



In Search of a Competition Policy for the Digital Sector

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INTRODUCTION

Competition policymakers have a difficult relationship with the digital sector. The large digital ecosystems, in particular, pose a unique challenge. The combination of economic features that foster high concentration and market power, rapid growth via M&A, and high levels of innovation go a long way toward explaining competition policy's legacy in the digital sector.

This legacy features virtually no challenges to digital mergers across two massive cycles of mergers and acquisitions (M&A) beginning in the mid-1990s. These cycles include the expansion of the now mature, first-generation digital ecosystems and the most recent build-out of cloud and artificial intelligence that continues to drive the digital transformation and its impact on innovation and economic growth.

Antitrust enforcement, which works to spur innovation by promoting competition, must find a way to address market power in the digital sector against a backdrop of rapid growth and innovation. It has been reticent to do so. Only recently have enforcers more vigorously engaged with the digital ecosystems. But a recent series of merger challenges in the U.S. have proved unsuccessful. Moreover, the recent surge of monopolization cases against large players will take years to resolve and the remedies that will ultimately emerge in successful cases remain uncertain.

This approach to U.S. antitrust enforcement is not likely to be effective in a rapidly transforming digital sector that is charging ahead at warp speed. By the same token, the compliance-based ex ante regulation of digital platforms in Europe is no panacea. Few competition policy experts, however, have asked whether a more coherent policy

approach to promoting competition in the digital sector is desirable, or needed. This PPI report, “In Search of a Competition Policy for the Digital Sector,” concludes that it is.

PPI’s analysis unpacks the major factors that collectively bear on the need for a more clearly articulated digital competition policy. These include the unique economics and business models in the digital sector, rapid growth through acquisition, and high levels of innovation and dynamism. The analysis evaluates the policy implications, against this unique backdrop, of antitrust’s late arrival on the digital scene. It proposes three initiatives that lay the groundwork for framing a coherent digital competition policy:

- The next political administration should convene an expert “blue ribbon” commission to identify digital competition policy approaches that address both market power and innovation in the digital sector.
- The U.S. antitrust agencies should commission a comprehensive set of retrospectives on past digital merger cases, including cases that were challenged, and those that were investigated but did not lead to an enforcement action.
- The U.S. antitrust agencies should issue guidance on antitrust remedies, including updated guidance on merger remedies but also anticipated approaches to restoring competition in successful digital monopolization cases.

I. LAYING THE GROUNDWORK FOR A DIGITAL COMPETITION POLICY

The ubiquity and expansion of digital ecosystems has myriad implications across the economic, political, and social landscapes. These include market power, consumer choice, privacy, diversity in the media, and innovation. The state of competition in markets where the digital

ecosystems operate is a common theme that motivates many of these policy issues.

Yet competition enforcers worldwide find themselves in a tussle with the digital sector. The digital “ecosystems” that feature a platform, cloud technology, and myriad applications are particularly fast-growing, dynamic, and innovative. The digital ecosystems also possess natural economic features that make markets prone to concentration and are hard to disentangle from strategic M&A and business practices that entrench or extend market power.

Moreover, there is no end in sight to the expansion of the digital sector. For example, the global market for “digital transformation,” which was valued at about \$990 billion in 2024, is only getting larger, with an expected annual growth rate of about 24% through 2030.¹ This latest wave of growth and expansion is driven by the use of advanced technology, especially artificial intelligence (AI), and further advancements in cloud technology.²

Competition policy is struggling to adapt and adjust to the ongoing digital transformation. The dormancy of antitrust enforcement during the cycle of expansion that created the now mature first-generation digital ecosystems and the latest wave of expansion in cloud and AI has put enforcers and regulators in “catch-up” mode. The outcome has been a jumbled global experiment in controlling market power.

For example, Europe is pursuing a regulatory compliance system under the Digital Markets Act (DMA). Under the DMA, “designated” entities promote competition on and across their platforms by fostering contestability, or entry of new players that provide choice for consumers.³ A recent report takes a cautionary tone regarding the DMA, noting that “Regulatory barriers to scaling up are particularly onerous in the tech sector” and “the EU’s regulatory stance towards tech companies

hampers innovation.”⁴ These observations highlight that the EU trade-off between stronger ex-ante regulatory safeguards and more regulatory light-handed rules to promote investment and innovation.⁵

After decades during which U.S. enforcers challenged virtually no mergers, they recently brought a series of digital merger challenges and monopolization cases against the large digital players. While these cases will ultimately rein in some forms of anticompetitive conduct, they will take years to resolve, remedies will be controversial, and any handoffs to future political administrations could well change their outcomes.

This state of play in competition policy in digital has a number of implications. One is that a lack of enforcement experience in the digital sectors means that policymakers may not be particularly well-equipped to handle further cycles of consolidation. These include growth that is producing the second- and third-generation digital players and expansion in cloud and AI that are driving the digital transformation.

A second is that a policy of unwinding consolidation and market power long after it has been acquired is not likely to effectively, or efficiently, advance the goal of promoting competition and innovation. Antitrust, which indirectly promotes innovation by restoring competition, moves slowly in the first place, but antitrust in “catch-up” mode exacerbates the challenge of promoting competition while rapid growth and innovation concurrently threaten to overtake it.

Third, and perhaps most important, does this pattern of antitrust enforcement reveal important information about the appropriate role and shape of competition policy in a high-growth, high-innovation sector? This report begins a dialogue on these issues and questions in order to frame

the contours of a more coherent, clearly articulated competition policy for the digital sector that both controls market power and supports innovation and growth.

II. THE UNIQUE CHALLENGE OF THE DIGITAL ECOSYSTEM BUSINESS MODEL

Promoting competition in the digital sector remains one of the most hotly debated and difficult policy issues of our era. No sector in modern history has posed a similar conundrum. Consider several features of the digital ecosystems. First, the digital ecosystems are a unique business model, found in a variety of markets, including social media and internet search and advertising.⁶ The major currency of exchange for users in many digital ecosystems is information, not dollars. Moreover, the value proposition centers on attracting and retaining users to an ecosystem and collecting and monetizing their data through advertising and algorithmically-driven suggestions.⁷ Second, the digital ecosystems largely grow through acquisition, as opposed to internal, R&D-generated expansion.⁸ Growth through acquisition is typically faster than internal growth, with more immediate access to new products, services, technologies, and intellectual capital. Accelerating growth can lead to faster achievement of economies of scale and coordination, penetration of more markets, and expansion of market share. But it comes with less control over innovation versus under organic growth where it is slower but easier to control and potentially more sustainable.⁹

Third, the digital ecosystems feature extraordinary engineering-economic integration. Integration covers a multi-sided market or platform that connects users and providers, cloud infrastructure to power the ecosystem, and a constellation of applications such as fintech, healthtech, e-commerce, and gaming and entertainment.¹⁰ The tight connection between integration and value proposition has important implications for competition policy.

Fourth, the unique economic features of the digital ecosystems make them naturally prone to dominance. These include, for example, economies of scale in cloud infrastructure and¹¹ data externalities, where only a small sample of information on user preferences and behavior can be extrapolated to a broader group.¹² In some digital ecosystems, powerful network effects increase the value of a service as more users adopt it, leading to tipping to a single large provider.

Finally, users are at an information disadvantage vis-à-vis operators of digital ecosystems. They often do not know how their data is used and are frequently inconsistent in following their data privacy preferences.¹³ These features make it easier for the digital ecosystems to use algorithms to shape user preferences that become ever smarter, in real time, through the deployment of AI and machine learning. These effects collectively keep users engaged in a digital ecosystem, compounding the problem of tipping in “winner-take-all” markets.

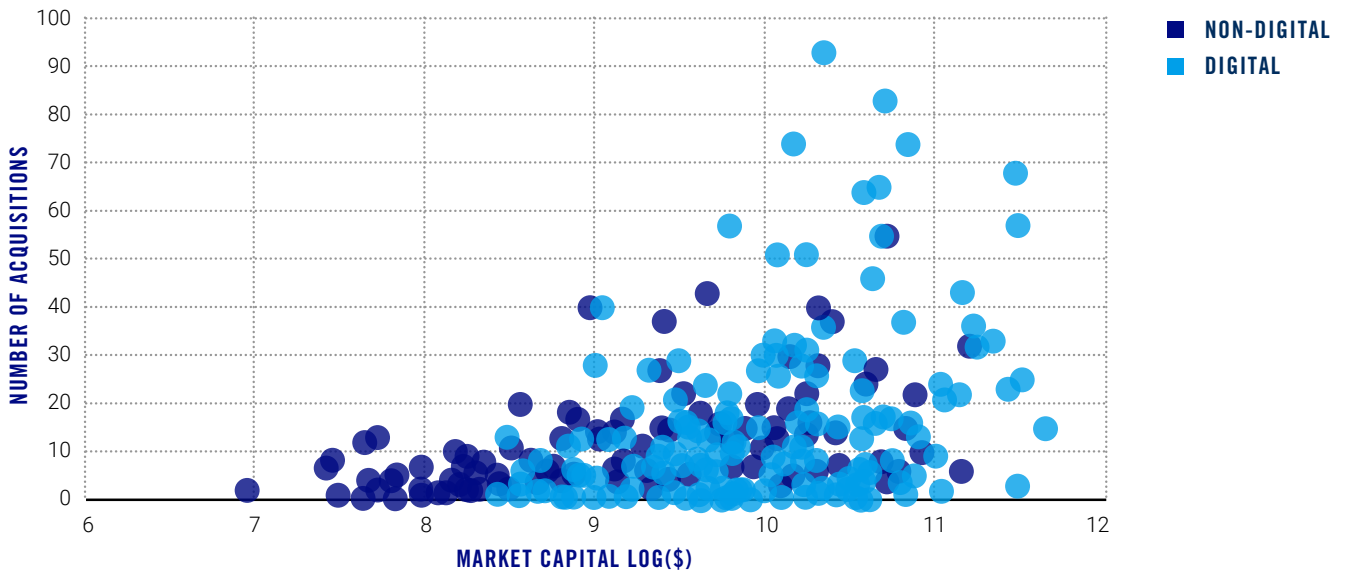
These unique economic features have made it more difficult for antitrust enforcers to frame coherent policy responses. But they do suggest two pathways for promoting competition and protecting incentives to innovate. One is to advance “intra-platform” competition by limiting a platform owner’s incentive or ability to self-preference, or favor their own products or services at the expense of rivals. Another is promoting “inter-platform” competition or the ability of new entrants to gain a foothold, by keeping barriers to entry low and promoting user switching to competing services.¹⁴ How these approaches are prioritized and implemented by competition policymakers, however, remains unclear.

III. THE DIGITAL SECTOR’S APPETITE FOR GROWTH BY ACQUISITION

Antitrust enforcement in the U.S. is based on a preference for organic growth, through internal R&D that leads to the introduction of new and better products or business models. This is rooted in the incipiency standard in Section 7 of the Clayton Act, which works to stop harmful mergers that are likely to substantially lessen competition before they occur.¹⁵ Contrast this fundamental tenet with research showing that the firms in the digital sector grow primarily through acquisition.¹⁶

Analysis shows that digital firms are both more acquisitive and more valuable than non-digitals. Acquisitiveness is moderately and positively correlated with a company’s size, as measured by market capitalization or funding levels. The lower left end of the spectrum in Figure 1 shows this relationship. It is dominated by the less acquisitive, lower-valued non-digitals, while the upper right is dominated by more acquisitive, more valuable digital firms. Non-digitals are, on average, between about 33-64% less acquisitive, and 30-57% lower in value, than their digital counterparts.¹⁷ M&A, therefore, is a major pathway to driving innovation and growth in the digital sector.

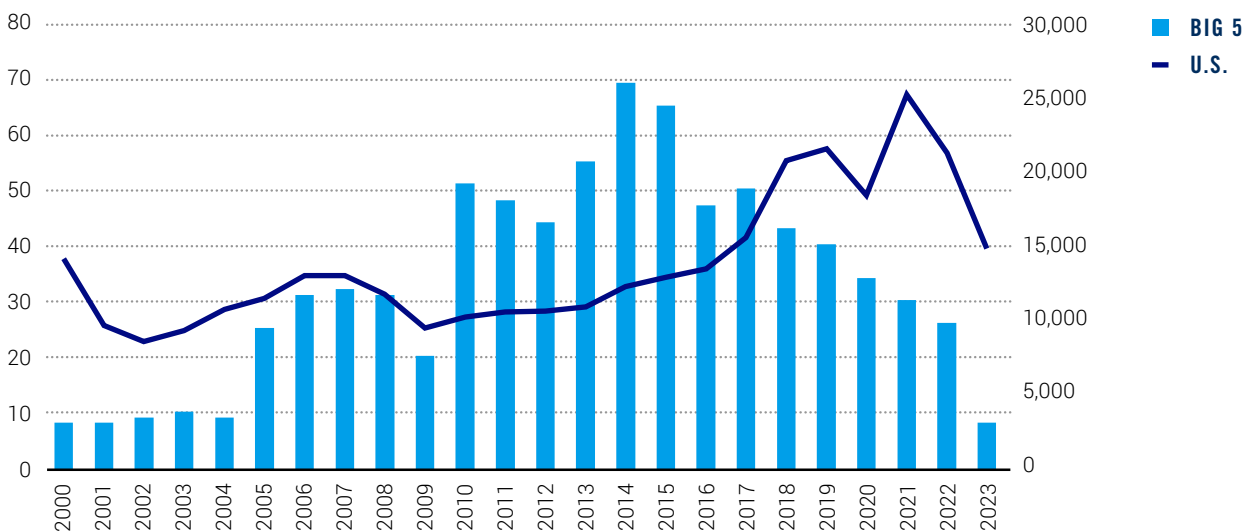
FIGURE 1: DEAL COUNTS V. MARKET VALUE FOR DIGITAL AND NON-DIGITAL COMPANIES (1995-2021)



What does the digital sector’s voracious appetite for acquisition mean for competition policy? A starting point is the expansion of the largest and oldest digital ecosystems — Amazon, Apple, Google, Meta, and Microsoft. As shown in Figure 2, the cycle of almost 900 acquisitions began in the

mid-1990s, accelerated around 2005, and peaked in 2014-15.¹⁸ The ramp-down in acquisitions since 2014-15 likely signals the maturity of the largest digital ecosystems, due to natural limits on company size, the availability of suitable takeover targets, or escalating regulatory risk.

FIGURE 2: ACQUISITION ACTIVITY BY THE BIG 5 DIGITAL ECOSYSTEMS VERSUS U.S. DEAL COUNT (2000-2023)



The peak and downcycle of acquisitions by the largest digital ecosystems occurs much earlier than the broader U.S. merger cycle, which peaked in 2021-2022. Among other things, this misalignment of the cycle of acquisition by the largest digital ecosystems with the larger M&A cycle signals unique factors driving digital expansion.¹⁹ But the digital sector is now in an even newer phase of transformation. As the demand for cloud infrastructure and cloud computing capability increases, more cycles of growth through acquisition will occur.

AI plays a central role in driving the growth of the cloud due to the high computing demands imposed by generative AI models. One survey of companies reveals that almost 50% are currently using generative AI public cloud services, while another almost 40% are experimenting with their use.²⁰ The symbiosis between cloud and AI and its impact on economic activity and commerce creates a powerful flywheel effect. Cloud computing providers rely on AI to power the automated systems that deliver information technology services and software as a service (SaaS) applications, while cloud computing supports AI by offering infrastructure to rapidly expand its deployment.²¹

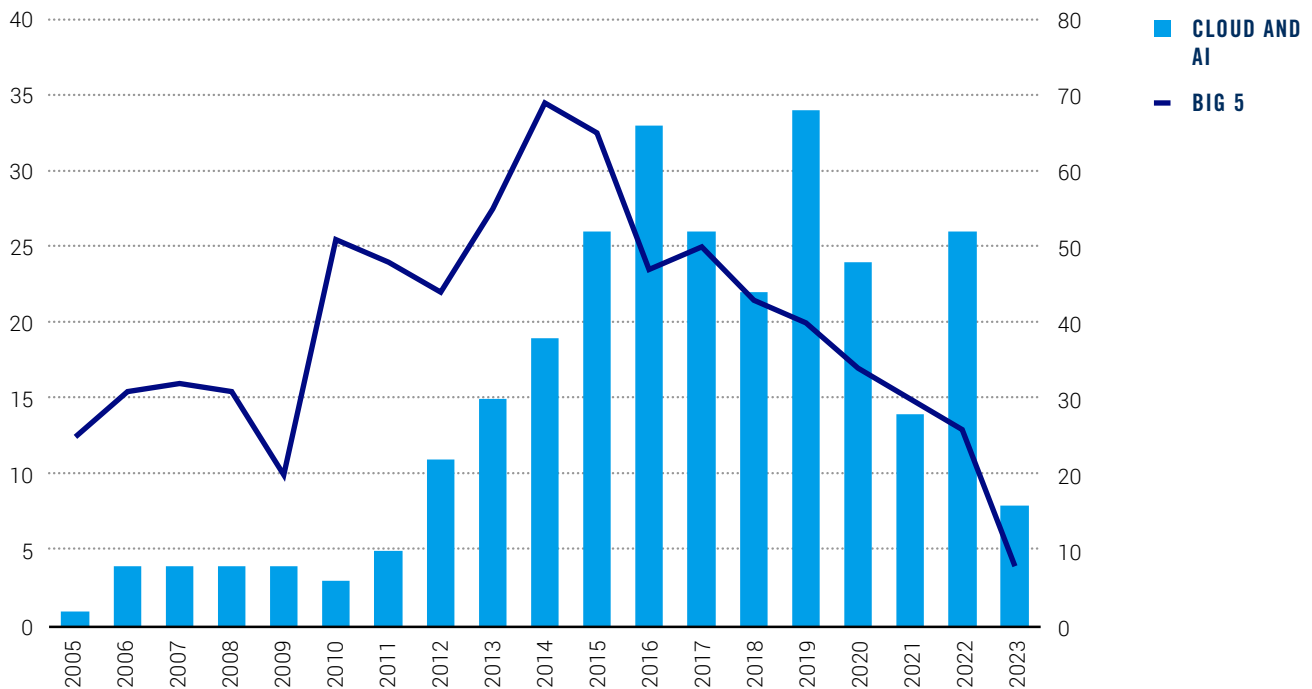
The U.S. cloud computing market was valued at almost \$700 billion in 2024 and is expected to reach \$1.45 trillion in 2029, or an annual rate of growth of about 16.5%.²² There are three major cloud players in the U.S. Amazon Web Services (AWS) has a market share of about 31%, Microsoft Azure's market share is 25%, and Google Cloud's share is 11%, bringing the share of the top three to about 67%.²³ Firms with smaller shares include IBM, Oracle, Salesforce, and Alibaba Cloud, resulting in a market at 1,750 HHI, or just below the highly concentrated level.²⁴ These market shares and the rank order of the top three cloud providers have remained consistent over time.

Other dynamics reveal more about the state of competition in the cloud market.²⁵ For example, Google Cloud has long scrapped for turf to expand its cloud market share.²⁶ AWS cloud capability appears to have resulted largely from internal R&D and growth, not acquisition.²⁷ And Microsoft's Azure is currently under the antitrust microscope for investments in leading AI firms and licensing practices that are alleged to lock in legacy cloud customers.²⁸ Moreover, there are recent antitrust probes into the control of AI semiconductor chips, and ownership stakes of major cloud providers in leading AI developers.²⁹

Given the meteoric growth of the first-generation digitals, the more recent cycle of expansion in cloud and AI, and emerging antitrust issues in these markets, PPI identified AI-related acquisitions by the largest cloud providers and firms that specialize in AI. This search identified additional companies, including Qualcomm, Meta, Intel, Nvidia, and Genesys.³⁰ Collectively, these companies made almost 280 AI-related acquisitions between 2005-2023.

As shown in Figure 3, acquisition activity involving AI ramps up around 2011 and peaks around 2018-2019. Notably, this cycle occurs four to five years after the peak in acquisitions by the first-generation digital ecosystems in 2014-15, also shown in Figure 3. This signals a separate cycle of expansion in a fast-developing technology market that is also out of sync with the broader cycle of M&A in the U.S. (see Figure 2). This is additional evidence that expansion in the digital sector is motivated by a different set of factors than M&A more generally, including growth through acquisition.

FIGURE 3: AI ACQUISITIONS VERSUS ACQUISITIONS BY THE BIG 5 DIGITAL ECOSYSTEMS (2005-2023)



IV. ANTITRUST’S LATE ARRIVAL ON THE DIGITAL CONSOLIDATION SCENE

A major feature of antitrust enforcement in the digital sector over the last 30 years is that U.S. enforcers have challenged virtually no mergers and brought no monopolization cases, until only recently. This is true for the first-generation digital ecosystems and also for the latest cycle of growth in cloud and AI. Antitrust inquiries into cloud and AI consolidation have begun only recently, a delayed response that follows the same pattern as enforcement involving the largest digital players.

To get a better sense of this dynamic, PPI reviewed cases brought by the DOJ and FTC involving digital markets across the three areas of antitrust law--mergers, monopolies, and anticompetitive agreements.³¹ We liberally included cases in the counts of different enforcement actions, even in instances where the businesses crossed the divide between digital and non-digital. The results show

a handful of antitrust complaints, beginning with the DOJ’s challenge of Google’s acquisition of ITA in 2011 and a few others since, the monopolization cases filed against Google (two cases) Apple, Amazon, and Meta between 2020 and 2024, and one recent case involving algorithmic collusion.

There is a clear uptick in cases opened around 2020, a peak in number of cases in 2022, and a downturn since. This surge in enforcement activity comes about eight years after the peak in expansion of the first-generation digital ecosystems and about five years after the peak in large cycle of cloud and AI-related acquisitions. To get a clearer picture of merger enforcement in the digital sector, where there is more detailed data, we collected statistics from the annual Hart Scott Rodino reports to Congress for a major subsector, web search portals and data processing services, from 2001-2022.³²

A key enforcement metric is the rate at which the agencies challenge mergers as illegal under Section 7 of the Clayton Act. The data show that, as a percentage of total deals cleared to the agencies for review, the challenge rate is only about 3.6% in this segment of the digital sector, much lower than the 15% average across all sectors. In contrast, however, the rate of “second requests” for more information at earlier stages of review, is 25% for the digital sector. This is significantly higher than the rate across all sectors of about 20%. The year-over-year change in rate of second requests rose steadily beginning around 2007 and peaked in 2016. It bumped up again in 2019 and has remained high since then. On the merger front, therefore, the agencies took close early-stage looks at digital deals but challenged very few. These cases include Google-DoubleClick, Microsoft-LinkedIn, and Facebook-Instagram.

Macroeconomic level data supports the idea that consolidation in the digital sector should have generated some antitrust scrutiny, perhaps much sooner than it has. One study shows, for example, that between 1980-2016 markups in the web search portals and data processing services sector increased and the rates at which new firms entered the markets in the sector declined.³³ These statistics signal an increase in market power and higher barriers to entry over time.

At the same time, however, digital firms show a much higher level of productivity relative to all firms. For example, labor productivity for NAICS codes in digital sectors 518 and 519 between 2017-2022 was significantly higher than in the non-farm sector.³⁴ Total factor productivity for digital firms in Europe was higher in the digital sector as compared to the non-digital sector.³⁵ The digital sector thus reveals growing concerns about market power, against the backdrop of high productivity and dynamism. This sets the stage for a discussion about redefining competition policy for the digital sector.

V. THE ROLE OF ANTITRUST IN THE DIGITAL SECTOR

Antitrust’s peculiar history in the digital sector raises a number of questions. For example, the historically low rate of merger challenges could be explained by any number of factors. Enforcers may have, early on, lacked the expertise or resources to address the rapid expansion of the digital ecosystems. They may also have been persuaded that claimed benefits of digital mergers, such as product innovation, ameliorated concerns over market power. To be sure, the expansion of the first-generation digital ecosystems occurred when the perceived risk of over-enforcement was high and enforcers and courts gave deference to pro-competitive justifications for consolidation.³⁶

Much has changed since the development of the first-generation digital ecosystems. The antitrust agencies have added staff expertise in computer science and technology. The updated 2023 Merger Guidelines include extensive discussion that may aid in framing theories of competitive harm in digital mergers moving forward.³⁷ Moreover, recent challenges to digital mergers signal the inclination to challenge mergers in the digital arena. In the last three years, for example, the agencies brought three major merger challenges in the digital sector in 2022 alone.

In Meta-Within, the FTC argued that the merger eliminated Meta as a potential competitor in the rapidly growing market for dedicated fitness VR apps.³⁸ In Microsoft-Activision, the FTC argued that the merger would strengthen incentives to make Activision’s gaming applications exclusive to Microsoft’s gaming ecosystem, including the cloud.³⁹ In United Health-Change Healthcare, the DOJ argued that by integrating Change Healthcare’s digital claims processing platform with a large commercial insurer, the merged company would have stronger incentives to disadvantage rivals.⁴⁰

The government did not prevail in any of these cases, which were based on novel or complex theories of harm or not supported by compelling evidence.⁴¹ These losses in recent merger cases bring antitrust's involvement in the digital sector full circle. This circle defined by the agencies' hard looks at digital mergers but few merger challenges during a formative period of expansion in leading digital ecosystems, followed by recent, largely unsuccessful merger challenges, and several large monopolization cases.

The bigger question is whether the below-average rate of merger enforcement in the digital sector over the last two decades is a "bug" or a "feature." If it is a bug, antitrust enforcers have missed, for whatever reason, blocking important mergers that contributed to the accretion of market power. The policy implication is that a better approach to merger control is needed. Indeed, the incipiency standard in U.S. merger law makes it the first "line of defense" against the accumulation of market power and emergence of dominant firms. Its incremental, case-by-case approach to blocking harmful consolidation allows benign or procompetitive acquisitions to move forward and prompts firms to find alternative innovation pathways.

If the below-average record of merger enforcement in the digital sector is a feature, we might conclude that enforcers have not erred by not flagging harmful mergers in key digital markets. After all, enforcers appear to have looked hard at deals, but they did not challenge them. The policy implication here is that a low rate of merger enforcement may not be unusual in a nascent, fast-growing sector marked by unique business models, dynamism, and innovation. This is likely one reason why the U.S. overtook Europe in the digital race.

If below-average merger enforcement is a feature, however, promoting competition will put more pressure on other antitrust tools, such as

antimonopoly law. But this record is as yet both incomplete and uncertain and will likely remain so for some time. For example, the only judicial opinion available in a monopolization case thus far is in the Google search case. There, the court found that Google is a monopolist, and maintained a monopoly, in two markets for search services.⁴² This conduct was aided by exclusive contracts for default placement of the Google search engine on devices. The outcome of the FTC's case against Facebook, which alleges that the acquisitions of Instagram and Facebook reinforced its monopoly in social networking, will be a telling verdict on whether those acquisitions should have been challenged at the time they were proposed.

Moreover, the digital competition policy conversation in monopolization cases is increasingly turning to remedy. Breakup remedies are held out as the easy fix for anticompetitive conduct in the digital arena. To be sure, evidence from the 1984 AT&T case indicates that breakups spurred competition and innovation in wired telecommunications.⁴³ But antitrust breakup remedies may be more difficult to craft for complex digital ecosystems while preserving incentives to innovate. For example, network effects, economies of scale, and locking in users through algorithmic preference-shaping foster a tendency toward concentration—features that may not disappear even if a large company is broken into smaller ones.

While the monopolization cases against the oldest, first-generation digital ecosystems progress slowly, the digital transformation moves ahead rapidly. New cycles of acquisition and expansion will continue to emerge, as will newer, powerful players, such as Open AI. This casts into sharp relief the ability of antitrust to stay on top of promoting competition in the digital sector, while recognizing sustained high levels of innovation that creates a "moving target" for enforcers.

VI. POLICY RECOMMENDATIONS

PPI's analysis supports the idea that the absence of a coherent policy approach to promoting competition in the digital sector is neither desirable, nor sustainable. Is some combination of antitrust and light-handed regulatory oversight that promotes intra-platform and inter-platform competition, without sacrificing dynamism and incentives to innovate, the better pathway? And what other policy tools, such as privacy law, could bootstrap competition policy? PPI concludes that more work is needed to lay the groundwork for a coherent competition policy for the digital sector. This work should be based on three policy priorities that candidates for leadership of the U.S. antitrust agencies in the next administration should fully embrace:

- **The next administration should convene a blue ribbon commission to identify policy approaches for promoting competition and innovation in the digital sector.** Antitrust is a powerful tool for promoting competition. Regulation that promotes access and fair competition on and between platforms is another. Other policies, including privacy, could also play an important role in supporting competition. A blue ribbon commission of experts would identify and prioritize the most effective public policy tools, or mix of policy tools, to promote competition and innovation in the digital sector.
- **The U.S. antitrust agencies should commission a comprehensive set of retrospectives of past digital merger cases.** Merger retrospectives are an important tool for evaluating the effectiveness of merger enforcement. This initiative would focus on cases that were challenged by the DOJ and FTC, but also cases that were terminated after an investigation but not challenged. For cases that were challenged and lost, retrospective analysis should evaluate if those mergers resulted in anticompetitive effects and harm to consumers, including higher prices, or lower quality and innovation.
- **The U.S. antitrust agencies should issue guidance on antitrust remedies.** The agencies do not issue general guidance on antitrust remedies. The DOJ's guidance on merger remedies was revised most recently in 2020 and withdrawn in 2022 by the Biden administration. The FTC's guidance is now 12 years old. New guidance on merger remedies is badly needed. Moreover, in light of the several pending monopolization cases at both agencies, it is important to provide transparency around how they would propose restoring competition resulting from harmful conduct. Such guidance would include specific discussion of remedies in digital cases, accounting for the unique economics and business models in the sector.

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