CFCE
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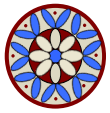
Economic Impacts of 2024 Bills:
SB 1047

Prepared by



ENCINA ADVISORS, LLC

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SB 1047, as amended, Wiener. Safe and Secure Innovation for Frontier Artificial Intelligence Models Act.

Economic Analysis

Key Findings

- We conclude that substantial portions of the California industries related to artificial intelligence (AI) will cease operations or will move out of state as a result of the provisions in SB 1047. SB 1047 would create substantial uncertainty around liability for AI-related startups operating in California as well as for established AI companies
- The AI industry in California is nascent, therefore quantifying the potential loss to California of its current economic impact as well as its expected *future* economic impact is difficult
- However, California has the most to lose from poorly-conceived AI regulations since it dominates the global AI industry:
  - California currently has **32 of the top 50 most promising privately-held AI companies**
  - In 2023, **AI-related startups in the San Francisco Bay Area received $27.4 billion in funding** from seed, venture and private equity investors, **representing 52.6% of the global total**
  - The California Department of Finance reports that California received an estimated **$17.6 billion in capital gains taxes in 2023, up from just $7.6 billion ten years earlier, a 32% increase.** While AI-related companies produced just a portion of this tax revenue, the rapid growth of the industry is what will continue similar growth over the next decade
  - California's AI jobs are high paying jobs and and generate significant income tax revenue. In 2023 for one AI-related industry (NAICS 541715), **California had an annual average of 3,496 establishments with annual employment of 111,259 and total wages of $24.0 billion. The annual wage in the industry was $215,968**
  - Assuming single-filing status, one AI-related industry (NAICS 514715) **generated approximately $1.86 billion in California state income taxes in 2023**
- Outside of California, the next biggest player in AI is the rest of the United States. Relocation by California companies to other states could be attractive given existing domestic agglomeration centers and lower costs than moving overseas

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California and the AI Industry

California currently dominates the global AI industry

- Forbes reports that California currently has 32 of the top 50 most promising privately-held AI companies. These companies so far have received 91.1% of the global total of AI funding (Source: Cai, Kendrick, Forbes 2024 AI 50 List - Top Artificial Intelligence Startups, *Forbes*, April 11, 2024)
- In 2023, AI-related startups in the San Francisco Bay Area received $27.4 billion in funding from seed, venture and private equity investors, representing 52.6% of the global total. This $27.4 billion was spread across 803 deals during the year, representing 16.6% of the global total (Source: Teare, Gené, "The SF Bay Area Has Become The Undisputed Leader In AI Tech And Funding Dollars," May 13, 2024 based on funding data from Crunchbase)
- According to data from Comprehensive.io from late 2023, companies in the San Francisco Bay Area were responsible for 59% of AI-related job postings in the United States (Source: Bote, Joshua, "Is San Francisco really the AI capital of the world? Here's what data shows," *The San Francisco Standard*, October 31, 2023)
- Based on data from Lightcast for all of 2023, California had 15.31% of all AI job postings in the United States. Texas came second at 7.89% and New York third at 5.29%. (Source: Nestor Maslej, Loredana Fattorini, Raymond Perrault, Vanessa Parli, Anka Reuel, Erik Brynjolfsson, John Etchemendy, Katrina Ligett, Terah Lyons, James Manyika, Juan Carlos Niebles, Yoav Shoham, Russell Wald, and Jack Clark, "The AI Index 2024 Annual Report," AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, Stanford, CA, April 2024, p. 231)

Takeaway: California has the most to lose from poorly-conceived regulations

Outside of California, the next biggest player is the rest of the United States

- In 2023, U.S.-based AI startups drew 73 cents of every dollar invested in the AI sector. The country saw AI funding jump 14% in 2023. The US also accounted for nearly half (46%) of AI deals in 2023, followed by Asia with 25% and Europe with 24% (Source: CB Insights, State of AI 2023 Report, February 1, 2024)

Takeaway: Relocation by California companies to elsewhere in the United States could be attractive because of existing domestic agglomeration centers and lower costs than moving overseas

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AI Industry Trends

Organizations are rapidly increasing the use of AI in their business operations

- The McKinsey Global Survey for 2024 shows that the adoption of AI by organizations is now at 72%. This is up from just 55% in 2023 and 50% in 2022. Additionally, 50% of organizations use AI in two or more business functions. This is up from just 31% in 2023 (Source: McKinsey & Company, McKinsey Global Survey, May 30, 2024)
- Analysts at Goldman Sachs estimate that widespread adoption of AI could boost global labor productivity and eventually drive a 7% increase in annual GDP—or almost $7 trillion—over a 10-year period (Source: Briggs, Joseph and Devesh Kodnani, "The Potentially Large Effects of Artificial Intelligence on Economic Growth," *Global Economics Analyst*, Goldman Sachs Economics Research, March 26, 2023)
- McKinsey analyzed 63 organizational use-cases specifically of generative AI in particular. It estimates that generative AI alone could add the equivalent of $2.6 trillion to $4.4 trillion annually across these use-cases, increasing the impact of all artificial intelligence by 15 to 40 percent. (Source: McKinsey & Company, The Economic Potential of Generative AI: The Next Productivity Frontier, June 14, 2023)

Takeaway: The AI industry literally will transform the world's economy over the next decade

AI startups are likely to define the tech utilities of the future

- Crunchbase reports that today California has some 5,605 companies involved in AI, Data and Analytics, Science and Engineering, and Software (Source: Crunchbase.com)
- Some analysts believe that the current proliferation of AI-related startups and the technical innovation and disruption they are creating is reminiscent of the 1990s and the explosion of internet service providers (ISPs) that occurred: there were 4,500 ISPs by 1998. Those ISP startups challenged the existing telecommunications providers and reshaped the entire industry (Source: Brendan Burke, "High-Stakes Foundation Model Horse Race Out of the Gates," PitchBook Data, Inc., June 26, 2024)

Takeaway: California's companies are currently at the forefront this transformation and are positioned to reap the benefits

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Provisions of SB 1047

SB 1047 would create substantial uncertainty for AI-related startups to continue operating in California

- While the $100 million cost threshold referenced in SB 1047 is intended to exclude smaller AI startups from the bill's provisions, it is unclear exactly what expenses apply: "Do you include the data set acquisition or the researcher salaries? Should we include the cost of previous training runs or just the final ones? Should human feedback for model alignment expenses count? If you fine tune someone else's model, should the costs of the base model be included?" (Source: Andreessen Horowitz, What You Need to Know About SB 1047: A Q&A with Anjney Midha, June 19, 2024)
- Additionally, the computing thresholds currently contained in SB 1047 are arbitrary. As computing power continues to rapidly grow as it has over the last several decades, many more models, including those of startups, would fall under the provisions of the bill (Source: Andreessen Horowitz, What You Need to Know About SB 1047: A Q&A with Anjney Midha, June 19, 2024)

Takeaway: AI startups have little assurance that the liability provisions contained in SB 1047 do not apply to them

SB 1047 could create uncertainty for larger, established AI-related companies as well

- Recent research in AI security has found it is possible to launch adversarial attacks on AI models that are capable of bypassing their implemented safety protocols. For example, in 2023, researchers unveiled a universal attack (Greedy Coordinate Gradient) that induces models to generate objectionable content and is capable of operating across various closed and open models including ChatGPT, Bard, Claude, Llama-2-Chat, and Pythia. This study demonstrated how models can be vulnerable to attacks that employ unintelligible, non-human-readable prompts
(Source: Nestor Maslej, Loredana Fattorini, Raymond Perrault, Vanessa Parli, Anka Reuel, Erik Brynjolfsson, John Etchemendy, Katrina Ligett, Terah Lyons, James Manyika, Juan Carlos Niebles, Yoav Shoham, Russell Wald, and Jack Clark, "The AI Index 2024 Annual Report," AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, Stanford, CA, April 2024, p. 193)

Takeaway: Developers of covered models might not be able to affirm that no unreasonable risk exists that the model or its derivative could cause or enable a critical harm

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Fiscal Implications for California

California's AI venture capital funding helps drive capital gains taxes

- The California Department of Finance reports that California received an estimated $17.6 billion in capital gains taxes in 2023, up from just $7.6 billion ten years earlier. That represents a 32% increase (Source: California Department of Finance, Governor's Budget Summary, 2023-24, p. 140)
- While AI-related companies produced just a portion of this tax revenue, the rapid growth of the industry is what will continue similar growth over the next decade

Takeaway: California has the potential to lose out on capital gains taxes into the future

California's AI jobs are high paying jobs

- Many AI research and development companies like OpenAI and Anthropic are classified by industry as falling under the North American Industry Classification System (NAICS) code 541715, Research and development in the physical, engineering, and life sciences (except nanotechnology and biotechnology)
- In 2023, California had an annual average of 3,496 establishments operating under NAICS 541715, with annual employment of 111,259 and total wages of $24.0 billion. The annual wage in the industry in California was $215,968 (Source: U.S. Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW), 2023)
- These California figures represented 13.4% of total U.S. establishments under NAICS 514715, 20.6% of total employment, 29.0% of total wages, and 1.41 times the annual wage
- Assuming single filing status, the workers in NAICS 514715 provided approximately $1.86 billion in California state income taxes in 2023 (Source: California Franchise Tax Board, 2023 Tax Calculator)

Takeaway: California could lose out on significant income tax revenue today