Issue Brief

Acquiring AI Companies

Tracking U.S. AI Mergers and Acquisitions

Authors
Jack Corrigan
Ngor Luong
Christian Schoeberl

CSET CENTER *for* SECURITY *and* EMERGING TECHNOLOGY

November 2024

Executive Summary

The commercial artificial intelligence industry is evolving rapidly, and the competition dynamics in this burgeoning sector will impact the rate, diversity, and direction of AI innovation in the years ahead. Maintaining U.S. technological leadership in the years ahead will require policymakers to promote competition in the AI sector and prevent incumbent firms from wielding their market power in harmful ways.

One important component of this effort will be monitoring mergers and acquisitions activity in the AI sector. M&A allows companies to gain access to talent, technologies, and other resources that may otherwise be out of their reach or too difficult to develop in-house. These transactions can allow firms to maintain their technological edge, gain economies of scale, and expand their business, all of which can drive growth and promote the healthy functioning of a market economy. On the flip side, however, M&A can also enable companies to entrench their economic power, reduce incumbent firms' incentives to invest in innovation, and hamper the ability of new disruptive firms to enter the market.

This brief seeks to shed light on major trends in M&A activity in the U.S. AI sector between 2014 and 2023. Our analysis is based on a dataset of 4,354 M&A transactions gathered through PitchBook, a third-party provider of corporate financial information. We found:

1. **Annual M&A transactions involving AI companies more than doubled over the last decade, from 225 in 2014 to 494 in 2023.** However, M&A transactions have declined since their peak in 2021 (828).

2. **The proportion of total M&A transactions in which non-AI companies acquired AI companies grew from 10 percent in 2014 to 45 percent in 2023.** Still, the majority of these acquisitions were conducted by other companies in the technology industry rather than firms in other sectors.

3. **Large incumbent technology companies rank among the top acquirers of AI companies, including Apple (28 transactions), Alphabet (23), Microsoft (18), and Meta (16).** However, the overall AI M&A activity remains fairly diffuse, with 1,446 unique acquirers engaging in AI M&A transactions over the past decade.

4. **In U.S. cross-border AI acquisitions, American firms have purchased 503 foreign AI companies, while foreign firms have bought 271 American AI companies.** U.S. firms most frequently acquired AI firms based in the United Kingdom and

Canada. Firms in the United Kingdom and Canada were also the most frequent foreign acquirers of U.S. AI companies.

The commercial AI sector is still in its infancy, and the dynamics of market competition today can have major effects on the trajectory of AI innovation tomorrow. Continuing to monitor the landscape of M&A transactions at home and abroad—particularly those involving incumbent technology companies—will be crucial to promoting an innovative and dynamic AI ecosystem in the years ahead. Additionally, it will be important for competition authorities to update their processes and procedures to appropriately scrutinize alternative business arrangements such as "partnerships" between incumbent firms and AI startups, which function similarly to traditional acquisitions but appear to avoid regulatory frameworks.

Table of Contents

Introduction

In the fall of 2010, three London-based technologists and entrepreneurs founded a company with the ambitious goal of building the world's first artificial general intelligence (AGI). At the time, AI systems were highly specialized, trained to perform discrete tasks within narrowly defined application areas. By employing recent advances in deep neural networks and reinforcement learning, the trio believed they could teach machines to think more like humans, gathering knowledge from disparate sources and applying it across a wide range of domains.[1] The founders envisioned AI systems that would one day help to solve some of the world's most pressing scientific and societal problems. [2]

Within a few years, the company, named DeepMind, made some major strides. Most notably, its researchers developed an AI system that taught itself to play seven classic Atari games. In a few of these, including Pong and Breakout, the AI even outperformed human experts.[3] Though DeepMind had yet to release a product or monetize its AI-powered gaming software, it raised more than $26 million by the spring of 2012.[4] In 2014, seeing the promise in its fledgling AI systems, Google (now Alphabet) acquired the startup for a then-whopping $650 million.[5]

Over the next decade, DeepMind helped cement Alphabet's reputation as an AI pioneer, building systems that could predict the structure of proteins and best the world's top players of chess, Go, and shogi.[6] As the race to develop generative AI heated up in Silicon Valley, Alphabet merged DeepMind with its other in-house AI development team, Brain, to form Google DeepMind.[7] Today, this consolidated entity is the epicenter of the company's AI efforts, producing Gemini, Gemma, and other models that have made Alphabet a top competitor in the rapidly expanding AI industry. It is impossible to know what might have happened had Alphabet not gone through with its acquisition of DeepMind, but it is difficult to imagine the tech giant being better off had it not acquired the British startup a decade ago.

Alphabet's success following the acquisition of DeepMind underscores the critical role that mergers and acquisitions can play in shaping the trajectory of an industry. M&A allows companies to gain access to talent, technologies, and other resources that otherwise may be out of their reach. These transactions can allow firms to maintain their technological edge, gain economies of scale, and expand their business, all of which can drive growth and promote the healthy functioning of a market economy.[8] On the flip side, however, M&A can enable companies to entrench their economic power, reduce incumbent firms' incentives to invest in innovation, and hamper the ability of new disruptive firms to enter the market.[9]

M&A transactions can also play a role in shaping the landscape of international technology competition. The UK government has noted that Google's acquisition of London-based DeepMind may have set back the country's domestic AI sector, and it has subsequently increased its scrutiny of national security-relevant business transactions.[10] The Committee on Foreign Investment in the United States (CFIUS) has similarly intensified its reviews of cross-border transactions involving countries aiming to acquire technologies relevant to national security, including AI, biotechnology, and quantum computing.[11]

As AI systems become increasingly integrated across the global economy, analyzing M&A activity in the AI industry will be crucial for maintaining U.S. technological leadership, monitoring AI adoption across sectors, and promoting a competitive, diversified, and resilient AI ecosystem.[12] The federal government's recent investigations into AI industry partnerships and revisions of merger guidelines have renewed discussions about the role that M&A plays in shaping emerging technology sectors.[13] We hope to inform those discussions by examining broad trends in M&A activity involving AI companies over the last decade.

We begin by exploring how the number of annual AI M&A transactions has changed over time, as well as the types of companies involved in those deals. We then examine the top acquirers of AI companies and cross-border M&A transactions involving the U.S. and foreign AI markets. We conclude with broad takeaways for policymakers looking to promote a dynamic and competitive AI market in the years ahead.

Methodology

This research aims to shed light on the AI-related M&A activity involving U.S.-headquartered buyers or targets between 2014 and 2023. Our analysis leverages data from PitchBook, which provides corporate and financial information on publicly-traded and privately-held companies.[14] Using PitchBook data, we determine the location of buyers' and acquired companies' headquarters, map the relationships between corporate subsidiaries and their parent entities, and identify the buyers and targets involved in the AI sector. We include M&A transactions in the analysis if either the buyer or the target are:

1. Assigned to PitchBook's "Artificial Intelligence & Machine Learning" vertical or includes an AI-related keyword in their description (see Appendix 1 for more details) and;

2. Headquartered in the United States

To ensure deals are assigned appropriately, subsidiaries received the headquarters locations of their parent entities. If the subsidiary was not AI-relevant but the parent company was, then the parent's designation was used. Lastly, we exclude M&A deals involving more than one acquirer, as well as deals in which less than 100% of the target company was acquired.[15] We manually reviewed a random sample (n=200) of the resulting set of deals to ensure relevance to our analytical goals.[16]

Using this methodology, we constructed a dataset that includes 4,586 U.S. AI M&A transactions conducted over the past ten years.[17] This dataset encompasses three types of M&A transactions, which we refer to collectively as "AI acquisitions":*

1. **AI Buyer/AI Target:** Transactions in which the acquirer (or its parent entity) is designated as AI-relevant, and the company being acquired is also designated as AI-relevant.

2. **AI Buyer/Non-AI Target:** Transactions in which the acquirer (or its parent entity) is designated as AI-relevant, but the company being acquired is not designated as AI-relevant.

* See Appendix 2 for more information on the three types of M&A transactions.

3. **Non-AI Buyer/AI Target:** Transactions in which the acquirer (or its parent entity) is not designated as AI-relevant, but the company being acquired is designated as AI-relevant.

Our analysis relies on PitchBook, which collects and verifies industry assignments, headquarter data, and parent-subsidiary relationships from a variety of sources. However, like all data sources, PitchBook is imperfect and has a number of limitations.

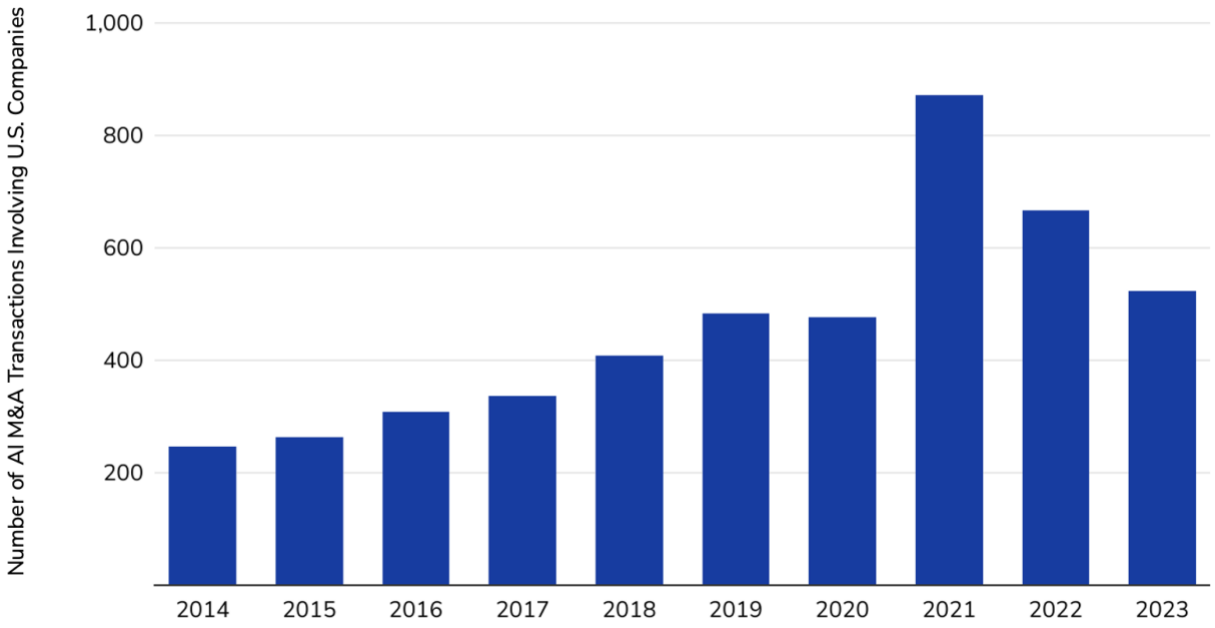
First, PitchBook is unlikely to capture all relevant AI buyers and targets given that the AI industry is evolving quickly as new technologies are introduced, new companies adopt AI systems, and new investors enter the market. Similarly, there may be M&A deals that were not publicly reported on and thus not included within PitchBook. Furthermore, the "Verticals" assignment and recorded keywords are subject to PitchBook's collection process, which may favor companies that emphasize their AI capabilities.

We validated and manually reviewed random samples to ensure the AI-relevance of parties and the details of the deals are reliable. Despite these limitations, this report provides useful snapshot information about the U.S. AI M&A landscape to further inform the competitiveness policy in the near future.

Findings

Our analysis found that overall M&A activity involving U.S. AI companies has trended upward over the last decade. The number of annual AI M&A transactions more than doubled, rising from 247 in 2014 to 523 in 2023. As Figure 1 shows, the number of annual M&A transactions involving U.S. AI companies grew steadily between 2014 and 2019, plateaued in 2020, and then spiked sharply in 2021, with 871 total deals marking an 83 percent increase from the prior year. While the number of transactions has fallen since then, overall M&A activity in 2023 was still somewhat higher than before the 2021 spike.

Figure 1. Annual AI M&A Transactions Involving U.S. Companies, 2014–2023



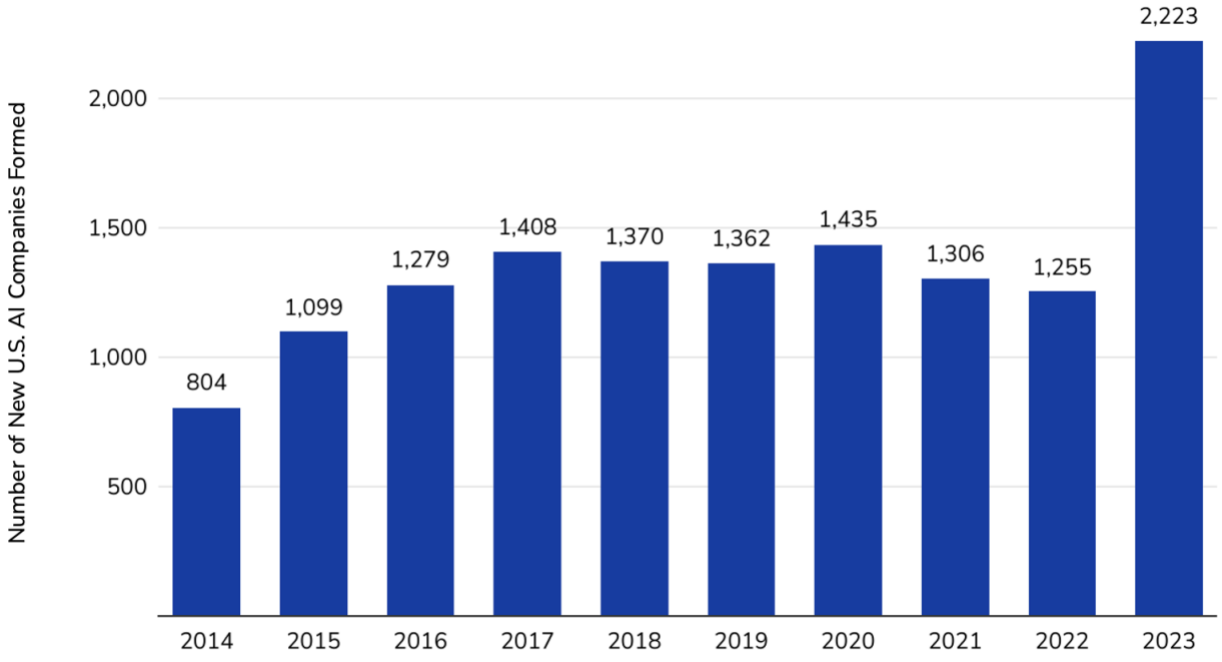
Source: CSET analysis of data provided by PitchBook Data, Inc.

There are a variety of factors that could have contributed to these trends in AI M&A transactions. The steady growth in the number of M&A deals in the latter half of the 2010s coincided with an expansion of the overall U.S. AI sector.[18] As shown in Figure 2, the number of new AI companies formed in the United States each year grew 75 percent between 2014 and 2017, and continued hovering at this elevated level before

spiking in 2023 amid the generative AI boom.* Global investment in the AI industry also grew significantly during this same period, though we were unable to determine the exact number of new global firms based on our data.[19] It is perhaps unsurprising that we observed an increase in AI M&A transactions as more companies entered the sector and the technology underlying their products improved.

Additionally, the spike and subsequent drop-off in AI acquisitions between 2020 and 2023 generally tracks broader economy-wide trends in M&A during that same period. Analysts at Boston Consulting Group found virtually every industry experienced a notable increase in the number of M&A transactions between 2020 and 2021, followed by a slight decline in 2022.[20] While the trend was more pronounced in our analysis of AI acquisitions, it is notable that the AI sector followed similar patterns as other industries. There are a number of potential explanations for these economy-wide fluctuations in M&A, including changing interest rates and economic disruptions related to the COVID-19 pandemic, though determining the exact causes is beyond the scope of our analysis.

Figure 2. Annual U.S. AI Company Formation, 2014–2023



Source: CSET analysis of data provided by PitchBook Data, Inc.

* It is important to recognize that Figure 2 does not reflect the overall size of the U.S. AI market (e.g., it does not include company exits). Even so, given the prevalence of U.S. firms in the AI sector, U.S. company formation is a useful proxy for overall market size.

Beyond the increase in total AI M&A activity, we also observed that the types of companies participating in transactions changed over time. As discussed in the previous section, our analysis encompasses three different types of AI M&A transactions: AI acquirers buying AI companies, non-AI acquirers buying AI companies, and AI acquirers buying non-AI companies. Different factors are likely to motivate each type of transaction. As with other intra-industry M&A transactions, AI companies may acquire other AI companies to gain access to new talent, eliminate competitors, expand existing AI products and services, or for a variety of other reasons. Non-AI companies may acquire AI companies as a way to quickly adopt AI capabilities without building them from scratch. AI companies may purchase non-AI companies in order to augment or diversify their existing AI offerings, and potentially to access new distribution channels for those products.* One example is Alphabet's (an AI company) acquisition of the healthtech firm FitBit (a non-AI company) in 2021, which allowed Alphabet to offer more AI products tailored to healthcare. AI firms may also purchase non-AI firms to support non-AI lines of business. Uber's (an AI company) acquisition of Postmates (a non-AI company), which expanded the rideshare company's food delivery business, likely falls into this category.[21]

Our analysis found that over the last decade, the most common type of AI acquisition involved AI companies buying non-AI companies. This category accounted for 56 percent of the M&A transactions in our dataset (2,576). Roughly 32 percent of the total transactions involved non-AI buyers acquiring AI companies (1,464), and just 12 percent entailed AI companies buying other AI companies (546).

However, we also observed that the annual distribution of deal types changed dramatically over time. As shown in Figure 3, in 2014 only about 10 percent of M&A transactions in our dataset involved non-AI companies buying AI companies, but by 2023 this category accounted for nearly 45 percent of transactions. During that same period, the share of transactions in which AI companies acquired AI companies grew

* Many AI companies are large conglomerates that operate in multiple sectors. Additionally, firms may also acquire companies for reasons that have nothing to do with gaining new technological capabilities. Industry incumbents may acquire startups to eliminate potential competitors, for example, or private equity investors may acquire firms in order to restructure and flip them for a profit or facilitate an industry roll-up. Our dataset offers little information on the rationale behind specific acquisitions—the discussion here is intended to highlight broad trends and potential capabilities-based reasons why different types of firms may engage in AI acquisitions. For more, see: James Chen, "Roll-up Merger: Overview, Benefits and Examples," *Investopedia*, May 19, 2024, https://www.investopedia.com/roll-up-merger-definition-4683958.

slightly from 4 percent to 13 percent, and the share involving AI companies buying non-AI companies shrunk from 86 percent to 42 percent.*

Figure 3. Share of Annual AI M&A Transactions by Deal Type, 2014–2023

Deal Year	Total Deals	AI Acquiring AI	AI Acquiring Non-AI	Non-AI Acquiring AI
2014	247	4%	86%	11%
2015	264	5%	85%	10%
2016	308	7%	77%	16%
2017	337	9%	62%	29%
2018	409	13%	56%	31%
2019	484	12%	52%	36%
2020	477	13%	50%	37%
2021	871	15%	49%	36%
2022	666	15%	49%	36%
2023	523	13%	42%	44%
Total	**4,586**	**12%**	**56%**	**32%**

Source: CSET analysis of data provided by PitchBook Data, Inc.

The rapid rise in the proportion of deals involving non-AI companies acquiring AI companies suggests that firms across the economy are increasingly looking to integrate AI into their operations and commercial offerings, and many are turning to M&A to acquire those capabilities rather than develop them in-house. Still, this trend should not be overstated. Over half of the non-AI companies that acquire AI firms are involved in the information technology (IT) sector, and while we do observe acquisitions by firms in other sectors such as finance, healthcare, and consumer goods, they account for a relatively small share of overall transactions (see Appendix 4 for more information). This

* The total number of transactions between AI acquirers and non-AI companies grew modestly during this period, just at a much slower rate than transactions in the other two categories (see Appendix 2).

does not necessarily mean that firms in these other sectors are failing to adopt AI, but rather that they may more often access AI tools through external IT vendors.*

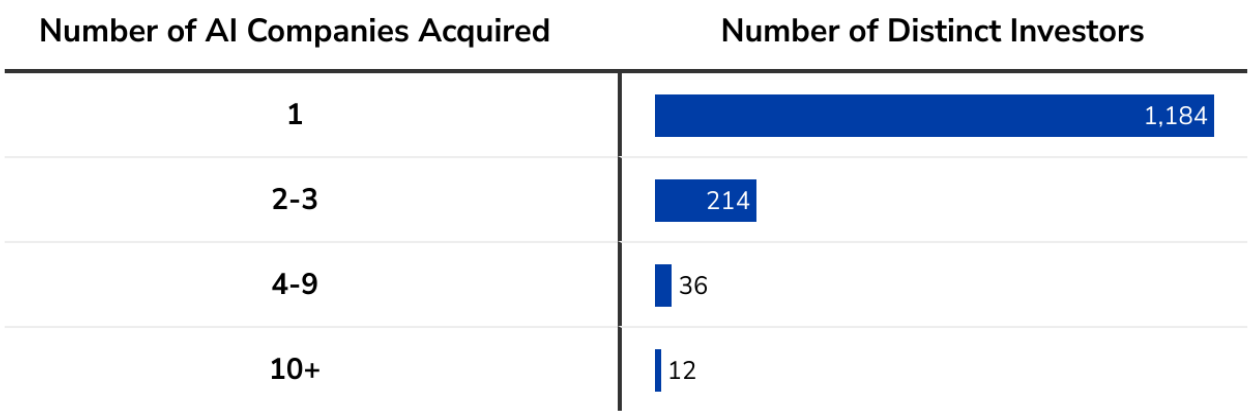
The rest of our analyses will focus exclusively on acquisitions of AI companies and exclude transactions in which AI companies acquired non-AI companies. Zooming in on acquisitions of AI companies allows us to more clearly illuminate trends in the nascent AI industry and their implications for market competition and the geopolitical landscape.

Top Acquirers of AI Companies

Our analysis revealed that many firms have acquired AI companies over the last decade, but only a small number have engaged in a significant amount of M&A activity.

Overall, we found that 1,446 unique companies conducted 2,010 acquisitions of AI firms between 2014 and 2023. As shown in Figure 4, the vast majority (82 percent) of these acquirers engaged in a single AI acquisition. Of the 262 companies that conducted multiple acquisitions of AI firms, only 48 engaged in more than three transactions and just 12 companies participated in 10 or more transactions.

Figure 4. Distribution of Acquirers by Number of AI Acquisitions



Source: CSET analysis of data provided by PitchBook Data, Inc.

* Based on our dataset, we were unable to analyze the specific AI techniques used and the different types of products offered by various companies.

From a competition policy perspective, there are two broad takeaways from these findings. First, the AI ecosystem appears to be relatively diffuse insofar as we see acquisitions distributed across a large number of companies. At a high level, we do not clearly observe large acquirers attempting to "roll-up" the AI industry through the aggressive M&A activity that has plagued the defense industrial base and other sectors of the economy, and even amid ongoing acquisitions, the number of companies participating in the AI market has increased over time (see Figure 2).[22] While these findings suggest the overall market for AI systems remains competitive, it is important to remember that AI is a general-purpose technology with many different applications, and competition dynamics may vary widely across different subsets of the AI sector. Additionally, it is worth recognizing that in certain cases a single acquisition, such as Google's purchase of DeepMind, can have an outsized impact on the dynamics of a particular product market.

Second, our analysis shows that while the overall AI M&A landscape is generally diffuse, there are a small number of firms with a demonstrated interest in acquiring a large number of AI firms. These most prolific acquirers represent a small share of overall transactions, but as apparent nodes of economic and technological power, they have the potential to alter the dynamics of the AI ecosystem.[23]

As shown in Table 1, four U.S. big tech companies—Apple, Microsoft, Alphabet, and Meta—rank among the most prolific acquirers of AI companies over the past decade.* The fact that these companies top the list is perhaps unsurprising. As some of the most valuable corporations in the world, these firms maintain large troves of capital that can be used to expand their businesses, enter adjacent markets, and acquire other firms' technologies and talent.[24] All four are considered leaders within today's AI industry, and it is reasonable to attribute their success at least somewhat to their comparatively aggressive approach to AI M&A over the last decade.

* Notably absent from the list of top acquirers is Amazon, which conducted only 6 acquisitions of AI firms between 2014 and 2023.

Table 1: Acquirers with 10 or More Acquisitions of AI Companies, 2014–2023

Acquirer	Number of AI M&A Deals
Apple	30
Microsoft	21
Alphabet	18
Intel	17
Cisco Systems	14
Meta Platforms	14
International Business Machines (IBM)	14
Accenture	11
ServiceNow	11
DataRobot	10
Salesforce	10
Snap	10

Source: CSET analysis of data provided by PitchBook Data, Inc.

Note: U.S. big tech companies are bolded.

While acquisitions by large incumbents are not inherently problematic, they often warrant additional scrutiny from policymakers. As noted in the U.S. government's latest merger guidelines, incumbent firms may use such acquisitions to eliminate competitive threats and retain their dominant position, potentially slowing technological development in the process.[25] Should big tech firms use market power to prevent new firms from gaining a foothold in the burgeoning AI market, either through M&A or some other means, they could limit the rate, diversity, and direction of AI innovation.[26] Indeed, many of the companies listed in Table 1 have already faced scrutiny from authorities in the United States and abroad for engaging in harmful acquisitions and other anti-competitive conduct.[27]

We were unable to determine the motivation and competitive effects of the big tech platforms' past acquisitions of AI companies based on our dataset. However, our analysis did reveal one notable trend in the firms' approach to M&A: the AI companies acquired by Apple, Microsoft, Alphabet, and Meta tended to be "younger" than those acquired by other firms. Specifically, big tech platforms acquired AI companies an average of 4.8 years after the company was founded, while other firms acquired AI

companies an average of 7.4 years after they were founded. Some may interpret this finding as supporting the claim that the big tech companies look to acquire young firms before they pose a competitive threat.[28] An alternative explanation would be that big tech firms have a better understanding of AI systems than other companies, and therefore tend to acquire promising technologies and startups earlier in their lifecycle. Still, the effects of such deals on competition and innovation would likely be similar regardless of the motives driving the acquisition.

Regulators have recently started investigating the behavior of the incumbent technology platforms in the AI market, including the investments that Microsoft, Alphabet, and Amazon have made in independent AI labs such as OpenAI and Anthropic.[29] Though few details on these "partnerships" have been publicly disclosed, they appear to offer incumbent firms a way to pull startups under their corporate umbrella while avoiding regulatory scrutiny. In January 2023, for instance, Microsoft and OpenAI struck a deal in which the tech giant would allocate the lab $10 billion worth of cash and cloud credits in exchange for an exclusive license to use OpenAI's models and a substantial stake in the startup's profits.[30] The deal provided Microsoft with many of the same benefits it would have gained from a direct acquisition of OpenAI, but because it was not technically an M&A deal, it avoided triggering a government merger review. These partnerships have become increasingly commonplace across the AI industry in recent years, and it will be crucial for the federal policymakers to update their processes and procedures to appropriately scrutinize such "acquisition-like" investments as well as more traditional M&A deals.[31] The vertical integration of the big tech companies across the AI supply chain offers them other potential opportunities to reduce or eliminate competitive threats, though these channels are beyond the scope of this report.*

* The vertical integration of the large tech companies and its effects is beyond the scope of this paper, but it will be explored in forthcoming CSET research: Jack Corrigan, "AI Market Powers" (Center for Security and Emerging Technology, forthcoming). For additional reading on this topic, see: Tejas Narechania and Ganesh Sitaraman, "An Antimonopoly Approach to Governing Artificial Intelligence" (Vanderbilt Policy Accelerator for Political Economy and Regulation, 2023), https://cdn.vanderbilt.edu/vu-URL/wp-content/uploads/sites/412/2023/10/06212048/Narechania-Sitaraman-Antimonopoly-AI-2023.10.6.pdf.pdf; Fernando van der Vlist, Anne Helmond and Fabian Ferrari, "Big AI: Cloud Infrastructure Dependence and the Industrialisation of Artificial Intelligence," *Big Data & Society* 11, no. 1 (March 2024), https://journals.sagepub.com/doi/10.1177/20539517241232630; Jai Vipra and Sarah Myers West, "Computational Power and AI" (AI Now Institute, September 2023), https://ainowinstitute.org/publication/policy/compute-and-ai.

U.S. Cross-Border AI Acquisitions

M&A transactions can also play a role in reshaping the landscape of international technology competition. Cross-border M&A deals can offer firms access to new markets, customers, talent, technology, and sources of capital. However, the companies executing these transactions may also have to navigate new economic, legal, and cultural challenges.[32]

In this section, we explore the ties between the AI markets in the United States and other countries by examining two types of M&A transactions:

1. Acquisitions involving a U.S. company purchasing a foreign AI company (503 M&A transactions)

2. Acquisitions involving a foreign company buying a U.S. AI company (272 M&A transactions)

Over the past decade, U.S. firms have purchased 503 foreign AI companies based in more than 50 countries, accounting for 30% of the overall number of AI firms acquired by U.S. companies (1,690). More than half of these transactions involved companies in just four countries: the United Kingdom, Canada, Israel, and India (see Table 2). U.S. acquirers may be particularly drawn to UK and Canadian companies due in part to similar investment review regimes and growing tech sectors.[33] Israel and India also have vibrant AI markets that are drawing attention from U.S.-based firms.[34] Looking ahead, U.S. firms scanning the global market for promising AI companies should be prepared for evolving regulatory environments abroad, as more countries are establishing and updating their own inbound investment review regimes.[35]

Table 2. Top Countries From Which U.S. Firms Acquired Foreign AI Companies

Foreign Destination	Number of AI M&A Deals	Percentage of U.S. Acquisitions of Foreign AI Companies
United Kingdom	99	20%
Canada	68	14%
Israel	51	10%
India	49	10%
Germany	31	6%
France	29	6%
Switzerland	18	4%
Australia	13	3%
Netherlands	10	2%
Spain	10	2%

Source: CSET analysis of data provided by PitchBook Data, Inc.

Foreign firms are also looking to the United States to acquire AI firms. Over the last decade, some 272 U.S. AI companies have been acquired by companies based in 30 different countries. As shown in Table 3, the United Kingdom, Canada, and India are among the top locations of foreign firms that have purchased U.S. AI companies. As noted above, these three countries are also among the most popular destinations for U.S. acquisitions of foreign AI companies.

Table 3. Top Countries from Which Foreign Firms Acquired U.S. AI Companies

Foreign Acquirer	Number of AI M&A Deals	Percentage of Foreign Acquisitions of U.S. AI Companies
United Kingdom	46	17%
Canada	43	16%
India	20	7%
Japan	20	7%
France	17	6%
Australia	16	6%
Ireland	16	6%
Israel	12	4%
Germany	11	4%
South Korea	9	3%

Source: CSET analysis of data provided by PitchBook Data, Inc.

Meanwhile, against the backdrop of U.S.-China competition for AI leadership, there are growing concerns related to Chinese firms buying U.S. AI companies. CFIUS has scrutinized transactions involving technologies that raise national security concerns, reviewing a record-high 181 transactions in 2022.[36] However, CFIUS also faces challenges in determining the risks associated with dual-use technologies like AI.[37]

Over the past decade, however, we observed only six instances of Chinese companies acquiring U.S.-based AI firms. The latest such transaction—a Chinese company's acquisition of a U.S. software company that develops AI systems to track social media influencers—took place in 2021. Notably, we observe no Chinese acquisitions of U.S. AI companies in the period after the Biden administration issued its 2022 Executive Order expanding CFIUS' jurisdiction to cover artificial intelligence.[38]

Key Takeaways

The commercial AI sector is still relatively young. Despite the broad assertions that leaders in government, industry, and academia have made regarding AI's transformative potential, there remain many open questions as to how the technology and the market surrounding it will evolve in the years ahead. What business models will be profitable? What types of models will lead the market? Which AI applications are valuable and which are overhyped? The competition dynamics of the AI sector in the years ahead will hinge on the answers to these questions.

Given the uncertainty surrounding AI, it is difficult to determine exactly how M&A activity within the industry today will affect the speed and direction of AI innovation tomorrow. However, we can derive a few high-level insights from our analysis.

First, there appears to be demand for AI systems across the economy, and many leading global companies seem interested in acquiring at least some AI capabilities through M&A. We observe steady growth in AI acquisitions over the last decade, and while the number of annual transactions has dropped off since 2021, it is clear that corporate interest in the technology remains high.[39] Additionally, the share of M&A transactions involving non-AI companies acquiring AI companies has increased significantly over the past decade. While this finding suggests that more companies are looking to gain AI capabilities, it is worth noting that most non-AI acquirers are still involved in the IT sector.

Second, while a wide range of companies have acquired AI companies over the last decade, it is notable that large incumbent technology firms including Microsoft, Alphabet, Meta, and Apple rank among the top acquirers of AI companies. All of these companies produce their own generative AI models and, in the case of Alphabet and Microsoft, operate computing infrastructure that other developers rely on to build and run AI systems. This vertical integration offers the big tech firms many potential opportunities to influence how the AI ecosystem develops in the years ahead.[40] Prior investigations have accused these firms of using M&A to reduce competition and entrench their market positions, and they have an opportunity to extend their dominance in the AI industry through direct acquisitions, "acquisition-like" investments, and other mechanisms.[41] Continuing to monitor the behavior of incumbent technology companies and their effects on market competition will be crucial to promoting a fair, open, and innovative AI industry.

Third, policymakers should also continue to track cross-border M&A transactions. Our analysis shows U.S. companies have proven keen on obtaining AI capabilities from

abroad, with foreign M&A deals accounting for roughly 30% of all acquisitions of AI companies by U.S.-based firms. Foreign firms have also shown an interest in buying up AI companies based in the United States. Understanding how these cross-border acquisitions may impact the economic and national security landscape will be crucial for policymakers looking to maintain U.S. technological leadership, likely requiring a case-by-case analysis of different transactions. With respect to inbound acquisitions of U.S. AI companies, CFIUS will need to increase its capacity and capability to properly review "gray-zone" transactions that might not have direct ties to countries of concern such as China, in order to prevent the transfer of emerging technologies that are critical to national security.[42]

M&A transactions involving AI companies have increased significantly over the last decade and will likely continue to grow as the AI sector expands and more companies across the economy look to adopt the technology. Large incumbent technology firms such as Apple, Microsoft, Alphabet, and Meta have been particularly prolific acquirers of AI companies, and their deals have tended to target younger-than-average firms. Given the incumbents' existing market power, their outsized influence within the AI supply chain, and their past conduct, their activity in the AI industry warrants continued scrutiny from competition authorities.[43] This will include monitoring both traditional M&A transactions, "acquisition-like" investments, and other behavior, and intervening in situations when the firms' activity threatens to undermine market competition. Similarly, policymakers should continue scrutinizing cross-border M&A deals on a case-by-case basis in order to prevent the United States from losing ground to foreign competitors in AI and other emerging technologies.

Authors

Jack Corrigan is a senior research analyst at CSET.

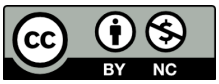
Ngor Luong completed her contributions to this research while she was a senior research analyst at CSET. She is currently detailed to the U.S. Department of State under an Intergovernmental Personnel Act agreement with CSET.

Christian Schoeberl is a data research analyst at CSET.

The views expressed herein are those of the authors and do not necessarily reflect those of the U.S. government.

Acknowledgments

For editorial feedback and assistance, we would like to thank Catherine Aiken, Zachary Arnold, Sam Bresnick, Pablo Chavez, Shelton Fitch, Eliana Garcés, Margarita Konaev, Cole McFaul, Igor Mikolic-Torreira, and Matthias Oschinski. We also thank Cristina Caffara, Jai Ramaswamy, and Howard Shelanski for thoughtful conversations that informed our research.



Document Identifier: doi: 10.51593/20240010

Appendix

Appendix 1: Selection of AI-Relevant Acquiring Parties and Companies

PitchBook provides industry assignments and keywords for companies covered within their dataset, which we used to select acquiring parties (or their parent companies, when available) and acquired companies relevant to artificial intelligence and machine learning. For our research purposes, we considered a merger and acquisition deal as having an AI-relevant investor if either the buyer or the target are assigned to PitchBook's "Artificial Intelligence & Machine Learning" vertical or if either entity includes an AI-related keyword (discussed below) in their description. This approach captures the companies that self-identify as relevant to the field, as well as those that are relevant across other industries (e.g., AI-powered financial services).

Verticals: From PitchBook's documentation, "When professionals talk about industries, they are referring to a broad group of companies that operate in the same general space. For example, business-to-business (B2B), business-to-consumer (B2C), energy and healthcare are all well-established industries that represent the breadth of the term. An industry vertical, however, is more specific and describes a group of companies that focus on a shared niche or specialized market spanning multiple industries." Within PitchBook's data, 38,599 companies and 2,797 investors are assigned to the "Artificial Intelligence & Machine Learning" vertical.

Keywords: Keywords come from a company's website, press releases, and product types. We include a regular expression search within these keywords for 'artificial intelligence,' 'machine learning,' and the suffixes of 'ai' and 'ml.' For example, a company without a vertical assignment but with a 'generative ai' keyword would be included as AI-relevant for our research purposes. Through this search, we surfaced an additional 2,259 companies and 279 investors.

We recognize that capturing the full landscape of AI-relevant companies is a difficult task. Solutions that are available to other areas of research, such as bibliometric research, are not as viable for corporate metadata. For researchers also interested in analyzing the activity of AI-relevant companies, please refer to the Emerging Technology Observatory's PARAT tool at parat.eto.tech to see additional methodologies in which a company's AI activity can be recorded.

Appendix 2: Types of AI Mergers and Acquisitions

Category	Description	# of M&As	Example
AI Acquiring AI	Transactions in which the acquirer, or its available parent entity, is designated as AI-relevant, and the company being acquired is also designated as AI-relevant	514	Microsoft acquired Suplari in 2021.
AI Acquiring Non-AI	Transactions in which the acquirer, or its available parent entity, is designated as AI-relevant, but the company being acquired is not designated as AI-relevant	2,403	Meta acquired Giphy in 2020.
Non-AI Acquiring AI	Transactions in which the acquirer, or its available parent entity, is not designated as AI-relevant, but the company being acquired is designated as AI-relevant	1,442	Apple acquired Datakalab in 2023.

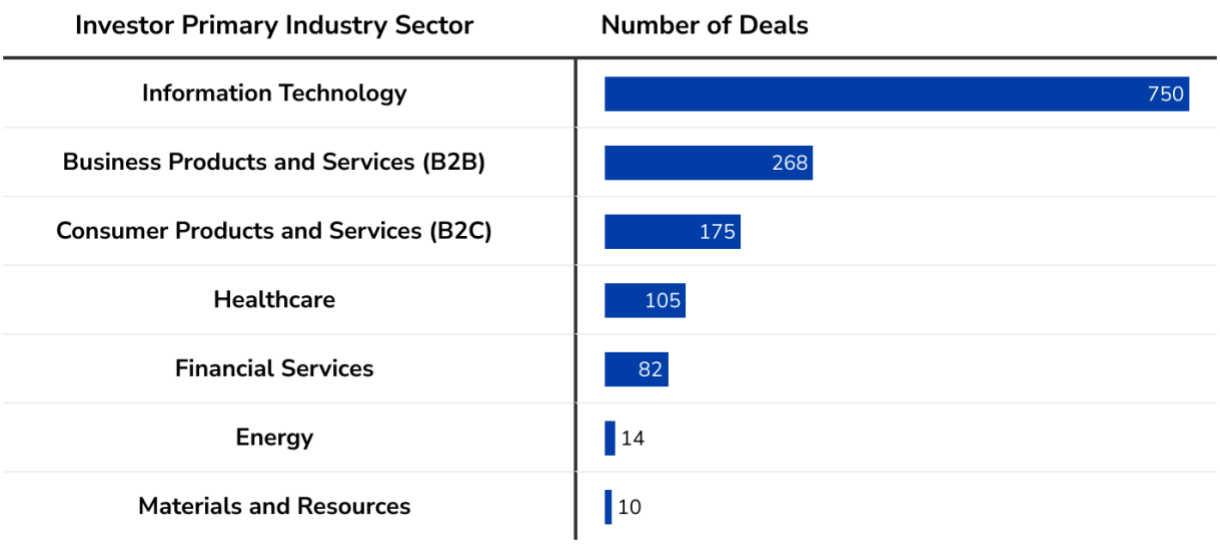
Source: CSET.

Appendix 3: Count of Annual AI Acquisitions by Deal Type, 2014–2023

Year	Total Deals	AI Acquiring AI	AI Acquiring Non-AI	Non-AI Acquiring AI
2014	247	9	212	25
2015	264	12	225	27
2016	308	22	237	49
2017	337	29	209	99
2018	409	54	230	125
2019	484	60	251	173
2020	477	62	238	177
2021	871	131	426	314
2022	666	98	326	242
2023	523	69	222	232
Total	**4,586**	**546**	**2,576**	**1,464**

Source: CSET analysis of data provided by PitchBook Data, Inc.

Appendix 4: Industry Sectors of Non-AI Acquirers of AI Companies



Source: CSET analysis of data provided by PitchBook Data, Inc.

Endnotes

[1] David Rowan, "DeepMind: Inside Google's Super-Brain," *Wired*, June 22, 2015, https://www.wired.com/story/deepmind/.

[2] Rowan, "DeepMind."

[3] Volodymyr Mnih, Koray Kavukcuoglu, David Silver, et al., "Playing Atari with Deep Reinforcement Learning," arXiv preprint 1312.5602 (2013), https://arxiv.org/pdf/1312.5602.

[4] PitchBook (not inflation adjusted).

[5] PitchBook (not inflation adjusted).

[6] John Jumper, Richard Evans, Alexander Pritzel, et al., "Highly Accurate Protein Structure Prediction with AlphaFold," *Nature* 596 (July 2021), 583–589, https://doi.org/10.1038/s41586-021-03819-2; David Silver, Thomas Hubert, et al., "Mastering Chess and Shogi by Self-Play with a General Reinforcement Learning Algorithm," arXiv preprint 1712.01815 (2017), https://arxiv.org/abs/1712.01815; David Silver, Aja Huang, Chris J. Maddison et al., "Mastering the Game of Go with Deep Neural Networks and Tree Search," *Nature* 529 (January 2016), 484–489, https://www.nature.com/articles/nature16961; James Somers, "How the Artificial Intelligence Program AlphaZero Mastered Its Games," *The New Yorker*, December 28, 2018, https://www.newyorker.com/science/elements/how-the-artificial-intelligence-program-alphazero-mastered-its-games.

[7] Sundar Pichai, "Google DeepMind: Bringing Together Two World-Class AI Teams," *Google Blog*, April 20, 2023, https://blog.google/technology/ai/april-ai-update/; Jeremy Kahn, "The Google Brain-DeepMind Merger Is Good for Google. It Might Not Be for Us," *Fortune*, April 28, 2023, https://fortune.com/europe/2023/04/28/the-google-brain-deepmind-merger-alphabet-pichai-risks-eye-on-a-i/.

[8] Markus Berger-de León, Paul Jenkins, Jerome Königsfeld, and Lukas Salomon, "Buy and Scale: How Incumbents Can Use M&A to Grow New Business," *McKinsey Digital*, December 21, 2022, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/buy-and-scale-how-incumbents-can-use-m-and-a-to-grow-new-businesses.

[9] U.S. Department of Justice and U.S. Federal Trade Commission, *Merger Guidelines* (Washington, D.C.; U.S. Department of Justice and U.S. Federal Trade Commission, 2023), 40, https://www.justice.gov/d9/2023-12/2023%20Merger%20Guidelines.pdf#page=40; Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith, and Peter Howitt, "Competition and Innovation: An Inverted-U Relationship," *Quarterly Journal of Economics* 120, no. 2 (2005), 701–728, https://dash.harvard.edu/bitstream/handle/1/4481507/aghion_invertedu.pdf;jsessionid=63D95413D7C4F47BE4B179C3FDAC891A?sequence=2; Tim Wu, "Taking Innovation Seriously: Antitrust Enforcement If Innovation Mattered Most," *Columbia Law School*, 2012, https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=2768&context=faculty_scholarship;

Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary, *Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations*.

[10] National Security and Investment Act 2021, https://www.legislation.gov.uk/ukpga/2021/25/contents.

[11] Exec. Order No. 14083, 87 FR 57369 (2022), https://www.federalregister.gov/documents/2022/09/20/2022-20450/ensuring-robust-consideration-of-evolving-national-security-risks-by-the-committee-on-foreign.

[12] Jack Corrigan, Melissa Flagg, and Dewey Murdick, "The Policy Playbook," Center for Security and Emerging Technology, June 2023, https://cset.georgetown.edu/publication/the-policy-playbook/.

[13] *FTC Launches Inquiry into Generative AI Investments and Partnerships* (Washington, D.C.: U.S. Federal Trade Commission, January 25, 2024), https://www.ftc.gov/news-events/news/press-releases/2024/01/ftc-launches-inquiry-generative-ai-investments-partnerships; *Merger Guidelines*.

[14] "Full Capital Markets Coverage—from Alternative Asset Deals to Contact Info for Millions of Industry Pros," *PitchBook*, accessed March 2024, https://pitchbook.com/data.

[15] A small number of Pitchbook M&A transactions (<20) involved multiple buyers acquiring a particular target company. Some researchers may choose to include these deals depending on how they define "M&A transactions." For example, the Human-Centered Artificial Intelligence group at Stanford offers a different definition in their 2024 AI Index Report. For more information, see: "Artificial Intelligence Index Report 2024" (Stanford University Human-Centered Artificial Intelligence, 2024), https://aiindex.stanford.edu/wp-content/uploads/2024/04/HAI_2024_AI-Index-Report.pdf.

[16] This manual review included checking a company's website and news reports for evidence of AI-relevance, verifying headquarters through other datasets and news reports, and ensuring the deal details match public reports.

[17] Private equity is a type of M&A and included within our dataset. However, private equity buyers do not constitute a sizable portion of our dataset (around 7 percent).

[18] "Artificial Intelligence Index Report 2024," 243.

[19] "Artificial Intelligence Index Report 2024."

[20] "M&A Activity by Year: The BCG M&A Report Collection," *Boston Consulting Group*, accessed August 2024, https://www.bcg.com/capabilities/mergers-acquisitions-transactions-pmi/mergers-acquisitions-activity-by-year.

[21] Heather Landi, "Google, Fitbit Launch New Cloud Analytics Tools to Help Hospitals Harness Wearables Data," *Fierce Healthcare*, September 30, 2022, https://www.fiercehealthcare.com/health-tech/google-fitbit-launch-new-analytics-tools-help-hospitals-use-wearables-data; Julia Love and Davey Alba, "Google Deepens AI Push into Health Care with Fitbit, Screenings," *Bloomberg*, March 19, 2024, https://www.bloomberg.com/news/articles/2024-03-19/google-deepens-ai-push-into-health-care-with-

fitbit-screenings; Mike Isaac, Erin Griffith, and Adam Satariano, "Uber Buys Postmates for $2.65 Billion," *The New York Times*, July 5, 2020, https://www.nytimes.com/2020/07/05/technology/uber-postmates-deal.html.

[22] Office of the Under Secretary of Defense for Acquisition and Sustainment, *State of Competition within the Defense Industrial Base* (Arlington, VA; U.S. Department of Defense, February 2022), https://media.defense.gov/2022/Feb/15/2002939087/-1/-1/1/STATE-OF-COMPETITION-WITHIN-THE-DEFENSE-INDUSTRIAL-BASE.PDF#page=27; Sean Carberry, "Private Equity Fueling Growth of Defense Mergers," *National Defense*, February 27, 2023, https://www.nationaldefensemagazine.org/articles/2023/2/27/private-equity-fueling-growth-of-defense-mergers; Matt Stoller, "Weird Monopolies and Roll-Ups: Horse Shows, School Spirit, Settlers of Catan, and Jigsaw Puzzles," *BIG*, July 18, 2020, https://www.thebignewsletter.com/p/weird-monopolies-and-roll-ups-horse; Matt Stoller, "A Land of Monopolists: From Portable Toilets to Mixed Martial Arts," *BIG*, July 10, 2020, https://www.thebignewsletter.com/p/a-land-of-monopolists-from-portable.

[23] Wu, "Taking Innovation Seriously: Antitrust Enforcement If Innovation Mattered Most"; FTC and DOJ Seek Info on Serial Acquisitions, Roll-Up Strategies Across U.S. Economy (Washington, D.C.: U.S. Federal Trade Commission, May 23, 2024), https://www.ftc.gov/news-events/news/press-releases/2024/05/ftc-doj-seek-info-serial-acquisitions-roll-strategies-across-us-economy; Jack Corrigan, "AI Market Powers" (Center for Security and Emerging Technology, forthcoming); Christian Schoeberl and Jack Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 1," Center for Security and Emerging Technology, October 2024; Christian Schoeberl and Jack Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 2," (Center for Security and Emerging Technology, forthcoming); Christian Schoeberl and Jack Corrigan, "Corporate Investments as Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 3," (Center for Security and Emerging Technology, forthcoming).

[24] Subcommittee on Antitrust, Commercial and Administrative Law, *Investigation of Competition in Digital Markets*; Directorate for Financial and Enterprise Affairs, *Serial Acquisitions and Industry Roll-ups – Note by the United States* (Paris, France: OECD Competition Committee, December 4, 2023), https://one.oecd.org/document/DAF/COMP/WD(2023)99/en/pdf; *United States v. Google LLC,* Case No. 20-cv-3010 (APM), Case No. 20-cv-3715 (APM), https://static01.nyt.com/newsgraphics/documenttools/f6ab5c368725101c/43d7c2a0-full.pdf.

[25] *Merger Guidelines.*

[26] Wu, "Taking Innovation Seriously: Antitrust Enforcement If Innovation Mattered Most"; *United States v. Google LLC*.

[27] *United States v. Google LLC*; Subcommittee on Antitrust, Commercial and Administrative Law, *Investigation of Competition in Digital Markets*; *Justice Department Sues Apple for Monopolizing Smartphone Markets* (Washington, D.C.: U.S. Department of Justice, March 21, 2024), https://www.justice.gov/opa/pr/justice-department-sues-apple-monopolizing-smartphone-markets; Ryan Browne, "Meta Accused of Breaching EU Antitrust Rules over Ad-Supported Subscription Service,"

CNBC, July 1, 2024, https://www.cnbc.com/2024/07/01/meta-accused-of-failing-to-comply-with-eu-antitrust-rules.html; Kelvin Chan, "Microsoft Breached Antitrust Rules by Bundling Teams with Office Software, European Union Says," *Associated Press*, June 25, 2024, https://apnews.com/article/microsoft-teams-eu-european-union-antitrust-26d11ada00f504d537d1b054dd6f6bbf; other top acquirers of AI companies, namely Intel and IBM, have faced off against government antitrust authorities in the past, see: Foo Yun Chen and Bart H. Meijer, "Intel Hit with $400 Million EU Antitrust Fine in Decades-Old Case," *Reuters*, September 22, 2023, https://www.reuters.com/technology/eu-re-imposes-400-mln-fine-intel-abuse-market-power-2023-09-22/; Alec Stapp, "The Ghosts of Antitrust Past: Part 2 (IBM)," *Truth on the Market*, February 3, 2020, https://truthonthemarket.com/2020/02/03/the-ghosts-of-antitrust-past-part-2-ibm/; Gilad Edelman, "Why the FTC Wants to Revisit Hundreds of Deals by Big Tech," *Wired*, February 12, 2020, https://www.wired.com/story/ftc-special-order-review-big-tech-killer-acquisitions/.

[28] Willam P. Barr, "Big Tech's Budding AI Monopoly," *The Wall Street Journal*, May 27, 2024, https://www.wsj.com/articles/big-techs-budding-ai-monopoly-40280c15; Colleen Cunningham, Florian Ederer, and Song Ma, "Killer Acquisitions," *Journal of Political Economy* 129, No. 3 (March 2021): 649–702, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3241707; *Merger Guidelines*, 23.

[29] *FTC Launches Inquiry into Generative AI Investments and Partnerships*; Aoife White, "Microsoft and Google AI Deals Get EU Antitrust Scrutiny, Vestager Says," *Politico*, June 28, 2024, https://www.politico.eu/article/microsoft-google-tech-deal-antitrust-security-open-ai-eu-margrethe-vestager/; *FTC, DOJ, and International Enforcers Issue Joint Statement on AI Competition Issues* (Washington, D.C.: *U.S. Federal Trade Commission*, July 23, 2024), https://www.ftc.gov/news-events/news/press-releases/2024/07/ftc-doj-international-enforcers-issue-joint-statement-ai-competition-issues.

[30] Microsoft and OpenAI have not disclosed the share of the investment that came in the form of cloud credits. For more information, see: Reed Albergotti, "OpenAI Has Received Just a Fraction of Microsoft's $10 Billion Investment," *Semafor*, November 18, 2023, https://www.semafor.com/article/11/18/2023/openai-has-received-just-a-fraction-of-microsofts-10-billion-investment; Tom Warren, "Microsoft Extends OpenAI Partnership in a 'Multibillion Dollar Investment'," *The Verge*, January 23, 2023, https://www.theverge.com/2023/1/23/23567448/microsoft-openai-partnership-extension-ai.

[31] Isabella Ward and Natalie Lung, "Big Tech's Year of Partnering Up With AI Startups," *Bloomberg*, December 18, 2023, https://www.bloomberg.com/news/articles/2023-12-18/big-tech-s-year-of-partnering-up-with-ai-startups; John B. Kirkwood, "How Big Tech's AI Startup Alliances Could Harm Competition," *ProMarket*, August 29, 2024, https://www.promarket.org/2024/08/29/how-big-techs-ai-startup-alliances-could-harm-competition/; Schoeberl and Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 3."

[32] "Cross-border M&A: A Springboard to Global Growth" (Deloitte M&A Institute, 2017), https://www2.deloitte.com/content/dam/Deloitte/us/Documents/mergers-acqisitions/us-m-a-cross-border-pov-spread.pdf; Benjamin Sibbett and Hanah Kim, "Cross-Border M&A: A Checklist of US Issues

for Non-US Acquirers," *Clifford Chance*, 2022, https://www.cliffordchance.com/content/dam/cliffordchance/PDFDocuments/2022-01-wolters-kluwer-blr-cross-border-m%26a-a-checklist-of-us-issues-for-non-us-acquirers.pdf.

[33] The United Kingdom passed the National Security and Investment Act in 2022 that includes the mandatory regime that requires qualifying transactions to be notified for approval and the voluntary regime that allows parties to submit transactions for approval on grounds of national security, similar to the Committee on Foreign Investment in the U.S. Canada's National Security Review of Investment Modernization Act also includes mandatory pre-closing national security notification. For more information, see: "CFIUS's U.K. Landing Now Complete — The National Security and Investment Act Is Now in Full Force," *Crowell*, February 22, 2022, https://www.crowell.com/en/insights/client-alerts/cfius-s-u-k-landing-now-complete-the-national-security-and-investment-act-is-now-in-full-force; "Canada: Mandatory Filing, Other Reforms Signal a New Era for Foreign Investment," *Baker McKenzie*, 2024, https://insightplus.bakermckenzie.com/bm/international-commercial-trade/canada-mandatory-filing-other-reforms-signal-a-new-era-for-foreign-investment.

[34] Husanjot Chahal, Ngor Luong, Sara Abdulla, and Margarita Konaev, "Quad AI," Center for Security and Emerging Technology, May 2022, https://cset.georgetown.edu/wp-content/uploads/Quad-AI.pdf; Anthony Ferrara and Sara Abdulla, "Financing 'The New Oil,'" Center for Security and Emerging Technology, May 2023, https://cset.georgetown.edu/publication/financing-the-new-oil/.

[35] "Every Country Wants Its Own Investment-Screening Regime," *The Economist*, November, 23, 2023, https://archive.ph/LI3uh.

[36] Committee on Foreign Investment in the United States, *Annual Report to Congress CY 2022* (Washington, D.C.; U.S. Department of the Treasury, 2022), 69, https://home.treasury.gov/system/files/206/CFIUS%20-%20Annual%20Report%20to%20Congress%20CY%202022_0.pdf.

[37] Emily Kilcrease, "The Role of Investment Security in Addressing China's Pursuit of Defense Technologies," Testimony to the U.S.-China Economic and Security Review Commission, April 13, 2023, https://www.uscc.gov/sites/default/files/2023-04/Emily_Kilcrease_Testimony.pdf.

[38] Exec. Order No. 14083.

[39] Dylan Butts, "AI Is the Talk of the Town, But Businesses Are Still Not Ready for It, Survey Shows," *CNBC*, March 6, 2023, https://www.cnbc.com/2024/03/06/generative-ai-holds-massive-potential-but-businesses-arent-ready-yet.html; "U.S. Companies Ramp Up Automation and AI as Inflation Persists," (Richmond, VA: U.S. Federal Reserve Bank of Richmond, June 20, 2024), https://www.richmondfed.org/research/national_economy/cfo_survey/data_and_results/2024/20240620_data_and_results; Kristina McElheran et al., "AI Adoption in America: Who, What, and Where," (Cambridge, MA: National Bureau of Economic Research, October 2023), https://www.nber.org/system/files/working_papers/w31788/w31788.pdf.

[40] Tejas Narechania and Ganesh Sitaraman, "An Antimonopoly Approach to Governing Artificial Intelligence" (Vanderbilt Policy Accelerator for Political Economy and Regulation, 2023), https://cdn.vanderbilt.edu/vu-URL/wp-content/uploads/sites/412/2023/10/06212048/Narechania-Sitaraman-Antimonopoly-AI-2023.10.6.pdf.pdf; Fernando van der Vlist, Anne Helmond and Fabian Ferrari, "Big AI: Cloud Infrastructure Dependence and the Industrialisation of Artificial Intelligence," *Big Data & Society* 11, no. 1 (March 2024), https://journals.sagepub.com/doi/10.1177/20539517241232630.

[41] Subcommittee on Antitrust, Commercial and Administrative Law, *Investigation of Competition in Digital Markets*; Amba Kak, Sarah Myers West, and Meredith Whittaker, "Make No Mistake—AI Is Owned by Big Tech," *MIT Technology Review*, December 5, 2023, https://www.technologyreview.com/2023/12/05/1084393/make-no-mistake-ai-is-owned-by-big-tech/; Gerrit De Vynck, "How Big Tech Is Co-opting the Rising Stars of Artificial Intelligence," *The Washington Post*, October 2, 2023, https://www.washingtonpost.com/technology/2023/09/30/anthropic-amazon-artificial-intelligence/; Corrigan, "AI Market Powers,"; Schoeberl and Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 1"; Schoeberl and Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 2"; Schoeberl and Corrigan, "Funding the AI Cloud—Amazon, Alphabet, and Microsoft's Cloud Computing Investments, Part 3."

[42] U.S. Government Accountability Office, *Foreign Investment in the U.S.: Efforts to Mitigate National Security Risks Can Be Strengthened* (Washington, D.C.; U.S. Government Accountability Office, April 2024), https://www.gao.gov/products/gao-24-107358; Michael Bow, "US national security committee investigates Abu Dhabi investors," *The Telegraph*, November 24, 2023, https://www.telegraph.co.uk/business/2023/11/24/national-security-committee-investigate-abu-dhabi-investors/.

[43] *Merger Guidelines*; *FTC Launches Inquiry into Generative AI Investments and Partnerships*; David McCabe, "U.S. Clears Way for Antitrust Inquiries of Nvidia, Microsoft and OpenAI," *The New York Times*, June 5, 2024, https://www.nytimes.com/2024/06/05/technology/nvidia-microsoft-openai-antitrust-doj-ftc.html.