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Lessons from Telecom Regulation for Tech Competition Policy

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Abstract

This paper examines the parallels between historical telecommunications regulation and current proposals for increasing competition in technology markets, focusing on three key market characteristics the sectors share: network effects, economies of scale, and switching costs. Regulators have addressed these issues in telecommunications markets through mandatory interconnection among telephone networks, compulsory asset sharing, and number portability requirements. While some of these interventions proved successful, others—such as the 1996 Telecommunications Act’s complex leasing requirements—generated significant costs with limited benefits. Real competition ultimately came not from the beneficiaries of those requirements, but from facilities-based innovators who built alternative networks.

As the paper argues, policymakers should consider the history of telecommunications regulation—both the success stories and the cautionary tales—as they contemplate analogous forms of intervention in tech markets, which are similar to telecom markets in some respects but different in others. With those lessons in mind, policymakers should apply a careful cost-benefit analysis to proposed regulatory strategies for increasing competition in tech markets, recognizing that disruptive intervention can sometimes impede rather than promote genuine competition and innovation.

1. Introduction

From academic scholarship to remedies-phase antitrust briefs, creative proposals abound for promoting tech competition through complex regulatory mandates. The most ambitious of these would compel the largest technology companies to share data or other assets with their rivals or to make their platforms interoperable with competing platforms. Those proposals bear striking parallels to similar initiatives the two of us remember from 25 years ago, when we overlapped at the FCC in the wake of the Telecommunications Act of 1996. The hot topic of the day was how best to promote competition with the still-dominant

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Bell monopolies. And some of America’s brightest minds earnestly debated these questions: to what extent should regulators force the Bells to lease their network facilities to rival providers of landline phone service, and how much should the rivals pay for the privilege? This seemed like heady, consequential stuff. And the FCC’s corridors resounded into the late hours with terms like “UNE-P” and “TELRIC.”

Hardly anyone uses or even recognizes those terms anymore. The Bell companies are no longer dominant in any market, but the reason has little to do with the complex facilities-sharing rules we debated at the turn of the century. The reason is that technological advances and private investment supplanted the very market we were trying to make more competitive: the one for voice-grade landline phone service. The winners in this disruptive movement were the cable and wireless companies that built their own networks rather than relying on someone else’s and thus created far more consumer value than anyone could ever hope to squeeze out of legacy telephone company facilities.

We have been thinking about the lessons of that experience as we finalize the third edition of the *Digital Crossroads* telecom treatise, due for publication in early 2026.² This new edition has been several years in the making. It addresses a wide range of industry developments that have reshaped telecommunications policy since the second edition’s publication in 2013. These include the rise and fall (and rise and fall again) of common carrier regulation for broadband ISPs, further consolidation within the wireless industry, redoubled efforts to free up more spectrum for commercial uses, the increasing competitive significance of low-earth-orbiting satellite broadband, and seismic shifts in broadband subsidy initiatives.

The greatest change in the third edition, however, is our addition of a new chapter that asks what the history of telecommunications regulation can teach about competition policy for today’s largest digital platforms. When the two previous editions were published, most policymakers assumed that broadband providers and other telecom companies might require ongoing regulatory scrutiny but that the leading tech companies generally did not. For example, many on the left and in the center of the political spectrum saw net neutrality regulation for ISPs as a necessary means of preserving competition on the open internet. But few saw any corresponding need to mandate “search neutrality” from Google, “app store

² JONATHAN E. NUECHTERLEIN & HOWARD A. SHELANSKI, *DIGITAL CROSSROADS: TELECOMMUNICATIONS LAW AND POLICY IN THE INTERNET AGE* (MIT Press 3d ed. forthcoming 2026). Portions of this paper are taken from that third edition.

neutrality” from Apple and Google/Android, “marketplace neutrality” from Amazon, or “newsfeed neutrality” from Meta/Facebook.

All that has changed. Today, these companies are firmly in the regulatory crosshairs of policymakers on both sides of the political aisle. And the scrutiny extends beyond issues of content moderation and consumer protection to core questions of competition policy. The enduring market power of today’s tech giants has prompted a wide range of proposed measures to spur successful competitive entry, both in the United States and abroad. U.S. courts are already devising remedies in some of the key antitrust cases against big tech incumbents, including Google, and may soon be called to do so in the antitrust cases against Meta, Amazon, and Apple. Meanwhile, the European Commission and other jurisdictions are ramping up enforcement of new laws and regulations that govern the conduct of large digital platforms, and regulators around the world are casting an inquiring eye towards the competitive dynamics of new AI technologies.

As we explain in our book and summarize in this paper, many of these competition-oriented proposals for tech markets bear a striking resemblance to the regulatory measures that U.S. policymakers have taken, with varying degrees of success, to promote greater competition within the telecommunications industry over the past 50 years. For all the talk about “reining in Big Tech,” however, only a handful of commenters have noted these parallels with telecommunications regulation and the lessons we can draw from them.³ Those lessons are important, and they are a decidedly mixed bag, containing some success stories but also cautionary tales about overregulation. These lessons, we argue, should inform today’s decisions about when and how to promote competition in tech markets through regulatory intervention.

2. A Primer on Competition Rules for Telecommunications Networks.

From the 19th until the late 20th century, policymakers assumed that the telephone business, dominated by AT&T’s sprawling Bell System, was an enduring natural monopoly

³ Most of these commenters take a generally favorable view of legacy telecommunications rules and tech-oriented analogues. See, e.g., [Final Report](#) of the Stigler Comm. on Digital Platforms, Stigler Center for the Study of the Economy and the State, at 102-04 (2019); HAROLD FELD, [THE CASE FOR THE DIGITAL PLATFORM ACT: MARKET STRUCTURE AND REGULATION OF DIGITAL PLATFORMS](#), (Public Knowledge May 2019); Sen. Mark Warner, White Paper, [Potential Policy Proposals for Regulation of Social Media and Technology Firms](#), at 22 (2018). For a more skeptical view of those legacy regulatory strategies and their potential application to tech markets today, see Thomas Lenard & Scott Wallsten, [Antitrust Officials Want to Sell Google for Parts](#), WALL ST. J. (Dec. 3, 2024).

that should be heavily regulated as such but not subject to competition, which was viewed as counterproductive, wasteful, and ultimately futile.⁴ This natural monopoly assumption rested on several economic characteristics of the telephone industry. As we will discuss, each has close parallels in key tech markets today.

First, telecommunications networks are subject to strong *network effects*. Suppose you lived in a midwestern American city in 1900, and two non-interconnecting telephone companies offered you service. You would have been much more inclined (all else being equal) to select the company operating 80% of the lines rather than the one operating 20% because the people you wished to call would much more likely be on the larger network. The absence of interconnection arrangements among rival networks thus created a cutthroat race to build the largest customer base in the shortest time frame; the winner could then put all rivals out of business by pointing out the limited value of their smaller networks.

Economies of scale — a telecom network’s ability to reduce its per customer costs by increasing its total number of customers — further accelerated this process by permitting larger networks to undersell smaller ones. Any telecommunications provider contemplating the construction of a new network faces immense initial costs. For wireline telephone companies, these include the costs of digging trenches and laying thousands of miles of wires to reach different customer locations. These costs are *fixed* in that the provider must incur them up front before it can provide any volume of service. In many cases, these costs are also *sunk* in that the investment, once made, cannot be put to some other use, a fact that makes the investment particularly risky. In contrast, once a ubiquitous network is up and running, the *marginal* cost of providing service to each additional customer is often tiny by comparison, particularly for wireline networks. Given these enormous fixed costs and negligible marginal costs, it is typically much cheaper per customer for a provider to serve one million rather than one thousand customers.

Network effects and scale economies are related but distinct phenomena. Each concept describes a characteristic of markets in which, all else held constant, increasing the scale of a firm’s operations improves the ratio of (1) the *value* of the firm’s services to each customer and thus the revenues the firm can obtain from that customer to (2) the per-customer *cost* to the firm of providing those services. Network effects improve this ratio by

⁴ See generally *Omega Satellite Prods. Co. v. City of Indianapolis*, 694 F.2d 119, 126 (7th Cir. 1982) (Posner, J.) (discussing rationale for exclusive-franchise regulation of markets deemed natural monopolies).

increasing the value of the service to each customer, whereas scale economies improve it by decreasing the per customer cost of providing that service. In the absence of regulation, each result favors larger networks over their smaller rivals. And these market characteristics were long thought to confer insuperable advantages on the incumbent telephone provider—usually one of the Bell operating companies—in any given geographic area.

Starting in the 1970s, however, policymakers began questioning the natural-monopoly assumptions that had been conventional wisdom almost since the inception of the telephone industry. The service markets that first fell prey to competition were the ones in which overall call volumes were so huge that a competitor could efficiently build a rival network and earn profits even though it had only a small share of the total customer base. The quintessential market of this type was for business-oriented long-distance services between major cities, a market that MCI and other firms entered in the 1970s and 1980s with the help of new technology and the courts. Another example was the market for high-speed “special access” links between local networks and long-distance networks. The Bell companies that owned the remaining natural-monopoly assets—the local exchanges, with their last-mile connections to every home and business in a given calling area—tried to thwart their rivals in these newly competitive markets by refusing to interconnect with the upstarts or by making interconnection unnecessarily burdensome.

In each case, the U.S. government stepped in and imposed mandatory interconnection rules. Such rules are the principal means of requiring a large incumbent network to share its network externalities with other networks. For example, MCI’s long-distance network would have attracted only limited business if its customers could have called only other customers already hooked up to MCI’s network, and not the exponentially larger group of customers served by the Bell System. By forcing the Bell System to exchange telecommunications traffic between its subscribers and those of MCI, regulators greatly enhanced the value of MCI’s service to its own customers. Antitrust enforcers went one step further and, in 1984, forced AT&T to divest the individual Bell operating companies as a remedy for the Bell System’s long history of anticompetitive exclusion of MCI and other rivals in adjacent markets. But the interconnection mandates continued to apply to the post-divestiture Baby Bells as well as other incumbent local monopolists.

These mandates, however, were not a complete solution to Bell’s dominance in local telephone markets. Except in the most densely populated urban cores, prospective entrants concluded that call volumes were insufficient to justify the enormous per-customer costs of

deploying new lines to individual homes and businesses. And interconnection requirements by themselves could not nullify those scale advantages of the telephone incumbents. Large office buildings in Manhattan benefited from new competition among providers of last-mile network connectivity, but residential suburbanites did not.

Against that backdrop, Congress enacted the Telecommunications Act of 1996, which promised full-blown competition in all telecommunications markets through a variety of regulatory strategies. Some were fairly uncontroversial. For example, Congress forced the industry to allow consumers to take their phone numbers with them when they switched providers.⁵ The consumer benefits of that *number portability* mandate far outweighed the modest costs. By making it easier for consumers to change providers, Congress permanently increased competitive pressure on all providers to keep their customers happy.

Less successful, however, was Congress's effort to equalize the disparity in scale economies between large incumbents and new entrants. To level the playing field, Congress granted entrants qualified rights to *lease capacity* on facilities owned by the incumbent telephone company at low regulated rates, thus enabling them to participate in the incumbent's economies of scale by availing themselves of the same low per-unit costs.⁶ For the ensuing decade, the telecommunications industry was consumed with bitter arguments about how best to apply those statutory leasing requirements, also known as rights of "access" to "unbundled network elements" ("UNEs").

In 1996, and again in 1999 and 2003, the FCC adopted implementing rules that took a very expansive view of a new entrant's rights to lease an incumbent's network assets in order to provide competing local telephone services. These asset-sharing obligations, however, presented major implementation costs and lessened the incentives of incumbents and new entrants alike to invest in their own networks. And courts repeatedly concluded that the FCC had not explained why such costs were worth incurring for the sake of "completely synthetic competition."⁷ As Justice Breyer observed, "it is in the *unshared*, not the shared, portions of the enterprise that meaningful competition would likely emerge,"

⁵ 47 U.S.C. § 251(b)(2).

⁶ *Id.* § 251(c)(3) & (d)(2).

⁷ *E.g., United States Telecom Ass'n v. FCC*, 290 F.3d 415, 424 (D.C. Cir. 2002); *see also AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 389-90 (1999); *United States Telecom Ass'n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004).

and “rules that go too far, expanding the definition of what must be shared beyond that which is essential to that which merely proves advantageous to a single competitor, risk costs that, in terms of the Act’s objectives, may make the game not worth the candle.”⁸

At the end of the day, the 1996 Act’s asset-sharing controversies generated enormous regulatory uncertainty—as well as stratospheric legal bills for the participants—but they did very little to achieve the Act’s stated objectives. Genuine competition with the Bell companies’ landline telephone services did not come from companies that relied on legal rights to lease the Bells’ soon-to-be-obsolete copper wires and circuit-switching capacity. It came instead from facilities-based mobile and broadband providers, as discussed below.

3. Lessons for Tech Regulation.

With that background, we now turn to the parallels with present-day proposals for competition-focused regulation of tech platforms. In the United States, the largest such platforms include Apple, with its iOS operating system and app store; Google, with its search engine, Android operating system, YouTube video service, and digital advertising platforms; Meta, with its social media apps (Facebook and Instagram) and various messaging apps (including WhatsApp and Messenger); Microsoft, with its Windows operating system and Office productivity suite; and Amazon, with its e-commerce marketplace.⁹

In varying respects, these companies derive their enduring clout from market characteristics that bear a deep economic resemblance to the market characteristics that policymakers historically invoked to justify heavy regulation of telecommunications incumbents. These include network effects, immense economies of scale and scope, and switching costs. As we have seen, policymakers responded to those economic characteristics in telecommunications markets with a variety of regulatory initiatives they believed would promote greater competition, including interconnection obligations, compulsory sharing of network assets, and number portability. What lessons can we glean from that experience when considering analogous proposals for regulatory intervention in tech markets?

⁸ *Iowa Utils. Bd.*, 525 U.S. at 429-30 (Breyer, J., concurring in part and dissenting in part). Although Justice Breyer dissented from other aspects of the majority holding in *Iowa Utilities Board*, he sided with the majority in rejecting the inadequately justified scope of the FCC’s network-sharing rules.

⁹ Although U.S. competition authorities tend to focus on these American companies, China-based companies such as ByteDance/TikTok, Temu, and Alibaba have comparable market positions globally and compete to differing degrees with their U.S. counterparts.

Network effects and interconnection/interoperability requirements.

The early Bell System monopoly showed how network effects can tip a market toward whichever network first gains a critical mass of subscribers, often regardless of comparative network quality. In principle, today’s consumers might likewise be unwilling to switch from an incumbent social network or messaging platform to an objectively superior new entrant because many of their friends and family members use the incumbent network and might not switch to the new one. The regulatory question in such circumstances is whether to force incumbents to share these network externalities with their rivals by means of an interconnection or interoperability requirement.

Some digital platform markets feature network-effect dynamics similar to those found in telecommunications markets, although there are some important differences. First, direct network effects are most salient for online services that involve elements of sharing or communication, where the size of the user base matters a great deal; examples include messaging and social-networking services. Network effects are less prevalent—at least in their direct form—in the case of other online services such as e-commerce platforms.

Second, as a practical matter, it is far more straightforward in some digital-platform contexts than others to impose interconnection or interoperability requirements. Ordering an instant-messaging platform such as Apple iMessage to interconnect with Android-based messaging, as the European Commission recently contemplated doing before shelving the proposal,¹⁰ is at least conceptually understandable. Such an interconnection mandate would be costly to administer, and it might face difficult implementation challenges (think end-to-end encryption), but it is a plausible subject for debate. In contrast, it would be orders of magnitude more complicated to order a social network to “interconnect” with—i.e., make itself interoperable with—competing social networks that use different protocols for making personal information available to varying audiences at a user’s discretion and might have quite different use cases. It is difficult even to conceptualize how such interoperability would work in practice, and the attendant privacy and implementation concerns would be immense.

Third, network effects tend to be less pronounced in digital-platform markets than in telecommunications markets because of the greater prevalence of *multihoming*—a customer’s

¹⁰ European Commission, [Commission Closes Market Investigations on Microsoft’s and Apple’s Services Under the Digital Markets Act](#) (Feb. 13, 2024).

ability to subscribe to multiple competing services simultaneously. Multihoming was a practical impossibility for telephone users of the early 1900s: few people wanted to join two competing telephone networks, with different copper lines connected to different household phones; they almost invariably chose the single network with the most subscribers and waited for the market to tip. But multihoming is much easier for many online services. For example, any consumer with an iPhone can easily switch back and forth between iMessage and WhatsApp and among X/Twitter, Bluesky, Facebook, and Reddit.

The ease of such multihoming attenuates the role of network effects in most digital platform markets and makes interconnection mandates less critical to competition than they are in physical-layer telecommunications markets. Indeed, there is instructive FCC precedent on that point. In 2003, the FCC abolished its interoperability mandate for AOL's instant messaging services, which it had imposed as a condition of approving the AOL/Time Warner in 2001. As it explained, “many consumers [we]re willing to use multiple platforms” for instant messaging, including new services by Microsoft and Yahoo! in addition to AOL, suggesting “that consumer lock-in is not a concern here.”¹¹ Today, the ease of online multihoming among rival mobile apps has led to major competitive shifts in a number of digital markets, all without interoperability requirements. For example, multihoming enabled Lyft to take significant market share from Uber in 2017 (before Uber won some of it back) and helped Spotify dislodge Apple as the leading provider of online music.

Two caveats are in order. First, the ease of multihoming does not by itself guarantee competitive conditions. Google co-founder Larry Page has famously suggested that digital market power is always ephemeral because “competition is only a click away.”¹² In many contexts, however, consumers do not “click away” from a leading platform in favor of promising alternatives even when they can readily do so, as a district court recently found to be the case with Google’s dominant search engine.¹³ Our point is narrower: multihoming

¹¹ Mem. Opinion & Order, *Applications for Consent to the Transfer of Control of Licenses (AOL/Time Warner)*, CS Docket No. 00-30, FCC No. 03-192, ¶ 10 (2003). The FCC also noted that the market had not tipped to AOL, that neither Microsoft nor Yahoo! saw any need to make their instant-messaging platforms interoperable with each other, and that the overhang of AOL’s interoperability mandate may have deterred it from launching advanced instant-messaging applications. *See id.* ¶¶ 6-13.

¹² Larry Page, *2012 Update from the CEO*, Google (2012).

¹³ *See United States v. Google LLC*, No. 20-cv-3010, slip op. at 236 (D.D.C. Aug. 5, 2024) (“Google’s dismissal of the importance of scale is inconsistent with market realities. Google often warns that competition is ‘only a click away.’ However,

often facilitates, but does not guarantee, competition in digital platform markets. Google has enduring market power in search not because of direct network effects as such, but because it enjoys other advantages of incumbency, including greater scale economies—a point to which we will soon return.

Second, although *direct* network effects may entrench dominant digital platforms less firmly than they entrenched dominant telecommunications networks, *indirect* network effects sometimes play an important role in sustaining the market power of platform incumbents.¹⁴ For example, as highlighted in the turn-of-the-century antitrust case against Microsoft, third-party developers focused on producing applications for Microsoft’s desktop Windows operating system rather than rival operating systems because Windows had the most users and the payoff for the developers was thus greatest.¹⁵ That *applications barrier to entry* made Windows increasingly attractive to consumers because it uniquely supported an increasing number of complementary applications, which in turn reinforced developers’ focus on designing applications for Windows rather than the alternatives.

A more recent example of this phenomenon involves smartphone operating systems. The value and utility of an iPhone or Android device grow both with the number of users and with the number of apps the device supports. Applications developers deciding where to allocate their efforts have obvious incentives to develop apps in the first instance for those two platforms. This feedback effect could leave competing platforms with fewer developers of complementary products, thereby making them less attractive to consumers. One victim of this mobile-era applications barrier to entry was, paradoxically, Microsoft’s own Windows Phone, which failed in part because too few third-party developers designed apps for the mobile Windows operating system.¹⁶

the paltry penetration in the market by competitors over the years has been a refutation of that theory by tangible and measurable results in the real world.”) (cleaned up).

¹⁴ See generally *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2280 (2018) (“[T]wo-sided platforms often exhibit what economists call indirect network effects. Indirect network effects exist where the value of the two-sided platform to one group of participants depends on how many members of a different group participate.”) (cleaned up) (citing D. EVANS & R. SCHMALENSEE, *MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS* 25 (2016)).

¹⁵ *United States v. Microsoft*, 253 F.3d 34, 65 (D.C. Cir. 2001).

¹⁶ See Vlad Savov, *Windows Phone Was a Glorious Failure*, THE VERGE (Oct. 10, 2017); Scott Wallsten, *Life on the Dark Side of Network Effects: Why I Ditched My Windows Phone*, TECH. POL’Y INST. (Jan. 2, 2013).

That said, whether such feedback effects pose competitive problems is not self-evident, as app developers decide whether to build for an operating system based not solely on whether one platform is bigger than another, but on whether any given platform (even if smaller than the dominant ones) is large enough to justify investment in developing apps for it. If so, a developer would leave money on the table if it ignored users of that smaller, but still big enough, platform. Some app developers might even focus their efforts on smaller platforms if they believe they might take a larger share of relevant business on those platforms than on the largest one where app competition might be more crowded.

In sum, the lessons we can draw for Big Tech from telecom interconnection requirements are mixed. Interconnection rules were plainly appropriate in legacy telephone markets because direct network effects were enormous and multihoming was a practical impossibility. Some (but by no means all) tech markets feature strong network effects, yet those that do are often subject to multihoming. Interoperability mandates might well provide some consumer benefits in some contexts by extending positive network externalities to small entrants. But the question, as always, is whether those benefits, which can be quite speculative, outweigh the considerable implementation costs and regulatory uncertainty of government-imposed interoperability rules. That question can be answered only on a market-by-market basis.

Scale economies and asset-sharing obligations

Apart from network effects, another feedback dynamic in digital technologies comes from scale and, in particular, from access to large stores of proprietary data. Digital platforms can obtain richer information at higher velocity than most conventional businesses can. For example, it is easier for a shopping website to see which products customers have clicked on than it is for a store to follow customers around to track their browsing behavior. Depending on the market, companies with access to more consumer data can outperform companies with access to less; where that is so, this advantage will attract more consumers to the data-rich companies and thereby generate more data those companies can collect and analyze, which may in turn increase their competitive advantage over data-poor rivals, and so forth.

This feedback loop may be particularly strong for search and AI services. A search algorithm will be more refined and effective the more queries it processes and the more data it can use to verify the quality of its results. Various kinds of machine-learning applications depend on feedback to refine their processes and outcomes. Models for generative AI require

large amounts and many different kinds of data for training so that they can provide results across various media and innumerable topics.

To the extent the data needed for such model training is proprietary and not widely available, data-feedback effects can help consolidate the market power of leading platforms. As more users join a platform, the platform receives more data with which it can improve its services, in turn attracting yet additional users whose presence reinforces this feedback effect and leaves smaller platforms behind. The most widely used search engine likewise has more user response data with which it can refine and train its search algorithms. In the government's antitrust case against Google, the district court cited that fact as a key market phenomenon that reinforced Google's monopoly power in search.¹⁷

The mere fact that data is valuable, however, does not necessarily mean that it exhibits ever-increasing returns to scale or that it gives market leaders, which normally gather the most data, a clear path towards monopoly. There is a robust debate in competition policy about whether data acquisition feeds winner-take-all feedback effects in digital markets.¹⁸ In all likelihood, the answer varies by market; the incremental value of data acquisition is likely much greater in some markets than others.

Depending on whether and when returns to additional data begin to diminish, large volumes of such information can give a major competitive advantage to market leaders (at least if smaller rivals cannot obtain relevant and similarly valuable data from third party sources). The more modest the volume at which returns from additional information diminish, the more likely it is that multiple competing platforms can obtain the customer data they need to deliver a competitive product or service. However, if the benefits of additional information begin to decline only at a very high volume of information, and if significant differences in access to customer data exist between incumbents and challengers, then control of the largest share of customer data could contribute to gaining and maintaining market dominance.

Where the costs of matching such scale are prohibitive, smaller rivals face a predicament similar to the one confronting new telecom entrants in the years before the

¹⁷ *Google*, slip op. at 230-36.

¹⁸ Compare Maurice Stucke, *Should We Be Concerned About Data-opolies?*, 2 GEO. L. TECH. REV. 275 (2018), with Daniel Sokol & Roisin Comerford, *Antitrust and Regulating Big Data*, 23 GEO. MASON L. REV. 1129 (2016), and Catherine Tucker, *Digital Data, Platforms and the Usual [Antitrust] Suspects: Network Effects, Switching Costs, Essential Facility* (2019).

Telecommunications Act of 1996. Even with full rights of interconnection, new entrants during that era could not hope to rival incumbent telcos in residential local exchange markets because they lacked the incumbents' enormous scale economies. In particular, they could not realistically hope to win enough market share to justify the expense of digging up the streets and laying cables to reach every household that might wish to sign up for service. Congress responded with the asset-sharing regime discussed previously, which entitled entrants to lease the incumbents' facilities at low, regulated rates.

Some commentators have urged policymakers to follow in the footsteps of this 1996 Act regime by granting new entrants in concentrated tech markets rights of access to the datasets of dominant platforms. For example, Oxford professor Viktor Mayer-Schönberger and coauthor Thomas Ramege have called for data-sharing mandates to temper what they view as the natural-monopoly characteristics of tech markets. Under their proposal—

every company above a certain size, say, those with more than a ten percent share of the market, that systematically collects and analyzes data would have to let other companies in the same market access a subset of its data. The larger a firm's market share, the more of its data others would be allowed to see. Data would be stripped of personal identifiers, augmented with metadata to make clear what sort of information the data provided and where it came from, and selected randomly to prevent companies from gaming the system (by granting access only to largely useless data, for instance).¹⁹

On a more company-specific level, the U.S. Department of Justice has recently proposed a similar data-sharing requirement as a remedy for Google's allegedly anticompetitive exclusion of rivals in the markets for general search and search text advertising.²⁰

¹⁹ Viktor Mayer-Schönberger & Thomas Ramege, *A Big Choice for Big Tech: Share Data or Suffer the Consequences*, FOREIGN AFFAIRS 52 (Sept./Oct. 2018).

²⁰ Exec. Summ. of Plaintiffs' Proposed Final Judgment, *United States v. Google LLC*, No. 1:20-c-v-03010-APM (D.D.C. filed Nov. 20, 2024) ("Data at scale is the essential raw material for building, improving and sustaining a competitive general search engine. Through its unlawful behavior, Google has accumulated a staggering amount of data over many years, at the expense of its rivals. Plaintiffs' [proposed remedy] aims to remedy this anticompetitively acquired advantage. [It] requires Google, among other things, to make its search index available at marginal cost, and on an ongoing basis, to rivals and potential rivals; and also requires Google to provide rivals and potential rivals both user-side and ads data for a period of ten years, at no cost, on a non-discriminatory basis, and with proper privacy safeguards in place. ... To remove barriers to entry and erode Google's unlawfully gained scale advantages, [the proposed remedy also] requires Google to syndicate (subject to certain restrictions) its search results, ranking signals, and query understanding information for ten years.") (citations and internal quotation marks omitted).

In our view, policymakers should greet broad data-sharing proposals with skepticism, for reasons familiar from our experience with the 1996 Act’s asset-sharing regime. Congress and the FCC erroneously assumed in 1996 that compelled asset sharing was the only feasible path to competition in local telecommunications markets. That sharing regime was largely unprecedented and imposed major costs on the industry, in the form of disruption, litigation, and regulatory uncertainty.²¹ And it created only a pale substitute for genuine competition because its regulatory beneficiaries could earn a profit without innovating; they could simply resell capacity on the networks of the wireline telco incumbents. In the end, the incumbents did hemorrhage market share, but they did not lose much of it to the companies that sought to piggyback on their obsolescent copper networks. Instead, the incumbents were eclipsed by facilities-based mobile wireless and cable broadband providers, which had no need for such piggybacking in the first place. Because of them, and not because of the 1996 Act’s facilities-sharing regime, the percentage of American households that subscribe to any landline voice service has fallen from nearly 100% in 1996 to about 25% today.²²

To paraphrase John Lennon, sometimes real competition is what happens while competition policy is making other plans. Today’s policymakers should remember that lesson as they contemplate similarly disruptive remedies for today’s digital markets. In particular, asset-sharing remedies should be considered with caution and imposed only in very limited circumstances.

Switching costs and portability requirements

The market-concentrating consequences of network effects and scale economies can be reinforced if users must incur significant switching costs when they leave one platform for another. A potential customer choosing among competing alternatives for the first time

²¹ As the Supreme Court observed, “The sharing obligation imposed by the 1996 Act created something brand new — the wholesale market for leasing network elements. The unbundled elements offered pursuant to § 251(c)(3) exist only deep within the bowels of [the legacy telephone network]; they are brought out on compulsion of the 1996 Act and offered not to consumers but to rivals, and at considerable expense and effort. New systems must be designed and implemented simply to make that access possible[.]” *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko*, 540 US. 398, 410 (2004) (internal quotation marks and citation omitted).

²² Andrew Van Dam, *Barely a Quarter of Americans Still Have Landlines. Who Are They?*, Wash. Post (June 23, 2023). Another data point is similarly instructive: in 1996, there were roughly sixteen mobile phone subscriptions per one hundred Americans. Within just five years, that figure had nearly tripled; by 2015, the number of cell phone subscriptions exceeded the number of potential subscribers as some people carried multiple devices. See World Bank, [Mobile Cellular Subscriptions \(per 100 people\) – United States](#) (visited Mar. 5, 2025).

might weigh them objectively according to price, quality, and other dimensions. A consumer might initially choose product A only because its price is lower than the price of competing product B. In the absence of switching costs, the customer would change to product B for subsequent purchases if B's price fell below that of A (quality etc. held constant). However, as buyers use product A, they might become comfortable with it, invest their time in mastering its use or customizing its features, and make complementary purchases that work better (or exclusively) with A.

In these circumstances, a later price decrease or quality increase in B might not be enough to attract many customers away from A; the costs of switching might to some degree "lock in" customers to product A. These consumer switching costs might include, for example, the expense of replacement equipment, the time needed to master new software, or the hassle of notifying acquaintances about one's new contact information. Switching costs can make market power more durable by tilting the playing field toward incumbents, especially where direct prices for consumers are zero or very low.

These lock-in effects are pervasive in the modern economy, and they do not necessarily prevent successful market entry.²³ For example, despite switching costs (and network externalities), Microsoft Word displaced WordPerfect, which had previously displaced WordStar; Facebook overcame MySpace, which had previously displaced Friendster; Spotify displaced Apple's iTunes; and AOL gained and lost a dominant lead in instant messaging.

Nonetheless, regulatory measures to reduce switching costs can still make abundant sense in industries dominated by entrenched monopolists or oligopolists. The answer in any given context depends on whether the competitive benefits of such measures outweigh their implementation costs.

The chief example in the telecommunications space consisted of the number portability requirements that Congress and the FCC imposed through the 1996 Act. Before then, consumers, most of whom had widely shared their phone numbers, had to give them up to switch carriers. To be sure, all of those carriers were interconnected, so consumers who switched would not lose the demand-side network externality of being able to call anyone else. But they would confront the time-consuming annoyance of informing all their friends

²³ See generally Michael Katz and Carl Shapiro, *Technology Adoption in the Presence of Network Externalities*, 94 J. POL. ECON. 922 (1986); Michael Katz and Carl Shapiro, *Product Introduction with Network Externalities*, 40 J. INDUS. ECON. 55 (1992).

and other contacts that their telephone numbers had changed. Policymakers responded by requiring carriers to port a subscriber's number not only among competing wireline networks, and not only among competing wireless networks, but also between wireline and wireless networks.²⁴ And that initiative has been a significant regulatory success: although it required carriers to upgrade their networks (so that they knew how to route calls to these newly carrier-agnostic numbers), it eliminated a major switching cost for subscribers and helped level the playing field among competing providers.

Consumers confront analogous switching costs today if, for example, they leave one social network or messaging platform for another or trade in an iPhone for an Android phone (or vice versa). One form of such costs involves the potential loss of a consumer's individually relevant data. If the application at issue has a messaging or sharing function, consumers might be hesitant to switch to a competitor if they could not easily port their contact lists to the new service. Similarly, consumers whose use of an application over time trained the application to adapt to their particular preferences might not want to rebuild their history and preferences on a new application. Some foreign jurisdictions have taken steps to overcome such potential barriers; for example, the United Kingdom has espoused a "right to data portability" that "allows individuals to obtain and reuse their personal data for their own purposes across different services."²⁵

While "data portability" has received much attention as a means of freeing consumers from the clutches of dominant platforms, regulation is sometimes unnecessary to achieve it. In 2018, some of today's leading tech companies collaborated to create the Data Transfer Project, which facilitates the porting of data among their respective services.²⁶ That project is limited in scope, and not everyone views it as an adequate solution.²⁷ But its very existence suggests that outright regulation might not be needed to ensure adequate data portability.

²⁴ See *CTIA v. FCC*, 330 F.3d 502, 504-07 (D.C. Cir. 2003).

²⁵ U.K. Information Commissioner's Office, *Right to Data Portability*; see also Gabriel Araújo Souto, *Data Portability: A Necessary Right for Users and Competitors of Digital Platforms*, SSRN (2018). For an overview of recent experience with E.U. and U.K. data portability initiatives, see Sarah Turner & Leonie Maria Tanczer, *In Principle vs In Practice: User, Expert and Policymaker Attitudes Towards the Right to Data Portability in the Internet of Things*, COMPUTER L. & SEC. REV., Vol. 52 (2024). For a skeptical view of data portability requirements in general, see Thomas M. Lenard, *If Data Portability Is the Solution, What's the Problem*, TECH. POL'Y INST. (Jan.2020).

²⁶ See Russell Brandom, *Apple Joins Google, Facebook, and Twitter in Data Sharing Project*, THE VERGE (July 30, 2019).

²⁷ See, e.g., Zander Arnao, *Can Data Portability Happen on Video-Sharing Platforms?*, BROOKINGS INST. (Oct. 11, 2022).

Instead, regulatory jawboning might be sufficient to create the requisite industry norms. If those norms falter, however, regulatory intervention might be appropriate. Again, the question for regulators in such circumstances is essentially a cost-benefit analysis: do the projected consumer benefits of portability mandates outweigh their likely costs, including the costs of implementation and unintended consequences? Number portability is the leading example of a portability mandate that passed that test, but—as noted—even it imposed some costs in the form of necessary network upgrades.

* * *

This paper has addressed only some of the lessons we can draw from decades of national experience with telecommunications regulation. In our forthcoming new edition of *Digital Crossroads*, we examine several others of equal importance.

For example, telecommunications policymakers have long debated how, if at all, to regulate vertical integration between providers of local connectivity services (e.g., 1990s-era local phone companies or today’s broadband ISPs) and providers of complementary services (e.g., 1990s-era long-distance companies or today’s internet applications). Those debates have spawned a wide range of regulatory experiments, from the breakup of the Bell System in 1984 to the FCC’s *Computer Inquiry* rules in the last quarter of the 20th century to the FCC’s on-again, off-again approach to net neutrality requirements. These various regulatory initiatives have met with mixed success and have strong, often-overlooked parallels with efforts by today’s policymakers to limit vertical integration by the largest tech companies by subjecting them to structural separation requirements²⁸ or common-carrier-style “nondiscrimination” rules.²⁹

Our overarching point, elaborated in greater detail in our book, is that courts and policymakers should focus hard on the lessons we can draw from such telecom-focused

²⁸ See Elizabeth Warren, Twitter, Oct. 14, 2021 (message to tech companies: “You can be the umpire, or you can be a player, but you can’t be both at the same time.”); Digital Consumer Protection Commission Act of 2023, S. 2597, 118th Cong. (2023) (co-sponsored by Sen. Warren); see also Ganesh Sitaraman, *How to Regulate Tech Platforms*, THE AMERICAN PROSPECT (Nov. 8, 2018) (arguing that “tech platforms” should be both “separated completely from all of their subsidiary business lines that operate on the platform” and subject to public-utility-style obligations “to treat all users with fair, neutral, and nondiscriminatory terms”).

²⁹ Legislative examples of such regulation include Articles 6(1) and 6(5) of the now-enacted Digital Markets Act (DMA) in the European Union and, in the United States, the proposed American Online Innovation and Competition Act, S.2023, 118th Cong. (introduced June 15, 2023).

regulatory experiments when considering the cost-benefit tradeoffs of analogous remedies for the largest tech companies. In the words of George Santayana, “Those who cannot remember the past are condemned to repeat it.”³⁰

³⁰ GEORGE SANTAYANA, *THE LIFE OF REASON: REASON IN COMMON SENSE* 284 (Scribner’s 1905).