-of-2024/.

[45] TrendlineHQ, "Big Tech's big R&D bill," 06/04/2024, https://www.trendlinehq.com/p/big-techs-big-r-and-d-bill

[46] PYMNTS, "Tech Giants Plan Massive $320 Billion AI Spend for 2025," 02/09/2025, https://www.pymnts.com/artificial-intelligence-2/2025/tech-giants-plan-massive-320-billion-ai-spend-for-2025

incentives for innovation among potentially dominant companies, the data indicate that these firms understand competitive advantage in the digital economy is not something to achieve and then just hold—it must be continuously earned through innovation.

In summary, incumbents *can* be toppled, diversification *does not* necessarily inoculate them, and therefore sustained innovation *is* a rational—and socially beneficial—response. We summarize the aforementioned crucial dimensions of competition and specific applications in digital markets in Table 2.

Table 2: Crucial Elements of Competition for Leading Incumbent Digital Services Firms

Dimension of Competition	Examples
Threat to Core Service	Shift of internet traffic to TikTok and then ChatGPT
	Alibaba overtaken by Pinduoduo
	Rise of KeeTa to challenge Foodpanda and Deliveroo
Limits to Diversification	Mercado Libre's outperformance of Walmart and Amazon in Latin America
	Emergence of Shein, Temu, and TikTok Shop to challenge Amazon and Mercado Libre
Imperative for Innovation	Emerging competition in AI

III. Regulatory Remedies: The Case of Google

We now turn to common remedies considered by regulators for leading technology firms, using the DOJ's proposed actions against Google as a significant example to facilitate the discussion. In what follows, we explain why many of the proposed actions—which range from structural divestitures and distribution restrictions to mandated data sharing and investment prohibitions—risk impairing successful products and harming consumers—effectively undermining the very competition and innovation they seek to promote. These findings are relevant across the technology industry. For example, while the DOJ is seeking the divestiture of Chrome from Google, the FTC is pursuing similar structural actions by attempting to unwind Meta's acquisitions of Instagram and WhatsApp and potentially to separate Amazon's marketplace from its fulfillment function.

In what follows, we discuss risks to competition and innovation resulting from several proposed actions, summarized in Table 3.

Table 3: DOJ Proposed Remedies and Analysis in Section III

DOJ Remedy	Section Addressed	Risks Identified
Divestiture	Section III.A	Rare use in practice
		Ineffectiveness in restoring competition
		Creation of unintended harm
		Android and Chrome struggling as independent entities
		Reduced innovation when Google cannot utilize Android and Chrome to compete on distribution
Distribution Restrictions	Section III.B	Preventing user access to better products and eventually higher consumer prices
		Lost revenue sources for channels and ultimately lost benefits for consumers
		Lost pro-competitive benefits from self-preferencing
		Lost benefits for consumers who depend on product quality
Mandatory Data and Technology Sharing with Rivals	Section III.C	Creation of adverse incentives
		Inferiority to other alternatives, such as voluntary data and API sharing

III.A. Forced Divestiture of Core Products is a Rare, Experimental Solution That Can Harm Consumers

The DOJ's proposed remedies include structural separation remedies centered on Google's browser and mobile operating system assets (products that were not the subject of the litigation). According to the proposal, Google must divest Chrome, its market-leading web browser, the idea being that this divestiture would permanently eliminate Google's control over a critical search access point and help rival search engines to compete for browser-based distribution using Google's own browser. The divestiture requirement comes with a five-year prohibition preventing Google from reentering the browser market, with the intent of ensuring a meaningful opportunity for competition to develop.

Regarding Android, the DOJ proposal presents two alternative approaches. The first option calls for complete divestiture of Android, which would prevent Google from using its own mobile operating system to limit the reach of rival search providers. DOJ's second option focuses on behavioral remedies. This alternative would impose restrictions on Google's ability to utilize its own Android to advantage its own search and advertising businesses while maintaining Google's ownership of the platform. If the behavioral remedies prove insufficient in preventing Google from improperly using its control of the Android ecosystem, or if Google attempts to circumvent the restrictions, the court could then mandate Android's divestiture.

These proposals to separate Android and Chrome from Google's ecosystem overlook the deeply interconnected nature of both products' technologies. The value of Android and Chrome manifests largely from their integration within Google's broader ecosystem, where data, services, and functionalities operate seamlessly together. Forcing them to function as standalone entities would likely undermine their effectiveness, diminish user experience, and erode their competitive viability in markets where integration is a key source of differentiation.

III.A.1. Structural reliefs have been rare in practice

The DOJ's current proposal to break up Google marks a significant departure from precedent concerning structural remedies.

Structural remedies in monopolization cases have been exceptionally rare throughout antitrust history. A comprehensive review of monopolization cases between 1890 and 1996 by Crandall (2001) found that, of 423 cases in which the government prevailed or reached consent decrees, only 95 resulted in structural remedies, nearly all involving merger cases. Only four cases involved single-firm monopolization without mergers or coordinated pricing behavior. Of these, Crandall identified two as having "landmark status:" *United Shoe Machinery* (1947) and *AT&T* (1974). The other two cases—*IBM* (1952), which involved only a minor divestiture, and *Kansas City Star* (1953), which required a relatively small company to sell its TV and radio stations for $7.6 million (approximately $80 million today)—were considered much less significant.

The few landmark cases where structural conduct remedies were implemented across all types of antitrust cases (not just the aforementioned four single-firm monopolization cases) stand out precisely because of their rarity. These include the earliest notable 1911 *Standard Oil* case, which divided the company into 34 separate entities (Hovenkamp, 2020), the 1948 *Paramount Pictures* decision, which forced major film studios to divest their theater holdings (De Vany & McMillan, 2004), the 1947 United Shoe Machinery case, which forced the company to divest one-third of its shoe-manufacturing operations (Crandall, 2011), and the 1982 AT&T breakup, considered the largest industry restructuring since *Standard Oil* (Botein & Noam, 1985).

This pattern of infrequent structural intervention has continued in recent decades, with the DOJ typically investigating fewer than ten potential monopolization violations annually (Crandall & Winston, 2003). That number has fallen even further in the past twenty years. Hence, before the DOJ's recent attempts to break up technology platforms, the remedy has not been granted in over four decades and never in the highly competitive and dynamic technology markets observed in this day and age.

Courts have demonstrated consistent reluctance to impose structural remedies, particularly in cases involving single, integrated companies.[47] As Judge Wyzanski emphasized, judges approach such dramatic interventions with "caution and humility" given their limited economic expertise (Comanor & Scherer, 1995). This judicial hesitation stems from several factors: the practical difficulties of dissolving integrated entities, the speculative nature of benefits, and potential harm

[47] A. Douglas Melamed, *Afterword: The Purposes of Antitrust Remedies*, 76 Antitrust L.J. 359, 368 (2009) ("[R]emedies are hard to get right and, when suboptimal, can undermine antitrust objectives by interfering with markets and prohibiting or deterring procompetitive conduct.").

to corporate, shareholder, and labor interests. The courts' preference for less drastic remedies is further evidenced by the fact that no court has ever required divestiture in a private monopolization case. A concern about divestiture is also evident in the U.S. Court of Appeals for the D.C. Circuit's decision in the Microsoft case, which states: "One apparent reason why courts have not ordered the dissolution of unitary companies is logistical difficulty. . . . [A] 'corporation, designed to operate effectively as a single entity, cannot readily be dismembered of parts of its various operations without a marked loss of efficiency.'"[48]

The rarity of structural remedies reflects not only judicial but also practical and theoretical challenges. Courts are understandably reluctant to order relief that may not be sustainable in the marketplace (Crandall, 2001).

In 1969, the U.S. Department of Justice filed an antitrust lawsuit against IBM (distinct from the aforementioned 1952 case), alleging it had monopolized the mainframe computer market through practices like bundling hardware, software, and services, predatory pricing, and restrictive sales policies. The government initially sought to break up IBM, which then held about 70% of the global mainframe market and dominated computing for large corporations and government agencies. However, after more than a decade of litigation, the DOJ dropped the case in 1982 without IBM admitting wrongdoing. A key reason was the rapid evolution of the computing industry during the lawsuit: personal computers (PCs) emerged as a disruptive force, shifting the industry toward more distributed computing and introducing new competitors like Apple, Microsoft, and Intel. Additionally, companies such as Digital Equipment Corporation (DEC), Hewlett-Packard, and Sun Microsystems gained traction with minicomputers and microcomputers, significantly altering the competitive landscape and undermining the rationale for structural relief (Shelanski & Sidak, 2001).

A similar pattern appeared in the 2001 *United States v. Microsoft Corp.* case.[49] Although structural remedies were initially considered, the U.S. Court of Appeals for the D.C. Circuit ultimately rejected them. The court noted that in fast-changing tech markets, dominant positions may be short-lived due to continual innovation. It cautioned against sweeping equitable relief, such as divestiture, in such dynamic environments (Houck, 2001). The corresponding consent decree with DOJ illustrates how a narrowly tailored, conduct-based remedy can restore competitive conditions without the disruption of a corporate breakup. Rather than fracturing Windows from Office, the final order imposed a series of behavioral safeguards.[50] Within a few years, Google leveraged open browser access to distribute its search toolbar and Mozilla launched Firefox on the back of the newly available Application Programming Interfaces (APIs). In addition, entrepreneurs such as Facebook (2004) and YouTube (2005) scaled rapidly atop a more interoperable web ecosystem. The episode demonstrates that carefully crafted

[48] *United States v. Microsoft Corp.,* 253 F.3d 34, 105-06 (D.C. Cir. 2001).

[49] https://law.justia.com/cases/federal/appellate-courts/cadc/00-5212/00-5212a-2011-03-24.html?utm_source=chatgpt.com

[50] There were numerous safeguards. Microsoft was required to disclose APIs to third-party developers on nondiscriminatory terms, refrain from retaliating against PC makers that pre-installed rival middleware (such as browsers or media players), end exclusive-dealing contracts that foreclosed distribution channels, and establish an independent compliance committee with five-year oversight.

vertical-conduct remedies can stimulate downstream innovation and facilitate entry—outcomes that an immediate structural split was not necessary to achieve.

Notably, Google's search business is now facing disruption similar to what IBM experienced in the 1970s. The emergence of OpenAI's ChatGPT and other LLMs is fundamentally altering the competitive dynamics of search. Even before integrating web search capabilities, ChatGPT challenged traditional search engines by offering a more conversational and personalized method of information retrieval.[51] Unlike search engines that deliver link lists requiring user synthesis, chat-based systems provide contextual, synthesized responses in a continuous dialogue. This shift from "search" to "chat" is not just technical—it represents a cognitive transformation in how users interact with information, emphasizing exploration and synthesis over keyword precision (Capra & Arguello, 2023). With personalized assistance, memory, and contextual awareness, platforms like ChatGPT are redefining the value proposition of search, posing a credible threat to Google's position in search.

In just the past year, Perplexity has emerged as another substantial LLM-based challenger, with sharp growth in its user base and query volume in 2024. Perplexity is now routinely cited in industry metrics as the fastest-scaling "answer engine"[52] and a substitute for Google Search,[53] underscoring the breadth of competitors challenging Google.

In this context, the rapid pace of innovation and emergent competition undermines the need for structural remedies to restore or maintain competitive conditions. Moreover, as our analysis above shows, such remedies historically are exceptionally rare in general. Consequently, the proposed structural remedies would indeed be highly inconsistent with precedent, if not unprecedented, and experimental.

III.A.2. Many structural reliefs have proven ineffective in restoring competition

Empirical research shows that court ordered structural remedies often fall short in providing competitive benefits on their own and instead, broader market, technological, or policy shifts are often the vehicles toward restoration of competition.

This is evident in the two aforementioned landmark cases involving single-firm monopolization with a structural remedy. In the *United Shoe Machinery* case, a structural remedy was ultimately imposed by the Supreme Court in 1969—more than two decades after the antitrust complaint was first filed—despite a 1964 lower court finding that earlier behavioral remedies had restored competitive conditions. This remedy required the company to divest one-third of its remaining shoe-manufacturing operations just as the U.S. shoe industry was entering a period of sharp decline (Crandall, 2001).

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[51] Melissa Heikkilä & Mat Honan, "OpenAI brings a new web search tool to ChatGPT," MIT Technology Review, 10/31/2024, https://www.technologyreview.com/2024/10/31/1106472/chatgpt-now-lets-you-search-the-internet/

[52] Sullivan, Mark, "The Rise of Perplexity AI, The Buzzy New Web Search Engine," Fast Company, 5/14/2024, How Perplexity's AI search engine is taking on Google and OpenAI - Fast Company.

[53] Roose, Kevin, "Can This A.I.-Powered Search Engine Replace Google? It Has for Me." 4/1/2024, https://www.nytimes.com/2024/02/01/technology/perplexity-search-ai-google.html

In 1984, AT&T was divested into seven regional "Baby Bells" to promote competition in the telecommunications market. While the breakup initially spurred competition and innovation, over the following decades, market forces led many of the separated entities to merge back together. By the 2000s, several Baby Bells—including BellSouth, Southwestern Bell (SBC), and others—reconsolidated into a newly reformed AT&T. This reversal underscores the challenge of enforcing lasting structural separation in rapidly evolving markets, where economic incentives and technological convergence often drive re-integration.

Considering other major structural remedies, the 1911 breakup of Standard Oil into 34 companies had little impact on oil prices (Crandall & Winston, 2003). Many spin-offs, including Exxon, Mobil, Chevron, and Amoco, flourished independently, and the founder of Standard Oil, John D. Rockefeller, who received proportional shares in each, became the primary beneficiary (Burns, 1977; Reksulak et al., 2004). Similarly, the 1911 breakup of American Tobacco into three firms resulted in a stable oligopoly, with profit levels and limited price competition persisting for decades (Crandall, 2001).

The 1948 *Paramount* decision, which forced major studios to divest their theaters, also failed to reduce concentration. By 1978, the seven original defendants still controlled nearly 90% of successful films (Gil, 2008). In other sectors, divorcement policies have had counterproductive effects. In gasoline retailing and beer markets, forced separations led to higher prices, lower service levels, and operational inefficiencies (Lafontaine & Slade, 2007). Studies found that requiring oil companies to divest gas stations raised costs without improving competition (Barron & Umbeck, 1984; Vita, 2000; Blass & Carlton, 2001), and similar policies in the U.K. beer market led to double marginalization and reduced efficiency (Slade, 1998).

Technological and regulatory changes—not structural remedies—typically drive competitive outcomes. The breakup of AT&T, for example, followed earlier FCC rulings such as the 1968 Carterfone decision, which allowed non-Western Electric phones on AT&T's network, and MCI's market entry, which had already introduced competition. Canada achieved similar telecom liberalization without divestiture, and the U.S. telecom market later re-consolidated through mergers, suggesting divestiture may have been unnecessary (Weber, 2008).

Other examples reinforce this pattern. In the 1937 Alcoa case, post-WWII competition emerged due to government policy, not court-ordered remedies (Crandall, 2001). Standard Oil's influence was already declining before its breakup due to new oil discoveries outside its control (Crandall, 2019). In film, the sharp declines in production and theater attendance after the *Paramount* decrees largely were driven by the advent of television, not antitrust action (Conant, 1981).

Notably, the recent cases toward leading technology companies have been reversed (i.e., AT&T) or as noted in the prior subsection, not been granted due to a rapidly evolving technological and economic landscape (i.e., IBM and Microsoft).

We summarize the papers, separations, and findings in Table 4.

Table 4: Empirical Academic Papers Studying Structural Separation Dissolution and Decrees as an Antitrust Remedy

Paper / Source	Separation Studied	Findings
Burns, M. R. (1977). The competitive effects of trust-busting: a portfolio analysis. *Journal of Political Economy*, *85*(4), 717-739	Standard Oil	Rockefeller tripled his wealth within two years.
Gil, R. (2010). An empirical investigation of the Paramount antitrust case. *Applied Economics*, *42*(2), 171-183	Paramount Studios	Ticket prices increased and admissions decreased.
Barron, J. M., & Umbeck, J. R. (1984) The Effects of Different Contractual Arrangements: The Case of Retail Gasoline Markets. *Journal of Law and Economics, 27(2).*, 313-328	Gasoline Firms	Gasoline prices increased and operating hours were reduced.
Vita, M.G. (2000). Regulatory restrictions on vertical integration and control: The competitive impact of gasoline divorcement policies *Journal of Regulatory Economics 18 (3)*, 217-233	Gasoline Firms	Gasoline prices increased.
Blass, A.A., & Carlton, D.W. (2001). The choice of organizational form in gasoline retailing and the cost of laws that limit that choice *Journal of Law and Economics 44(2)*, 511-524	Gasoline Firms	Costs increased.
De Vany & McMillan, 2004	Paramount Studios	Incumbents were strengthened.
Masten, S., & Snyder T. (1983). On the Merits. Journal of Law and Economics, 1993, 36(1)	United Shoe	Efficiency losses and increased free riding.
Tennant, R. (1950). The American Cigarette Industry (Yale University Press)	American Tobacco	Oligopoly was strengthened.
Fisher, F.M., Greenwood, J.E., & McGowan, J.J. (1983). Folded, spindled and mutilated (MIT Press)	IBM	Technological change and entry barriers impacted entry into the industry rather than the antitrust suit.

III.A.3. Structural reliefs may create unintended harm

In addition to being ineffective, structural remedies can introduce unintended market inefficiencies and harm consumers. A forced separation of Google Search from Android or Chrome risks introducing such inefficiencies. One key issue is the loss of operational integration, which can degrade service quality, lead to discontinuation of services and prevent access to user preferred products. After the AT&T breakup, customer satisfaction declined,[54] and private line provisioning took a year to return to acceptable levels (Weber, 2008).

The costs of implementation can also be enormous. The AT&T divestiture reportedly cost $20 billion and led to $5 billion in lost productivity between 1984 and 1985. It also did not produce meaningful competition as many post-divestiture entrants failed, leaving an estimated $50 billion in stranded investment.[55] These costs, combined with ongoing administrative burdens like waiver requests and regulatory oversight, can divert resources from innovation and improvement.

Additionally, structural separation may introduce double marginalization, where independent entities each add markups, ultimately raising consumer prices (Shelanski & Sidak, 2001).

Market output and consumer choice can also be negatively impacted: The breakup of studios and distributors in the motion picture industry eliminated efficient practices like season contracts and led to increased film rental rates and admission prices, creating new inefficiencies in film distribution (De Vany & McMillan, 2004). Following the Paramount decree, over 5,000 theaters closed nationwide by 1960, and the remaining ones adapted by reducing screen sizes while increasing audience capacity. Drive-in theaters with few capacity constraints flourished despite their poor-quality picture and sound. The divorcement also removed the studios' guaranteed access to box office revenues, resulting in reduced quantity as well as quality of films. The number of films produced in Hollywood fell from about 750 annually in 1930s to 300 in the 1950s. Many studios attempted to mitigate risk by focusing exclusively on big stars and big budgets, which only further reduced film production as resources concentrated on fewer high-stakes spectacles (Gil, 2008).

An unsuccessful divestiture can lead to outcomes worse than the original competitive concern. A notable example is the 2015 Albertsons-Safeway merger, which the FTC approved on the condition that 168 stores be divested to preserve competition. Most of these stores were sold to Haggen Holdings, a small regional grocery chain with just 18 locations at the time. Virtually overnight, Haggen expanded nine-fold into unfamiliar markets—but it lacked the infrastructure, scale, and brand recognition to compete effectively. Within a year, the company filed for bankruptcy, closed more than 100 stores, and left many communities with fewer grocery options

[54] Jake Kobrick, "The Breakup of "Ma Bell": *United States v. AT&T*," Federal Judicial Center, https://www.fjc.gov/history/spotlight-judicial-history/breakup-ma-bell

[55] Robert W. Crandall, "The AT&T Divestiture: Was It Necessary? Was It a Success?," U.S. Department of Justice, 03/28/2007, https://www.justice.gov/archives/atr/att-divestiture-was-it-necessary-was-it-success

and thousands of jobs at risk.[56] Similarly, as part of T-Mobile's acquisition of Sprint in 2023, T-Mobile was required to sell some of its low-band spectrum to Dish Network, but the remedies eventually collapsed as Dish Network failed to secure the necessary funding for the purchase, undermining regulatory goals.[57]

The 1984 breakup of AT&T also shows how structural remedies can unintentionally harm workers. After AT&T divested its local Bell Operating Companies (BOCs), union density in the telecommunications sector fell from 56% in 1983 to 24% by 2001. The BOCs downsized their unionized workforces, created nonunion subsidiaries in growth areas, and faced rising competition from nonunion firms. The breakup also dismantled centralized collective bargaining, which had previously ensured consistent wages and benefits across the company. This allowed the new 'Baby Bells' to push for local bargaining arrangements that weakened union power (Hafiz, 2021).

Table 5 summarizes studies of separations documenting resultant unintended harms.

Table 5: Unintended Harms from Structural Reliefs

Paper / Source	Separation Studied	Unintended Harms Documented
Jake Kobrick, "The Breakup of "Ma Bell": *United States v. AT&T*"	AT&T	Customer satisfaction declined
Weber, J. H. (2008). The Bell System Divestiture: Background, Implementation, and Outcome. *Federal Communications Law Journal, 61*, 21	AT&T	Private line provisioning quality declined
Robert W. Crandall, (2007). "The AT&T Divestiture: Was It Necessary? Was It a Success?" (presentation)	AT&T	Significant direct cost ($20B) as well as indirect cost ($5B in lost productivity, $50B in investment in failed new entrant)
Cass, R. A. (2012). Antitrust for high-tech and low: regulation, innovation, and risk. *Journal of Law Economics & Policy*, 9, 169	Microsoft	Direct financial cost ($1B) and other indirect costs despite structural relief not implemented

[56] Brent Kendall, "Albertsons to Buy Back 33 Stores It Sold as Part of Merger With Safeway," Wall Street Journal, 11/24/2015, https://www.wsj.com/articles/albertsons-to-buy-back-33-stores-it-sold-as-part-of-merger-with-safeway-1448411193

[57] Dan Meyer, "Dish Network backs out of T-Mobile spectrum buy, financial woes continue," SDxCentral, 03/04/2024, https://www.sdxcentral.com/articles/news/dish-network-backs-out-of-t-mobile-spectrum-buy-financial-woes-continue/2024/03/

De Vany, A., & McMillan, H. (2004). Was the antitrust action that broke up the movie studios good for the movies? Evidence from the stock market. *American Law and Economics Review*, 6(1), 135-153	Paramount Studios	Eliminated efficient distributional practices
Gil, A. (2008). Breaking the studios: Antitrust and the motion picture industry. *NYU Journal of Law & Liberty*, 3, 83	Paramount Studios	Theatres closed and/or struggled to survive
		Audience turned to drive-in theatres despite poor quality
		Reduced quantity and quality in firms
Kendall, B. (Nov. 24, 2015) "Albertsons to Buy Back 33 Stores It Sold as Part of Merger With Safeway," *Wall Street Journal*	Albertsons-Safeway Merger	Divested stores closed as chain went bankrupt, leading to a worse outcome for local communities.
Meyer, D. (Mar 4, 2024). "Dish Network backs out of T-Mobile spectrum buy, financial woes continue," *SDX Central*	T-Mobile-Sprint Acquisition	Divestiture deal failed due to financial challenge, undermining regulatory goals.
Hafiz, H. (2021). Rethinking Breakups. *Duke Law Journa*l, 71, 1491	AT&T	Union power weakened, undermining labor market competition and worker welfare.

III.A.4. Android and Chrome may not be viable as independent products

Android and Chrome are best-in-class services that Google offers to ordinary consumers for free. Yet it remains unclear what the Department of Justice implies by calling for their divestiture, given that neither Android nor Chrome has a clearly defined, independent revenue source. Both products are supported through open-source software and monetized indirectly via advertising, primarily through their integration with Google Search and other services. According to Alphabet's 2024 financial statements, the vast majority of Google's revenue—over 75%—comes from advertising, with Android and Chrome functioning as critical distribution vehicles for these revenue-generating services. Absent integration with Google, each would be unlikely to thrive or deliver the same consumer benefits it offers today unless it integrates with another company's ecosystem or adopts a new business model, most likely involving either integrated advertising, or subscription payments. If integrated with another company's ecosystem, the remedy is just picking winners and losers, and if advertising and/or subscription payments are added, consumer welfare may be harmed.

Research on vertical integration highlights the many benefits of combining complementary products and services within a single firm. Transaction cost economics, pioneered by Williamson (1976), explains that vertical integration can improve efficiency by eliminating double marginalization—when separate firms at each stage of production add their own mark-ups.[58] Housing these stages within one company often results in lower consumer prices.

Beyond pricing, integration also reduces the costs of managing relationships between firms, especially when significant investments create power imbalances (Lafontaine & Slade, 2007). It enables better coordination, protects intellectual property, and allows faster knowledge transfer—factors that promote innovation and synergy (Ceccagnoli et al., 2012).

For digital firms, integrated ecosystems provide even more value. They align complementary assets, amplify network effects, and solve coordination problems by establishing shared standards and interfaces. This enables scalable innovation and smooth user experiences (Jacobides, Cennamo & Gawer, 2018).

Forced separation of such tightly integrated services can destroy value. Scholars warned that splitting Microsoft's OS from its applications would harm interoperability and raise coordination costs (Shelanski & Sidak, 2001). Similarly, breaking up Amazon's marketplace could force users to shop across different sites for the same product—making the experience less convenient without increasing real competition (Hovenkamp, 2020).

In the case of Google, Android's transformation into the world's leading mobile operating system would not have been possible without the company's strategic backing. When Google acquired Android Inc. in 2005 for an estimated $50 million, the fledgling startup gained access to Google's extensive resources and technical expertise. This acquisition proved pivotal: Android was originally designed for digital cameras, but under Google's direction, the platform was reoriented toward the emerging smartphone market. Google's financial support enabled Android to pursue a groundbreaking strategy—offering a free, open-source operating system that manufacturers and developers could easily adopt and customize. This approach allowed companies like Samsung, HTC, and Motorola to build a diverse array of Android devices, targeting various market segments and price points.[59] By 2010, Android devices had overtaken iPhone sales, significantly enhancing market competition and consumer choice. Android also substantially lowered the cost barrier to smartphone ownership, achieving an average device

[58] Consider the following example that illustrates double marginalization. There is a two-level digital supply chain of an operating system (upstream) and a browser (downstream), which, as separate entities, set their own profit-maximizing markup above cost. Those markups compound: the upstream firm charges the downstream firm a price that already contains a margin, and the downstream firm then adds another margin when it prices to end users. The result is a retail price higher than the single-monopoly price and, more important for antitrust, higher than the price a vertically integrated firm would charge once it internalizes the entire margin stack. Integration lets the combined entity treat the operating system and browser as cost centers serving a joint profit function, eliminating the "double mark-up" and often justifying a zero-price offer on one layer (e.g., Chrome) subsidized by revenues elsewhere (e.g., search advertising).

[59] Steve Brachmann, "A Brief History of Google's Android Operating System," IPWatchdog, 11/26/2014, https://ipwatchdog.com/2014/11/26/a-brief-history-of-googles-android-operating-system/

price of approximately $208—just one-third the cost of smartphones running more closed operating systems (Cennamo and Zhu, 2023).

The commercial value of Android and Chrome stems not from their standalone features, but from the synergies they enable with other Google products. Such integration drives consumer engagement, ad impressions, and ultimately revenue—benefits that would be lost or significantly diminished if these products were separated.

Google's investment in these companies is also rooted in its historical lack of direct consumer distribution channels—unlike Apple and Microsoft, which controlled operating systems and default browsers. Google invested in open-source Chromium and Android precisely to gain access to consumers in the absence of its own operating system or hardware ecosystem. These open-source initiatives became a strategic necessity, ensuring that Google's core services like Search and YouTube could still reach users at scale. However, after divestiture, it is unlikely that Google—or any acquiring company with existing distribution channels or fewer synergies—would continue making similar investments in these open-source systems, jeopardizing key foundations of today's digital ecosystem.

Structural divestiture of Android and/or Chrome is likely to follow one of two scenarios.

- Scenario 1 involves a full spin-off, in which "Android Inc." and "Chrome Co." become standalone firms, financed solely by revenue from licensing, advertising, or subscriptions.
- Scenario 2 envisions an asset sale, where one or both properties are absorbed by another major leading technology firm—most plausibly Microsoft for Chrome, or a company like Amazon, Meta, or Samsung for Android.

Under Scenario 1, the key risk is underinvestment. A divested Chrome could resemble Firefox circa 2010: a technically competent browser that began with promise but, starved of capital for rapid engine updates, security hardening, and standards leadership, steadily lost market share. Chrome operating as a Mozilla-style nonprofit would lack the resources to innovate and the benefits of economies of scope. Chrome's success has been deeply tied to Google's broader ecosystem, drawing on substantial financial resources and engineering talent that enabled both its initial development and ongoing advancement.

Similarly, an independent Android would lose access to Google's cross-subsidies for security patching, certification labs, and developer tooling. History suggests it would be pushed toward a paid licensing model, increasing OEM costs and ultimately raising handset prices.

It is important not to underestimate the potential harm to the broader ecosystem from divestiture. Chromium—Google's open-source browser project—has become the de facto implementation layer for web standards, powering not only Chrome, but also Edge, Brave, Vivaldi, and Opera, as well as embedded browsers in Microsoft Teams, Slack, and even Tesla dashboards. Likewise, the Android Open Source Project (AOSP) underpins an extraordinary range of devices beyond smartphones: Peloton bikes, Samsung Family Hub refrigerators, Amazon Fire TV sticks, Meta's Horizon OS headsets, point-of-sale terminals, and dozens of IoT form factors all rely on Google's open-source baseline. Divesting Chrome and Android could lead to a regression toward

an ecosystem characterized by slower innovation cycles, higher consumer prices, and fragmented app experiences—precisely the problems that Google's stewardship of Android and Chrome helped to address. Even Microsoft's Windows Phone, despite the backing of one of the world's largest technology firms, failed to compete against integrated players like Apple.

Scenario 2 trades the investment risks of Scenario 1 for renewed concerns about market concentration. If Microsoft—already a gatekeeper through Windows and Bing—were to acquire Chrome, regulators would face a revived version of the browser/OS bundling issues that defined the Microsoft case of the late 1990s. Similarly, transferring Android to Amazon, Meta, or Samsung would create strong incentives to self-preference the purchaser's own app store, voice assistant, or ad network. Rather than eliminating gatekeeper power, such a remedy would simply reallocate it—likely prompting a new round of scrutiny over vertical foreclosure.

Android and Chrome are not off-the-shelf businesses; they rely on extensive back-end infrastructure, engineering resources, and network effects that may not translate easily to new ownership. As a result, it is possible that buyers in such a divestiture process fail to productively integrate these incomplete business units with their existing assets. This could lead to a scenario where both products deteriorate or are ultimately discontinued—depriving consumers of tools they rely on daily. Rather than restoring competition, such an outcome would weaken it.

III.A.5. Android and Chrome enabled Google to bypass gatekeepers and severing them would impair years of procompetitive progress

Android and Chrome enabled Google to bypass gatekeepers and reach users directly, ensuring access to core services like Search, Maps, Gmail, and YouTube. Android and Chrome thus gave Google a viable option to remain competitive in both desktop and mobile markets—while also increasing innovation, lowering costs, and expanding consumer choice.

Before Google introduced Android and Chrome, Microsoft and Apple had emerged as leaders in key technology channels, significantly influencing consumer access to digital products and services. Microsoft dominated the personal computer market with its Windows operating system, holding over 90% of the global PC market share by the mid-2000s. Its Internet Explorer browser similarly dominated, controlling approximately 95% of browser usage at its peak around 2002-2003. Meanwhile, Apple emerged as a significant player in the mobile market after launching the iPhone in 2007 and subsequently the iPad in 2010.

Google risked marginalization, as distribution channels could prioritize their own services or limit Google's visibility within their ecosystems.

Google collaborated with the mobile industry to form the Open Handset Alliance in 2007, establishing Android as an open-source operating system. Similarly, Google introduced the Chrome browser in September 2008, directly challenging Microsoft's Internet Explorer on the desktop. Chrome's streamlined, secure, and high-performance approach quickly resonated with users, and by 2012, Chrome had surpassed Internet Explorer as the most popular browser globally.

Chrome and Android have since become essential conduits for the diffusion—and continuous improvement—of U.S.-developed AI technologies. Together, the two platforms deliver well over two-thirds of all browser usage and roughly 70 percent of mobile-OS installs worldwide, and Android alone commands close to 85 percent share in many emerging markets across Africa, South Asia, and Latin America. Consequently, both products serve as a means of delivering state-of-the-art American AI models to billions of users who would plausibly otherwise be served by non-U.S. (often Chinese) ecosystems, with the resulting usage data—crucial for model fine-tuning and bias reduction—flowing back into domestic R&D pipelines.

In summary, the current competitive landscape suggests that dramatic interventions—such as structural remedies or divestitures—will likely impair preferred products and are unlikely to advance any better options for consumers. Proposals to separate Android and Chrome from Google's ecosystem fail to recognize that the value of both products stems largely from their integration within Google's broader ecosystem, where data, services, and functionalities operate seamlessly together. Forcing them to function as standalone entities would likely undermine their effectiveness, diminish user experience, and erode their viability in markets where integration is a key source of differentiation.

This presents a paradox for regulators: if the concern prompting divestiture is that integration drives superior market performance, then separated products would likely seek new integration partners to remain competitive—effectively recreating similar vertical structures under different ownership, potentially leading to increased market concentration. In doing so, regulators would not be reducing market power but at best reshuffling it, or even eliminating an effective competitor, essentially reducing options for consumers and picking winners and losers in a rapidly evolving industry. This sort of central planning has been disfavored in antitrust by a unanimous Supreme Court as "a role for which they are ill-suited."[60]

Alternatively, if the concern centers on quality and innovation, forced separation could degrade both. Disrupting shared access to data, engineering talent, and technological synergies would hamper the ability of these products to deliver the performance, affordability, and innovation that consumers currently enjoy. In this scenario, consumers risk losing the very benefits that made Android and Chrome so widely adopted in the first place. Table 6 summarizes this challenge.

Table 6: Regulator's Paradox for Markets with Highly Complementary Products and Services

Concern	Likely Consequence of Firm Breakup
Integration Drives Superior Market Performance	Separated products seek new integration partners to remain competitive, resulting in a reshuffling of market power, not a reduction
Quality and Innovation	Disrupting shared access to data, engineering talent, and technological synergies hampers firms' ability to deliver performance, affordability, and innovation that consumers value

[60] *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 408 (2004).

III.B. A Ban on Search Distribution Would Solve a Nonexistent Problem and Generate Market Inefficiencies.

The DOJ's proposal outlines several key prohibitions on Google's distribution practices. Most significantly, it bars Google from providing anything of value to third parties in exchange for making Google the default search engine or otherwise discouraging the distribution of competing search products. This restriction specifically targets Google's arrangement with Apple, explicitly prohibiting Google from offering Apple any compensation for default search placement or preinstallation across Apple's ecosystem. For other device manufacturers and distributors, similar restrictions apply with limited exceptions.

The proposal also restricts Google's ability to preinstall search access points on its own devices and requires the implementation of choice screens on both new and existing Google browsers where users haven't actively selected a default search engine. These choice screens must be designed without preferencing Google and must minimize friction in the selection process, with requirements based on empirical evidence of consumer behavior. Moreover, the divestiture of Chrome and Android further forbids Google from self-preferencing through owned products.

Restricting distribution practices often introduces market inefficiencies and harms consumer welfare. The distribution agreements between Google and device manufacturers/OEMs effectively function as subsidies that can reduce retail prices for consumers, especially for lower-margin smartphone models, meaning distribution restrictions could remove these subsidies and result in higher prices or lower quality. Distribution restrictions can also adversely affect complementor markets, creating a systemic dampening effect across the broader digital ecosystem. Furthermore, when default options reflect the highest-quality or most-preferred services, they can enhance user experience and improve efficiency—suggesting that not all defaults are detrimental to competition or consumer welfare.

A central concern with the range of restrictions DOJ contemplates is that they would limit the best products available.

As Judge Mehta has written, "[Google] has hired thousands of highly skilled engineers, innovated consistently, and made shrewd business decisions. The result is the industry's highest quality search engine, which has earned Google the trust of hundreds of millions of daily users."[61] As a result of the combination of restrictions and inefficiencies, the proposed DOJ remedies would create more problems than it might solve. For a company like Apple, a high-quality search tool is critical toward establishing and maintaining Apple's branding of quality. The approach of courts to this question therefore warrants caution toward regulatory reengineering that might reduce efficiency and quality. As Sullivan (2002) cautions, "Courts must exercise care to ensure that the cost of correcting the market failure does not exceed the anticompetitive injury visited on consumers." Whatever the potential anticompetitive harms in search, the idea of limiting high-quality products is akin to the type of regulatory intervention in

[61] United States, et al. v. Google, LLC, No. 20-cv-3010 (APM) (D.D.C. Aug. 5, 2024), Dkt. No. 1033 at 6.

which a government agency would force Mercedes to let its dealers choose inferior brakes and steering wheels for the Mercedes cars it sells.

III.B.1. An effective ban on Search distribution may result in market inefficiencies and eventually raise consumer prices

The DOJ's proposed remedies targeting self-preferencing, defaults, and distribution payments risk undermining digital firms' ability to distribute and promote their products within their ecosystems. These restrictions would not only disrupt current distribution methods but also hinder future innovation in promotional strategies, potentially increasing costs, reducing market reach, and forcing fundamental changes to business models. As a result, consumers may face diminished welfare due to increased inefficiencies.

Historical evidence across industries supports this concern. After the 1948 *Paramount* decision banned practices like block booking, major film studios experienced a sharp decline in production—down 19%—due to the administrative burden of negotiating contracts film-by-film rather than in bundles (Gil, 2010; Ornstein, 1994). Theaters also faced increased costs and complexity, as previously efficient distribution systems were dismantled.

In the airline industry, decades of regulation by the Civil Aeronautics Board (CAB) kept prices artificially high and depressed demand. Following deregulation in 1978, airfares fell by roughly 40% in real terms through 2006, while passenger volume more than tripled. Studies estimate consumer benefits of $6–20 billion annually,[62] leading the Government Accountability Office to conclude that reregulation would likely reverse these gains (Wilson & Klovers, 2020).

More recently, Buchner & van Alten (2024) highlight how legacy Global Distribution Systems (GDS) have become barriers to innovation. Airlines with more control over their distribution—such as Ryanair—have been able to innovate more effectively in pricing and customer engagement. Regulatory mandates for neutral displays and restrictions on self-preferencing have led to fragmented inventories, higher search costs, and reduced transparency for consumers.[63]

In the alcohol industry, bans on exclusive territories and other distribution restrictions have similarly failed to achieve policy goals. Studies have shown these interventions raised prices and reduced consumer access to products and services (Sass & Saurman, 1993; 1996; Sass, 2005; Nelson, 2003). Ornstein and Hanssens (1985) also found that spirits consumption was reduced by 8-12%, not through direct regulatory effects but by effectively raising prices through restricted selection, fewer outlets, limited hours, and less efficient shopping experiences.

[62] Morrison & Winston (1986), The Economic Effects of Airline Regulation; Crandall & Ellig (1997), Economic Deregulation and Consumer Choice: Lessons for the Electric Industry.

[63] Strategy&, "Connecting with the customer & How airlines must adapt their distribution business model," https://www.strategyand.pwc.com/m1/en/reports/connecting-with-the-customer.pdf

Banking regulations provide further parallels. Restrictions on branching have historically discouraged innovation in service delivery by distorting the cost-benefit analysis banks use to expand their networks (Cerasi, Chizzolini & Ivaldi, 2013).

Finally, in the modern technology sector of digital ecosystems, Thatchenkery & Katila (2023)'s analysis of enterprise infrastructure software firms demonstrated that while innovation among complementors soared post-intervention, particularly among low-market-share firms, their financial performance simultaneously declined, as the complementors had unwittingly relied on Microsoft's ecosystem infrastructure for critical complementary assets like market access and technical support to effectively commercialize their innovations. Thus, small firms may need a digital ecosystem to thrive.

Studies also have shown that when digital firms can control their distribution channels, they are more likely to invest in quality improvements and innovative features. Moreover, potential entrants are more likely to invest and innovate when they have the possibility of securing distribution advantages through defaults or partnerships (Decarolis, Li & Paternollo, 2024).

Together, these examples demonstrate that restricting or effectively banning distribution practices often introduces market inefficiencies and harms consumer welfare. Moreover, in the context of widespread antitrust actions against leading technology companies, the proposed remedies may reverberantly spread from industry leaders to the entire technology sector, and collectively they may prohibit all technology firms from effectively distributing their products.

In addition, regulations that impose restrictions selectively on only one (or some) market actors effectively serve as a de facto distribution ban for those firms, severely limiting the firm's ability to operate and compete. When regulations prevent markets from adjusting based on consumer preferences, the likely result is reduced innovation, economic inefficiency through higher prices and lower quality, and widespread consumer frustration.

III.B.2. Supplier revenue share agreements benefit consumers

Distribution payments by platforms to other channel providers, essentially as a form of marketing or product promotion, may be critical to channel providers' survival. For example, prohibiting Google from paying for default placement could have significant financial implications for Mozilla Firefox. According to Eric Muhlheim, Mozilla's chief financial officer, Mozilla Firefox relies on search deals with Google for approximately 85% of its funding, and eliminating this revenue stream could "put Firefox out of business."[64] In addition, this would potentially reduce browser diversity and technical competition, as Firefox represents one of the few browsers not built on Google's Chromium code base. Therefore, a remedy aimed at curbing Google's search position might inadvertently eliminate a key competitor in the browser market,

[64] Ryan Knappenberger, "Mozilla exec warns DOJ remedies in Google monopoly trial could crush Firefox," May 2, 2025, https://www.courthousenews.com/mozilla-exec-warns-doj-remedies-in-google-monopoly-trial-could-crush-firefox/

ultimately resulting in less competition rather than more.[65] Were Chrome to be divested, prohibited distribution agreements with Google create similar revenue challenges as those articulated by Firefox, increasing the likelihood of acquisition by a major platform like Microsoft as a means of survival. Additionally, Google's broader ecosystem supports many small publishers through its AdSense program, and restrictions on Google's distribution practices could significantly impact their revenue streams (Ammori & Pelican, 2012).

As noted above, the distribution agreements between Google and device manufacturers/OEMs effectively function as subsidies that can reduce retail prices for consumers, especially for lower-margin smartphone models. These financial arrangements can lead to more affordable devices across the market. If Google were prohibited from maintaining these agreements, the willingness of Google's competitors to subsidize some of their products and services could be reduced. For example, alternative distribution contracts with competitors like Bing would generate substantially less revenue for manufacturers, and such effects would ripple across the entire industry as numerous device manufacturers, browser developers, and wireless carriers currently benefiting from these arrangements would need to recoup lost revenue. The affected companies in similar market dynamics typically respond by raising consumer prices, which would exacerbate affordability challenges for consumers already navigating inflation and economic uncertainty.[66]

III.B.3. Self-preferencing is often pro-competitive and beneficial

The regulator's proposed remedies also seek to prevent Google from promoting its search engine through self-preferencing. As Kiefer & Prince (2023) note, the practice of firms offering their own products alongside third-party offerings is a longstanding commercial arrangement that predates digital platforms. Retailers have sold private-label products alongside branded merchandise for decades; just as digital platforms now offer proprietary services alongside third-party applications. This dual role as both platform operator and participant should not automatically be deemed as anticompetitive; rather, common ownership between platform operators and participants can generate several procompetitive benefits.

Hagiu, Teh, & Wright (2022) examine the consequences of banning platforms from selling their own products alongside third-party offerings (the "dual mode"). Their analysis reveals that when platforms are forced to abandon dual mode for product categories where they have efficiency advantages over fringe sellers, consumer surplus consistently decreases, and total welfare drops. For products where platforms have even modest advantages in selling compared to fringe sellers, a ban on dual mode reduces both consumer welfare and innovation. In the empirically most relevant scenarios, banning the dual mode leads to welfare reductions.

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[65] Geoffrey A. Manne, "Avoiding Misguided Remedies in the Google Search Antitrust Case," Truth on the Market, 03/04/2025, https://truthonthemarket.com/2025/03/04/avoiding-misguided-remedies-in-the-google-search-antitrust-case/.

[66] Trevor Wagener, "Consumers Beware: Potential Costs of DOJ Antitrust Remedies in the Google Search Trial," CCIA, 10/07/2024, https://ccianet.org/articles/consumers-beware-potential-costs-of-doj-antitrust-remedies-in-the-google-search-trial/.

Scott Morton and Zettelmeyer (2004) demonstrate that retailers strategically position store brands to diminish national brands' negotiation leverage, forcing manufacturers to offer better terms to maintain their market position. This theoretical mechanism is supported by real-world evidence, including Coca-Cola significantly lowering wholesale prices in response to aggressive store brand placement. Empirical analysis in Chintagunta, Bonfrer, & Song (2002) confirms this dynamic, showing national brand manufacturers adopting more "accommodating" stances after store brand entry, with wholesale prices often declining more than retail prices.

The resulting benefits extend beyond just lower prices: Pauwels & Srinivasan (2004) found that store brands create a more diverse competitive landscape where retailers gain higher margins, premium national brands successfully differentiate through innovation, and consumers ultimately benefit from expanded product variety and, in many cases, reduced average prices. This market restructuring fundamentally alters competitive forces by constraining national brands' pricing power and creating incentives for quality competition and innovation.

Dubé (2022) reveals that regulating or banning Amazon's private label (PL) offerings would create an inconsistent double standard that ultimately harms consumers. While antitrust authorities have specifically targeted Amazon's PL practices for potential regulation, Dubé identifies that Amazon's program remains remarkably small at just 1% of its total retail sales (under $5 billion), vastly overshadowed by traditional retailers like Walmart ($186 billion in PL sales), Costco ($58 billion), and Target ($30 billion), summarized in Table 7. The proposed regulations ignore how PLs deliver substantial consumer benefits through lower prices (saving U.S. consumers over $40 billion annually), reduced search costs, and increased product variety, benefits that would be arbitrarily denied to Amazon customers. As the UK CMA concluded after extensive investigation, PL growth does not constitute an unfair advantage against established brands, making the regulatory focus on Amazon's modest program particularly misguided and ultimately detrimental to consumer welfare.

Table 7: Private Label Sales Across Select Vendors

Firm	Private Label Sales
Amazon	$5B
Walmart	$186B
Costco	$58B
Target	$30B

More generally, Rong et al. (forthcoming) examines the impacts of China's "Anti-Monopoly Guidelines for Platform Economy" on digital market competition, which established restrictions on price discrimination, self-preferencing behaviors, and acquisition activities, with the intention of curbing monopolistic practices and enhancing competition in platform markets. These efforts are effectively a form of structural separation – no entry into industries in which the Chinese technology companies covered by the regulation are not present and limits on firm behavior that are akin to separation such as no self-preferencing. If these significant limitations had increased competition, there would have been increased entry into the markets where these platform companies compete and more venture-capital-related investment. However, the empirical analysis demonstrates contrary outcomes: industries significantly influenced by the regulated

platforms experienced 26.73% lower investment activity and 18.72% fewer market entrants compared to industries not subject to the Guidelines. Moreover, the regulations not only constrained the growth trajectories of dominant tech platforms, but also adversely affected complementor markets where covered companies were previously active participants, creating a systemic dampening effect across the broader digital ecosystem.

III.B.4. Defaults may benefit consumers depending on product quality

The proposed ban on Google paying Apple and others to make Google Search the default ignores that consumers clearly prefer Google, and it could push them toward search engines they like less. Evidence from Firefox's experiments with default search engines showed that when users were switched from Google to alternatives like Yahoo or Bing, most either reverted to Google manually or navigated directly to its site. Rivals retained only 16.5% to 42% of search volume, indicating that Google's market position is driven more by consumer preference than by default settings.[67]

Allcott et al. (2025) ran a field experiment that, among other things, examined the impact of requiring users to choose their search engine, rather than have a default. They find little evidence of defaults generating significant switching costs, stating that "…requiring Google users to make an active choice among search engines increases Bing's market share by only 1.1 percentage points, implying that switching costs play only a limited role…"[68]

Studies on Google's default settings also show that alternative choice screens have had limited success in markets like Russia and Turkey, potentially leading to inferior service quality for users (Decarolis, Li & Paternollo, 2024). While these interventions did reduce Google's market share by approximately 10 percentage points in both Russia and Turkey, the overall impact on competition and service quality presents a complex picture. The effectiveness largely depended on the presence of viable local competitors with sufficient brand awareness, such as Yandex, which was able to capitalize on the opportunity in these markets. Competitive dynamics following these interventions created mixed welfare effects for users. In Turkey, users of Huawei devices suddenly found Yandex as their preset default instead of Google without actively choosing it, potentially receiving lower-quality search results.

Similarly, despite Microsoft's promotion of Bing—including pop-ups in Chrome—the term "Google" remains the most searched query on Bing. Since consumers clearly prefer Google Search, setting Google Search as the default in Chrome does not appear to be harmful (Mariñoso, 2001).

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[67] The Search decision itself makes this clear, "Mozilla… switch[ed] the default to Yahoo. Yahoo only retained 16.5% of the total search volume."; "In a 2016 experiment, Mozilla switched the default on both new and existing users from Google to Bing. By the twelfth day, Bing had kept only 42% of the search volume. After some additional time, those numbers dropped to 20–35%." Search decision at 117.

[68] Additional findings pertain to effects of providing users paid incentives to switch search engines, which relates to effects of incentive marketing, not antitrust remedies.

In sum, not all defaults are detrimental to competition or consumer welfare, particularly when they reflect the highest-quality or most-preferred services, in which case they can enhance user experience and improve efficiency.

III.C. Mandatory Data and Technology Sharing with Rivals Undermines Investment in Innovation

On top of undoing the exclusive distribution agreements which the Court found to have contributed to Google's market position in Search, the DOJ proposes a sweeping range of significant data and technology sharing requirements intended to undo Google's scale "advantage" and level the playing field. These include mandating that Google provide its search index to rivals at marginal cost (which often means free in the digital economy), share user-side and advertising data for ten years on a non-discriminatory and privacy-compliant basis, and syndicate search results, ranking signals, and query understanding information for a decade (limited to U.S. queries). A one-year requirement to syndicate search text ads is also included. Additionally, content creators would gain new rights to opt out of having their content crawled for indexing, LLM training, or AI-generated outputs. The revised proposal adds that Google must also disclose how it uses user-side data to train its search and advertising AI models.

These requirements are layered on top of the contractual remedies already proposed. They also appear designed to dismantle the technological and scale advantages that Google has developed over decades. By compelling Google to disclose and share core elements of its search infrastructure and data assets, the remedy risks enabling rivals to reverse-engineer Google's search ranking algorithms and other proprietary technologies.

III.C.1. Mandated technology/data sharing often leads to product degradation and disincentives to differentiate or innovate

While well-intentioned, there is no strong evidence to support the claim that Google's dominance in search is due to scale in search data—the core motivation behind this proposed remedy. A growing body of empirical research, including studies using data from platforms like Netflix and Amazon, indicates diminishing returns to data scale. For example, Netflix's recommendation quality plateaued after a relatively modest amount of user data was collected, suggesting that simply having more data does not linearly translate into better outcomes. Similarly, research on Amazon's product recommendation system has shown that beyond a certain point, additional data yields only marginal improvements in predictive accuracy. These findings challenge the assumption that scale in data alone confers insurmountable competitive advantage.

The experiences of rival search engines by Microsoft and Yahoo reinforce this view. Microsoft's Bing nearly doubled its U.S. search market share in 2010,[69] and Yahoo won a three-year deal with Mozilla to be the default search engine in 2014.[70] Despite these substantial opportunities to

[69] See, for example, Barry Schwartz, July 2010, "Bing Almost Doubles Search Share In a Year," https://www.seroundtable.com/archives/022526.html

[70] See, for example, Evan Niu, November 2014, "Yahoo! Scores Firefox From Google," https://www.fool.com/investing/general/2014/11/20/yahoo-scores-firefox-from-google.aspx

acquire and leverage user data at scale, neither company was able to sustain long-term momentum against Google.

Mandated technology sharing also risks serious adverse effects. As widely discussed in the literature (Tucker & Wellford, 2014; Drexl, 2017; Crémer et al., 2019; Kathuria & Globocnik, 2020; Martens et al., 2020; Jin & Wagman, 2021; Hagiu & Wright, 2023), such mandates can discourage innovation by reducing incentives to invest in data collection and product development. Forced sharing creates a free-rider problem—allowing competitors to benefit from others' investments without bearing the costs—leading to a market of undifferentiated products and diminished consumer welfare. Privacy concerns also arise when user data is shared across firms without consumer relationships, potentially eroding trust.

Hagiu & Wright (2023) show that firms often subsidize consumers to gain market share and data; if sharing is mandatory, those incentives vanish, leading to higher prices. Martens (2024) finds that under the EU Digital Markets Act, asymmetric data sharing (from large to small firms only) fragments the search market. Such market fragmentation can lead to lower quality, particularly for rare queries that require large-scale data aggregation.

In fintech, open banking regulations have similarly discouraged innovation. Xie & Hu (2024) note that banks reduce investment in features when forced to share data.[71] The European Union's Payment Services Directive 2 (PSD2) led to lower API quality and weaker infrastructure, harming both competition and consumers (Colangelo, 2024).

Hausman & Sidak (2005) analyzed unbundling mandates across five countries and found no support for the "stepping stone" hypothesis that competitors using shared infrastructure would eventually invest in their own. Instead, unbundling discouraged investment and attracted short-term, opportunistic firms. Retail prices also did not decline post-mandate, challenging a core rationale for the policy.

Pindyck (2007) critiques TELRIC pricing in the U.S. Telecommunications Act for failing to reflect real-world investment risks. By ignoring the sunk nature of telecom investments and allocating all downside risk to incumbents while giving entrants a valuable, cost-free option, TELRIC undermined infrastructure incentives—ultimately harming long-term consumer welfare despite short-term gains.

These findings suggest that regulatory approaches to data sharing should carefully balance the need to promote short-term competition with the imperative to preserve long-term innovation incentives.

In Google's case, requiring the company to share its search index would enable competitors to focus on reverse-engineering Google's proprietary technologies, rather than developing novel innovations to outcompete it. The likelihood of successfully reverse-engineering Google's search algorithm from such data sharing is so high that Google CEO Sundar Pichai told a U.S. federal

[71] Laura Brodsky & Liz Oakes, "Data sharing and open banking," McKinsey & Company, 09/05/2017, https://www.mckinsey.com/industries/financial-services/our-insights/data-sharing-and-open-banking

court the remedy would amount to a 'de facto divestiture of search.'[72] In addition, given the massive data requirements for AI development, reduced innovation incentives from mandated data sharing naturally extend to AI, serving as another threat to the United States' technology leadership.

III.C.2. Voluntary data and API sharing are common and likely to expand across digital markets given its demonstrated benefits

Voluntary data-sharing is common in digital markets. Such sharing has many benefits. It can promote innovation and competition more effectively than mandatory requirements by preserving flexibility and market incentives. When firms control how and when they share data, they can tailor strategies to balance openness with competitive advantage, resulting in more efficient market outcomes (Choe, Cong & Wang, 2024). Hence, there is reason to expect data-sharing arrangements to continue to proliferate in digital markets.

In the U.S., open banking has evolved without regulatory mandates, with strong adoption of voluntary data-sharing technologies. The Consumer Financial Protection Bureau reports that API usage doubled between 2019 and 2022, as major financial institutions developed credential-free APIs covering tens of millions of accounts (Colangelo, 2024). Banks such as HSBC (UK), Intesa San Paolo (Italy), and BBVA (U.S.) have built API infrastructure to support platform-based business models (Borgogno & Colangelo, 2020).

Evidence also shows strong market outcomes: in countries with open banking initiatives, venture capital investment in fintech startups rose by one-third, and total capital invested doubled—particularly in markets where consumers trust data-sharing systems (Babina et al., 2024).

Alternatives to direct data transfer, such as API sharing, offer more secure, flexible, and innovation-friendly approaches to competition. In open banking, APIs have enabled controlled, real-time access between banks and third parties, enhancing both innovation and data security (Babina et al., 2024). API usage in the U.S. nearly doubled between 2019 and 2022 (Colangelo, 2024).

APIs define standardized protocols that allow external parties to request specific information under tightly controlled conditions. Providers retain data ownership, decide what is accessible, and ensure compliance with privacy rules (Borgogno & Colangelo, 2019). APIs can also offer premium access tiers with advanced functionality (Zachariadis, 2020), and because they connect directly to source systems, they guarantee up-to-date information, unlike static data transfers.[73]

From an efficiency standpoint, APIs enhance standardization and interoperability—critical in complex, multi-stakeholder ecosystems (Borgogno & Colangelo, 2019).

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[72] See, for example, Jackson, Fiona, "Google's DoJ Antitrust Trial: CEO Says Sharing Search Data Would Be 'De Facto Divestiture'," https://www.techrepublic.com/article/news-google-doj-antitrust-trial-sundar-pichai/

[73] Raw Labs, "The Modern Approach to Data Sharing: 12 Benefits of Data Sharing Via API," 07/14/2022, https://www.raw-labs.com/blog/benefits-of-data-sharing-via-apis

The advantages of API sharing are widely recognized. PSD2 regulations in the financial sector mandate API access to account data, but many institutions adopted the infrastructure voluntarily. Similar trends are emerging in healthcare, energy, and public administration, reflecting API sharing's growing role in the digital economy (Borgogno & Colangelo, 2019).

Other mechanisms also show promise. Data intermediaries or trusts can act as neutral managers of data access, balancing privacy and efficiency (Martens, 2023). In some jurisdictions, centralized regulatory data pools enable oversight and competition while preserving security (Martens, 2024).

AI developments offer further alternatives. Techniques such as "grounding" allow LLMs to access proprietary datasets without directly transferring the data, while "plugins" enable tailored functionality for specific use cases (Martens, 2023). These innovations highlight that competition and innovation can thrive without mandating broad, open data access.

IV. Investment Restrictions in AI Hinder Growth and Competition in a Vital Industry

On top of undoing the exclusive distribution agreements which the Court found to have contributed to Google's market position in Search, the DOJ's initial proposal also prohibits Google from owning or acquiring any interests in "rival query-based AI products"—part of a broader structural remedy to prevent Google from using financial entanglements to suppress emerging competition. The proposal required Google to disclose and divest any such holdings within six months and to seek prior approval for future investments, partnerships, or acquisitions involving competitors in search or search advertising markets, including AI firms.

These restrictions aimed at preventing Google from discouraging or disincentivizing rivals through financial influence. The proposal recognizes that AI represents a potential avenue for disruptive competition, noting that "the integration of generative AI is perhaps the clearest example of competition advancing search quality."

Nevertheless, in the more recent revised proposal, the DOJ abandoned its earlier demand that Google divest AI investments, as "evidence gleaned from remedies discovery indicates a risk that prohibiting Google from owning or acquiring any investment or interest in any search or search text ad rival, search distributor, or rival query-based AI product or ads technology could cause unintended consequences in the evolving AI space." Meanwhile, the DOJ continues to seek an advance notification requirement for Google to notify the DOJ of any transactions involving AI.[74]

Leading technology companies' investments, including partnerships with startups, have historically empowered new ventures and fueled innovation and competition in AI. Such partnerships are especially vital in AI, where startups face steep infrastructure and data hurdles and training LLMs requires massive computing resources that can quickly exhaust a startup's

[74] United States of America v. Google LLC, 1:20-cv-03010, (D.D.C. Mar 07, 2025) ECF No. 1184

budget. Collaborating with incumbents that control cloud infrastructure enables startups to scale and innovate more effectively in applied AI.

IV.A. Leading Technology Companies' Investments Have Historically Empowered New Ventures

Perhaps peculiar in the DOJ set of remedies was limits on AI investment, as it does not seem that AI investments were within the scope of liability. Rather, liability was limited to the question "Do Google's exclusive distribution contracts reasonably appear capable of significantly contributing to maintaining Google's monopoly power in the general search services market?"[75] In answering this question, it does not seem that limits in AI investing would address any competitive concerns that actually justify a remedy. Further, AI investments are already covered under the 2023 Merger Guidelines, where a partial acquisition may present "significant competitive concerns."[76] These observations, in addition to the concerns about unintended consequences cited by the DOJ, all serve as justifications for its abandonment of AI divestment demands.

The DOJ's shift reflects a broader recognition: investment by large technology firms has historically helped startups scale and innovate, particularly in R&D-intensive sectors. Undermining this dynamic could harm the very competition regulators hope to foster. Most startups face steep odds—only 20% survive past two years,[77] and just 4.6% globally become "scaleups" valued at $50 million or more. Few reach unicorn status.[78]

Incumbent support has played a critical role in changing these odds. Facebook's acquisition of Instagram spurred growth and improved user experience but also spurred overall market demand for similar products, creating new opportunities for other entrants and/or consumers (Halaburda et al., 2024; Li & Agarwal, 2017). Google's purchase of Android transformed it from a struggling startup into a leading mobile OS (Hovenkamp, 2020). More recently, Microsoft's multi-stage financing of OpenAI—now exceeding $10 billion—supplied the cloud credits, custom silicon, and go-to-market channels that a stand-alone lab could never have secured, transforming GPT research into a commercially viable platform. Likewise, Anthropic's recent multi-billion-dollar round from Amazon and Google illustrates the importance of providing incumbent cloud capacity with economies of scale.

Other sectors offer similar examples. In biotech, Moderna and BioNTech secured critical early investments from Merck and Pfizer, respectively, enabling their breakthrough COVID-19 vaccines (Polidoro & Yang, 2021). GM's investment in Lyft and acquisition of Cruise Automation accelerated work in autonomous vehicles. Strategic partnerships—such as

[75] Google, 747 F. Supp. 3d at 153.

[76] 2023 Merger Guideline, Guideline 11.

[77] Michael T. Deane, "Top 6 Reasons New Businesses Fail," Investopedia, 06/01/2024, https://www.investopedia.com/financial-edge/1010/top-6-reasons-new-businesses-fail.aspx

[78] Startup Genome, "What Makes a Startup Succeed? Identifying Scaling Success Factors," GSER 2024, https://startupgenome.com/article/what-makes-a-startup-succeed-identifying-scaling-success-factors

Caterpillar's work with predictive analytics firm Uptake, [79] or Qualcomm's support of Airvana (Park & Steensma, 2012)—have helped startups access resources, test infrastructure, and scale globally.

A key mechanism enabling these developments is corporate venture capital (CVC), which has grown rapidly. In 2015, CVCs participated in 21% of all U.S. VC deals (Röhm et al., 2017), with investments reaching $8 billion in some sectors by 2018 (Polidoro & Yang, 2021). CVC provides strategic value beyond capital—giving incumbents a "window on technology" and enabling startups to access complementary assets and know-how. Research shows that CVC-backed firms often achieve better outcomes: they are more likely to go public, less likely to fail, and more integrated into corporate innovation pipelines (Dushnitsky & Lenox, 2005; Ma, 2020).

Acquisition has also become the dominant exit route for startups—rising from 29% of VC-backed exits in 1990 to 89% in 2010 (Kim, 2022)—as IPOs have become more complex and costly. Blocking acquisitions or investments by incumbents would disrupt this critical exit channel and reduce incentives for innovation.

Recent data underscores the risk: in China, platform antitrust measures led to a 27% drop in investment activity and a 19% decline in new firm formation in affected sectors (Rong et al., forthcoming). Startups requiring specialized assets benefit disproportionately from CVC: 17.5% of CVC-backed firms in such cases went public versus just 8.8% of those backed by independent VCs; their failure rates were also significantly lower (Park & Steensma, 2012).

CVC supports a symbiotic ecosystem—corporates provide funding, market access, and technical expertise, while startups contribute fresh ideas and agility. Severing these ties would likely reduce innovation and stall the development of high-growth ventures. Restricting incumbents from investing in AI startups may thus inadvertently weaken the very competitive forces regulators seek to promote.

IV.B. Investment from Leading Technology Companies Fuels Innovation and Competition in AI

Leading technology companies play a critical role in shaping the AI landscape through substantial financial and non-financial investments. Notable examples include Google's acquisition of DeepMind, which accelerated its AI capabilities, and Microsoft's investment in OpenAI, which significantly scaled its development efforts.

Google plans to invest $75 billion in cloud and AI infrastructure in 2025—up from $52.5 billion in 2024—focusing on data centers and cloud servers to meet rising demand and address capacity constraints.[80] Amazon has also deepened its AI commitments, doubling its investment in

[79] KPMG, "Four ways incumbents can partner with disruptors: Turning disruption into a source of competitive advantage," June 2016, https://assets.kpmg.com/content/dam/kpmg/pdf/2016/06/four-ways-incumbents-can-partner-with-disruptors.pdf.

[80] Nathan Eddy, "Google to Spend $75 Billion on AI, Cloud Investment," Techstrong.ai, 02/12/2025, https://techstrong.ai/aiops/google-to-spend-75-billion-on-ai-cloud-investment

Anthropic to $8 billion as of November 2024. In addition to funding, Amazon's AWS serves as Anthropic's cloud provider, and the companies are collaborating on developing custom Trainium chips via AWS's Annapurna Labs.[81]

These partnerships are particularly crucial in the field of AI, where startups often encounter significant challenges related to infrastructure and data access. Developing LLMs demands extensive computing power, which can rapidly drain a startup's financial resources. By partnering with established companies that manage cloud infrastructure, startups can more efficiently scale their operations and drive innovation in applied AI.[82]

Regulatory complexity adds further pressure to partners. As scrutiny from antitrust agencies, alliances with experienced incumbents help startups navigate compliance and implement governance frameworks.[83] In today's environment, such collaborations are not just strategic—they are essential to innovation, scaling, and long-term competitiveness in AI.

V. Radical Regulatory Approaches Could Undermine American Technology Leadership

National competitiveness increasingly takes on greater weight in enforcement and regulatory decisions. For example, past U.S. antitrust actions that mandated sharing of proprietary technology have often yielded unintended consequences for American industrial leadership. Notable examples include the 1958 DOJ consent decree forcing RCA to license its electronics technologies to competitors, including Japanese firms, and the 1975 FTC requirement that Xerox share comprehensive technical documentation of its copier innovations with rivals. These well-intentioned measures ultimately contributed to foreign dominance in the affected sectors, as overseas companies capitalized on American innovations at minimal cost while operating under different regulatory frameworks in their home markets.[84] Enforcement remedies that are a fundamental restructuring of an industry take on a quasi-regulatory effect.

Today, AI represents a critical sector for U.S. economic growth and global competitiveness. American companies across the spectrum, from established technology companies like Google and Microsoft to a robust ecosystem of startups, are driving innovation in this space, supported by approximately $290 billion in venture capital over the past five years. Economic projections highlight AI's potential to significantly boost productivity, with estimates suggesting it could increase annual U.S. GDP growth by 0.4-1.5 percentage points through the 2030s, potentially

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[81] "Amazon doubles down on AI startup Anthropic with $4bn investment," The Guardian, 11/04/2024, https://www.theguardian.com/technology/2024/nov/22/amazon-anthropic-ai-investment

[82] Matt Mcllwain, "Big Tech's AI Spend: Fuel for the Startups That Will Shape the Future," Madrona, 09/10/2024, https://www.madrona.com/thank-you-big-tech/

[83] Hayden Field & Kif Leswing, "Generative AI 'FOMO' is driving tech heavyweights to invest billions of dollars in startups," CNBC, 04/01/2024, https://www.cnbc.com/2024/03/30/fomo-drives-tech-heavyweights-to-invest-billions-in-generative-ai-.html

[84] Trevor Wagener, "Mandated Tech and Data-Sharing: A Remedy to "Cure" Privacy, Innovation, and U.S. Leadership," CCIA, 03/24/2025, https://ccianet.org/articles/mandated-tech-and-data-sharing-a-remedy-to-cure-privacy-innovation-and-u-s-leadership/

adding $1.2-3.8 trillion to the economy over the next decade. However, this leadership position faces increasing challenges from global competitors, particularly China, which is making rapid advances in AI capabilities and aggressively pursuing international adoption of its technologies. In this context of intensifying international competition, regulatory decisions affecting U.S. technology companies such as preventing them from investing in AI could inadvertently hamper American innovation and technological leadership in this area.[85]

U.S. enforcers and regulators should also learn from what's happened in other major markets. For example, the European Union's tough approach to tech companies—especially through the Digital Markets Act (DMA)—serves as a warning, even though it's less aggressive than what the DOJ is proposing in the Google case..[86] Unlike the United States' more measured approach (at least as witnessed up to the remedies framework proposed by the DOJ), the EU's hasty implementation of comprehensive technology regulation has produced tangible negative consequences within its first year, including postponed service launches (such as Meta's Threads), degraded functionality of existing services like Google Search, and increased security vulnerabilities that Apple has warned could create "new avenues for malware, fraud and scams." These outcomes demonstrate that rapid, burdensome regulations intended to curb the power of leading technology firms can undermine innovation and user experience while potentially compromising security. The stark contrast between the EU, which hosts none of the world's largest technology companies, and the United States, where global technology leaders flourish, further underscores how regulatory patience and careful consideration of unintended consequences have contributed to American technological leadership.[87]

VI. Concluding Remarks

Regulatory actions targeting leading technology companies reflect an ambitious departure from antitrust principles that may fundamentally reshape the digital economy. The remedies proposed in the DOJ's case against Google represent a pivotal moment in antitrust enforcement in the digital economy.

This white paper has examined these proposed remedies through both theoretical lenses, historical precedents, and empirical evidence, highlighting the importance of integrated ecosystems and continual innovation in digital markets. Our analysis finds that many of these remedies—ranging from structural divestitures and distribution restrictions to mandated data sharing and investment prohibitions—place the sector at grave risk by undermining the very competition and innovation they seek to promote. History offers numerous cautionary tales: structural separations are rarely used and when imposed, have frequently failed to deliver

[85] Trevor Wagener, "Banning Investments in AI is a Cure Worse Than the Purported Disease," CCIA, 02/27/2025, https://ccianet.org/articles/banning-ai-investments-is-a-cure-worse-than-the-purported-disease/

[86] The recent Draghi Report, inter alia, recommends enhanced enforcement of the DMA, https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en

[87] Robert Winterton, "In Defense of Caution: How America's Thoughtful Approach to Tech Regulation is Superior to Europe's Rush," NetChoice, 03/19/2024, https://netchoice.org/in-defense-of-caution-how-americas-thoughtful-approach-to-tech-regulation-is-superior-to-europes-rush-2/

sustained competitive benefits, while distribution bans and mandated sharing regimes have often introduced inefficiencies, hindered innovation, and eroded consumer welfare.

It is also important to recognize that Google's success with Android and Chrome is inseparable from the broader ecosystem of services, infrastructure, and strategic investments that support them. Undermining these products with respect to their parent firm could reduce product quality, increase costs, and erode user experience without achieving meaningful competitive gains.

Moreover, voluntary mechanisms—such as API-based sharing and corporate venture investment—are already common in digital markets and proving beneficial, and are likely to continue and expand accordingly. These approaches allow firms to maintain incentives for innovation while enabling competitive access and reducing regulatory friction. For example, the Google Maps API underpins thousands of location-based services, and the Google Scholar and Google Patents APIs democratize access to scientific and patent metadata. Products such as TensorFlow, Android's AOSP, and the recently open-sourced Gemma models likewise illustrate how voluntary, permissioned access has catalyzed third-party innovation while preserving security and quality control.

The enforcement environment for digital platforms must evolve, but it must do so with precision. A modern regulatory framework must clearly differentiate between promoting healthy market competition and merely shielding individual companies from competitive pressure. Remedies that merely reallocate market share without enhancing contestability may reduce, rather than increase, consumer welfare. When firms rely on regulation to displace rivals instead of competing through better products and services, enforcement risks devolving into rent-seeking behavior (Ammori & Pelican, 2012). Effective regulation should focus on creating conditions for genuine competition and addressing underlying market dynamics for meaningful entry, rather than focusing narrowly on advantaging current competitors (Mahari, Lera & Pentland, 2021).[88] Instead of rigid structural interventions, regulators should pursue targeted, evidence-based remedies that preserve the dynamic efficiencies of integrated digital ecosystems.

The proposed remedies do not align with the realities of modern technology markets and are likely to cause more harm than benefits with respect to promoting competition, preserving innovation, and protecting consumer welfare.

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[88] Moreover, size-based regulatory thresholds—as seen in the EU's Digital Markets Act or U.S. legislative proposals—risk undermining growth incentives. Basing obligations solely on firm size, rather than actual market conduct or competitive harm, marks a significant departure from traditional antitrust principles. As Sokol and Comerford (2015) observe, "bigness is not an antitrust offense." Regulatory focus should remain on specific anticompetitive behaviors, not on penalizing scale or success.

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Appendix: Current government brought antitrust cases against leading technology firms

Case	Defendant	Initial Filing	Government Arguments
DOJ v. Google (Google Search)	Google	Oct 20, 2020	DOJ sued Google for illegally monopolizing the internet search engine and internet search advertising market. Specifically, DOJ alleged that Google monopolizes internet search through pay-to-play agreements with search distributors that force users into using its search engine. DOJ was seeking structural relief such as divestiture as well as behavior reliefs such as bans on distributional payments.
DOJ v. Google (AdTech)	Google	Jan 24, 2023	DOJ sued Google for monopolizing the digital advertising market. DOJ accused Google of spending billions buying up tools relied on by publishers and advertisers in the digital advertising markets, such as dominant ad server DoubleClick, and forcing market participants to use its products, including its monopolistic advertising exchange, AdX. DOJ was seeking to break up Google's online advertising business by divesting its Ad Manager suite, including its DoubleClick ad server and AdX ad exchange.
Texas v. Google	Google	Dec 16, 2020	Led by the State of Texas, a group of U.S. states and territories sued Google for monopolizing the digital advertising market. The Texas suit alleged that Google manipulates its advertising exchange to simultaneously underpay publishers and force advertisers to unknowingly overpay, pocketing the difference. The suit also alleged that Google excluded competing advertisers from the market by intentionally tying different parts of its advertising services together, locking publishers and advertisers into using Google products over those of its competitors.

			The suit also alleged that Google struck an illegal deal with Facebook, referred to as "Jedi Blue," to eliminate competition that threatened Google's ad monopoly, and in return Google rigged ad auctions in Facebook's favor.
Utah v. Google	Google	July 7, 2021	Led by the State of Utah, a group of states sued Google for monopolizing the smartphone application market. Pointing to the same conduct for which the European Union fined Google €4.1 billion, the suit alleged that Google has monopolized the Android app distribution and Android app payment systems by artificial technological and contractual conditions that Google imposes on its competitors. The States alleged that Google paid off manufacturers and phone carriers to discourage them from creating competing app stores, and signed contracts with them to make Google Play undeletable and make it unnecessarily hard for users to download apps outside Google Play. The suit also alleged that Google uses its app store monopoly to force app developers and consumers into using Google's payment processing system for app-related transactions. The States were asking the Court to stop Google's anticompetitive behavior and are seeking financial penalties.
FTC v. Meta	Meta	Dec 9, 2020	FTC sued Meta (then Facebook) for monopolizing social networking. FTC alleged that Meta bought up rivals such as Instagram and WhatsApp and used its dominance to suppress competitors it could not acquire. FTC was asking the court to order Meta to sell Instagram and WhatsApp and to require the firm to seek prior approval for any further acquisitions.
FTC v. Amazon (Online Retail)	Amazon	Sep 26, 2023	FTC sued Amazon for holding and abusing an online retail monopoly and conducting anticompetitive practices in online retail, arguing that the firm

			violated Section 5 of the FTC Act and Section 2 of the Sherman Act. FTC alleged that Amazon squeezed sellers on its marketplace and favored its own services to protect its monopoly, resulting in artificially higher prices for consumers. FTC also alleged that Amazon imposed penalties on sellers who offer lower prices elsewhere by not displaying their products in the "buy box", effectively preventing meaningful price competition and harming both merchants and consumers. There were also concerns that Amazon could drive sellers to use Amazon's fulfillment services to obtain better placement on the marketplace.
FTC v. Amazon (Subscription)	Amazon	Jun 21, 2023	FTC alleged Amazon duped consumers into unknowingly enrolling in Amazon Prime, in violation of the FTC Act, and the Restore Online Shoppers' Confidence Act. FTC alleged that Amazon used user-interface designs to trick consumers into enrolling in automatically renewing Prime subscriptions. Amazon had also complicated the cancellation process for Prime subscribers who sought to end their membership. FTC also alleged that Amazon attempted to delay and hinder the Commission's investigation in multiple instances.
California v. Amazon	Amazon	Sep 14, 2022	California sued Amazon for anticompetitive contracting practices in violation of California's Unfair Competition Law and Cartwright Act. The complaint alleged that Amazon used its dominance of the online retail market to coerce third-party sellers and wholesalers into anticompetitive agreements that penalize sellers for selling their products at a cheaper price anywhere else, including their own websites.
DOJ v. Apple	Apple	Mar 22, 2024	DOJ sued Apple for its violation of multiple antitrust statutes. DOJ alleged that Apple has maintained a monopoly over smartphones by imposing restrictions and

			making it difficult for consumers to switch from iPhones to other devices, and by limiting how well competing products like non-Apple smartwatches and digital wallets work with iPhones. DOJ also alleged that Apple blocked companies from offering apps that competed with Apple's own products like cloud-based streaming apps, messaging apps and the digital wallet.