

AI Start-up Acquisitions and Investments by Big Tech: An Anti-Competitive Tactic?

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1. Context

Artificial Intelligence (AI) start-ups are raising billions of dollars, and the Tech Giants seem to have engaged in a race to acquire promising AI start-ups and attract top AI talents. As of 2023, Google, Amazon, Meta, Apple, and Microsoft (the “GAMAM”) have collectively acquired more than 80 AI start-ups.[1] The AI race is also carried out through partial-ownership investments and partnerships. Over the last several years, Microsoft invested \$13 billion in OpenAI, while Amazon and Google invested \$4 billion and \$2 billion respectively in Anthropic’s AI-powered chatbot, Claude. As shown below, while acquisitions of AI start-ups in the U.S. have started slowing down in 2022, AI investment activity has reached its peak in 2023.

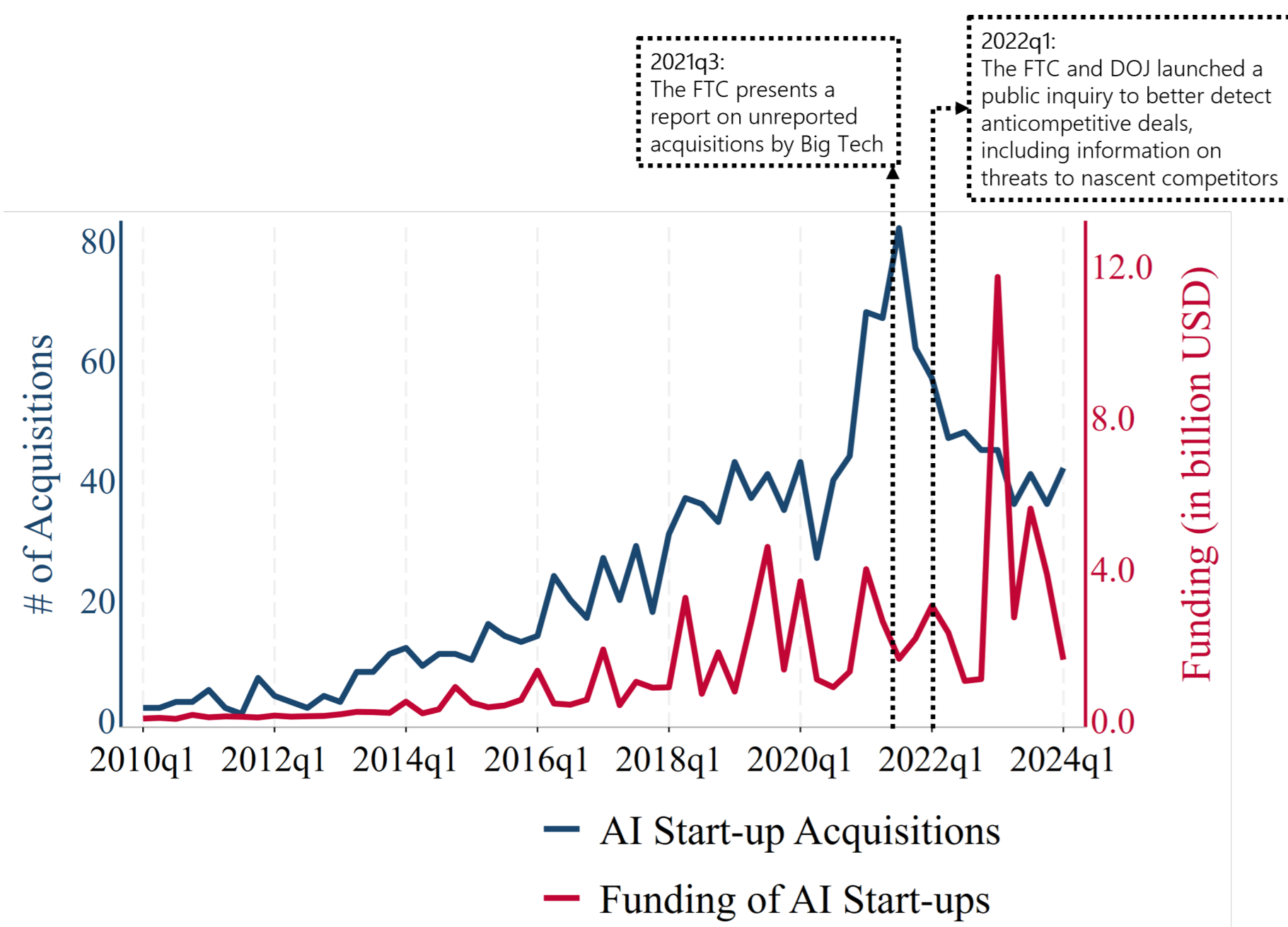
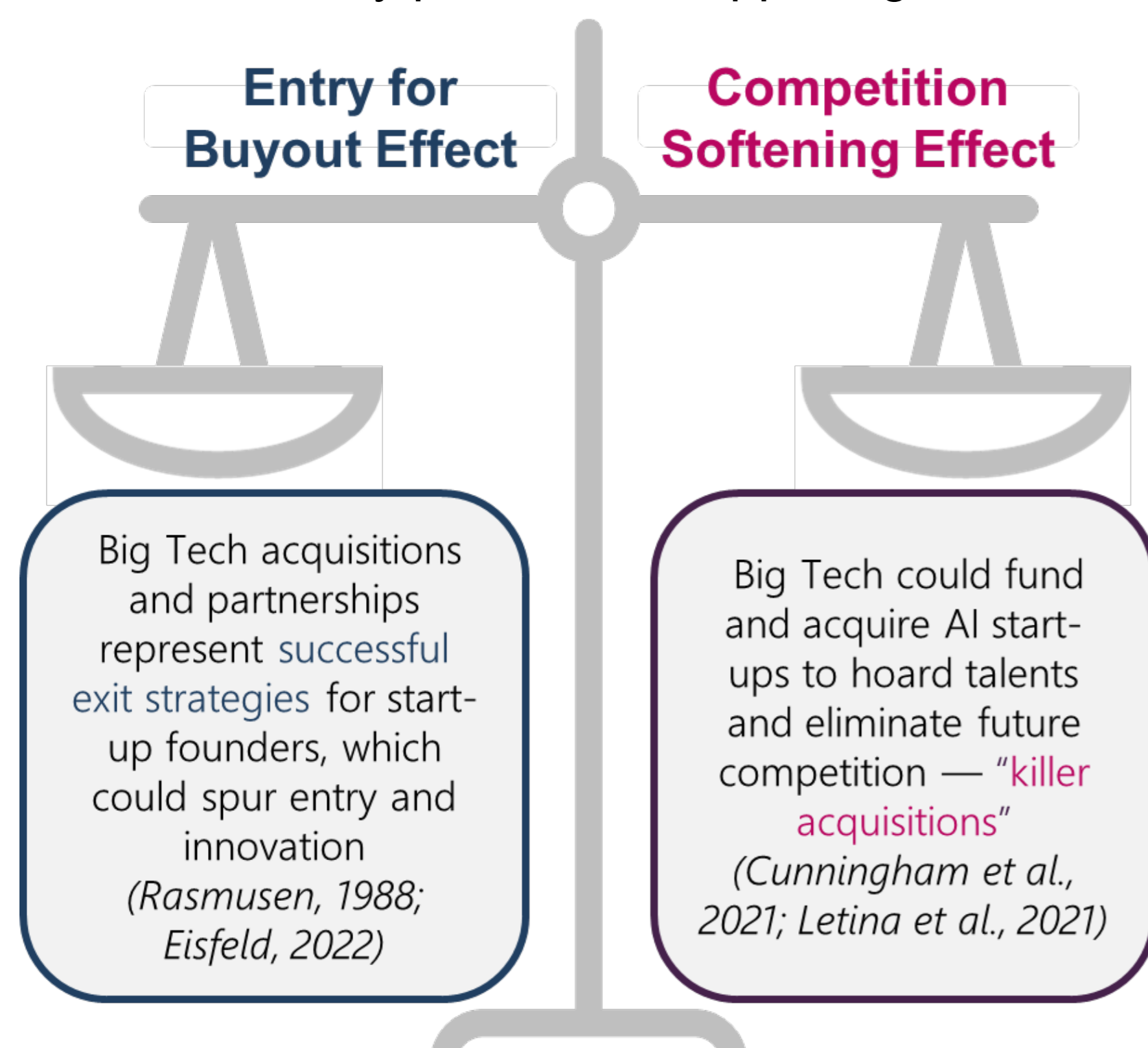


Figure 1: Acquisitions and Investments in AI Start-Ups in the U.S.[1]

Scrutiny from antitrust authorities around the world is increasing in response to these AI competitive tactics, and several agencies have launched inquiries into the partnerships concluded between large tech firms and Generative AI providers. There is a concern that smaller AI developers may have difficulty competing against larger, well-established firms, and that the domination of the AI market by a few actors may limit consumer choice, stifle innovation, and ultimately harm consumers.

Research Question: Is market concentration in the AI sector harmful for competition?

Economic theory predicts two opposing forces:



2. Method and Empirical Strategy

Using a Venture Capital database, I evaluate the market dynamics post-acquisitions and post-investments in AI start-ups by Big Tech. Specifically, I examine the effect of AI start-up acquisitions and investments on:

- The entry of AI start-ups
- The performance of competitors (i.e., other AI start-ups not involved in the transaction)
- Innovation in the AI industry

Assumptions:

If AI start-up acquisitions and partnerships with Big Tech are indeed harmful to competition, I would expect to find:

- A lower number of entrants in the AI sector
- A decline in competitors’ performance
- Limited innovation from both acquired AI start-ups and their competitors

I intend to apply a difference-in-differences estimator in order to explore the movements in each metric before and after “the treatment”, i.e., the acquisition or investment in AI start-ups:

$$\mu_{i,t} = \alpha_i + \alpha_t + \delta(\text{treated}_i \times \text{post}_t) + u_{i,t} \quad (1)$$

where $\mu_{i,t}$ is the outcome of unit i in quarter t , α_i and α_t are unit and time fixed effects, and $u_{i,t}$ the error term.

One challenge for identification is that the key explanatory variable (AI acquisitions/investments) is likely related to factors that affect entry, performance, and innovation metrics that are omitted from the regression equation. To address potential endogeneity concerns, I will use an Instrumental Variable (IV) method. A potential instrument could be a variable indicating whether start-up founders previously worked at a Big Tech company.

3. Preliminary Results

Preliminary analysis shows that the usual suspects (the GAMAM) are not the only ones making AI acquisitions and investments. Since 2010, there have been more than 1,400 acquisitions of U.S.-based AI start-ups, made by more than 1,000 different acquirors operating in various industries.[1] As shown below, other top acquirors include large tech companies like Intel, Salesforce, X, and IBM. Similarly, many other companies besides the GAMAM fund AI start-ups. By 2023, Alibaba, General Motors, PayPal, Tencent, and Volkswagen had collectively invested around \$30 billion in AI start-ups. In comparison, the GAMAM had collectively invested \$23 billion in AI start-ups by 2023.

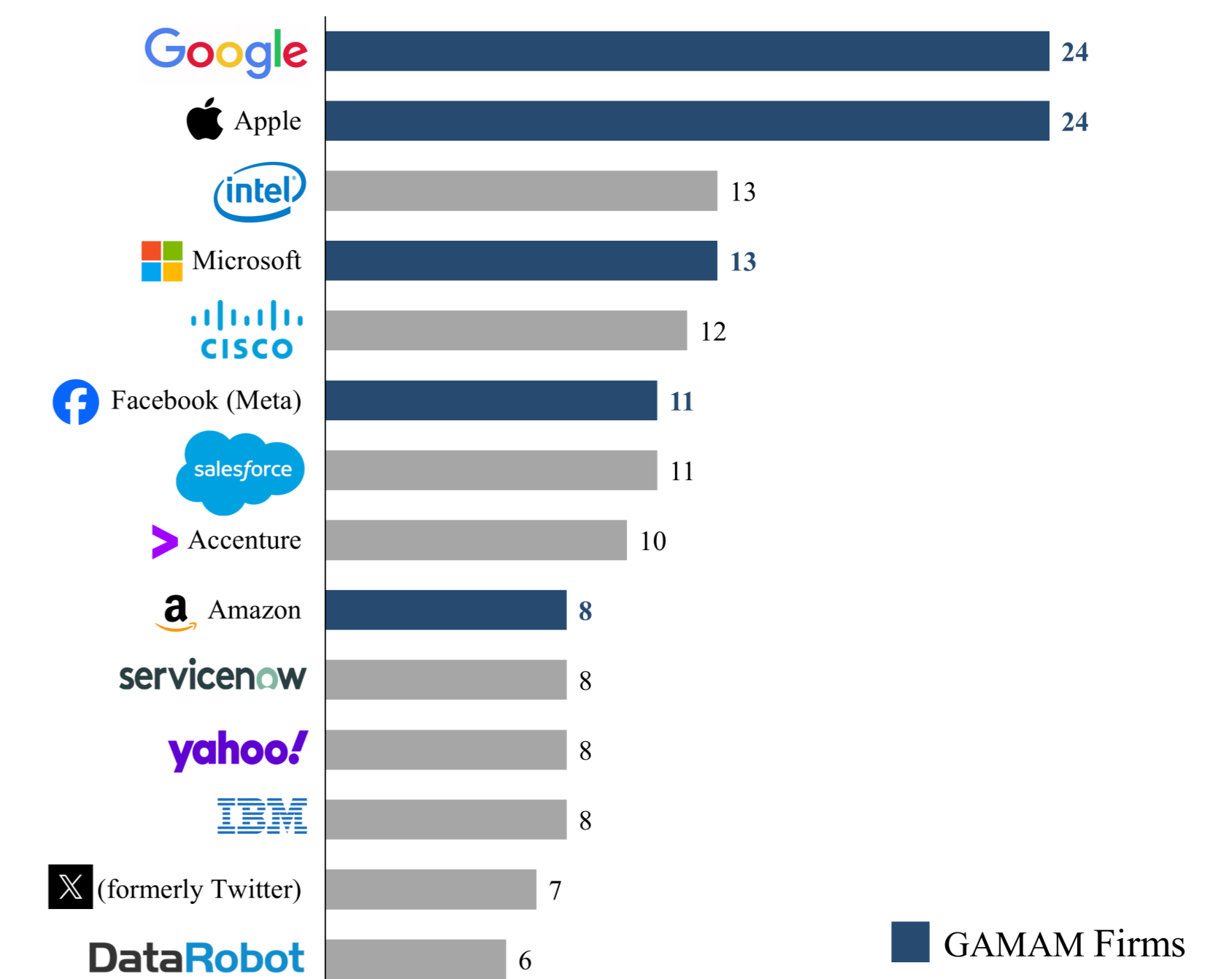


Figure 2: Number of U.S.-Based AI Start-up Acquisitions, 2010-2023 [1]

The number of new entrants in the AI sector started decreasing in 2019. However, the number of start-up exits (i.e., closure) has also started decreasing in 2019. The number of AI unicorns (start-ups valued at more than \$1 billion) reached a peak in 2021, but has been lower in 2022 and 2023. Econometric analysis will discern the causal effect of GAMAM’s AI acquisitions and investments on these outcomes.

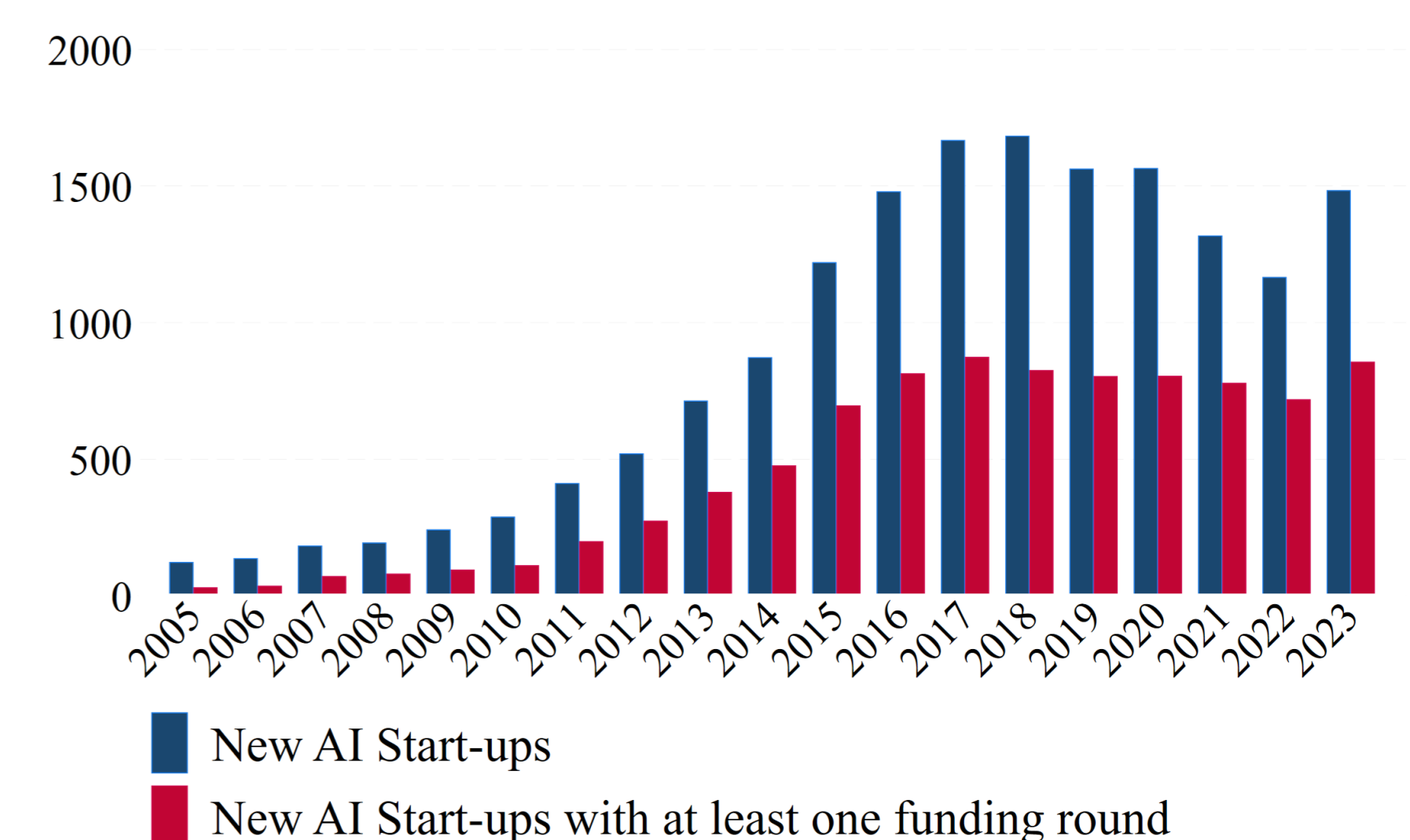


Figure 3: Number of U.S.-Based Newly Created AI Start-ups[1]

4. Policy Relevance

- My paper will produce policy-relevant descriptive facts on AI start-up acquisitions and investments, and will offer policy guidance on the recent concerns raised by competition authorities with respect to the AI market.
- My paper contributes to the debate on declining productivity growth in industrialized economies and the risk it entails for innovation (Gutiérrez and Philippon, 2017; Autor et al., 2017).

References

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