

Artificial Intelligence, Semiconductors, and the New Politics of Technology: Governance, Industrial Policy and Global Markets in an Era of Strategic Competition

Micaela Lopez
Supervised by Dr William Vlcek, School of International Relations



INTRODUCTION

AI and the semiconductors that support it have shifted rapidly in political and economic significance — once discussed as commercial innovation, now treated as matters of national security and geopolitical power.

Frontier AI models — the most advanced, general-purpose AI systems currently available — can support intelligence, cybersecurity, and military applications, while depending on concentrated global chip supply chains.

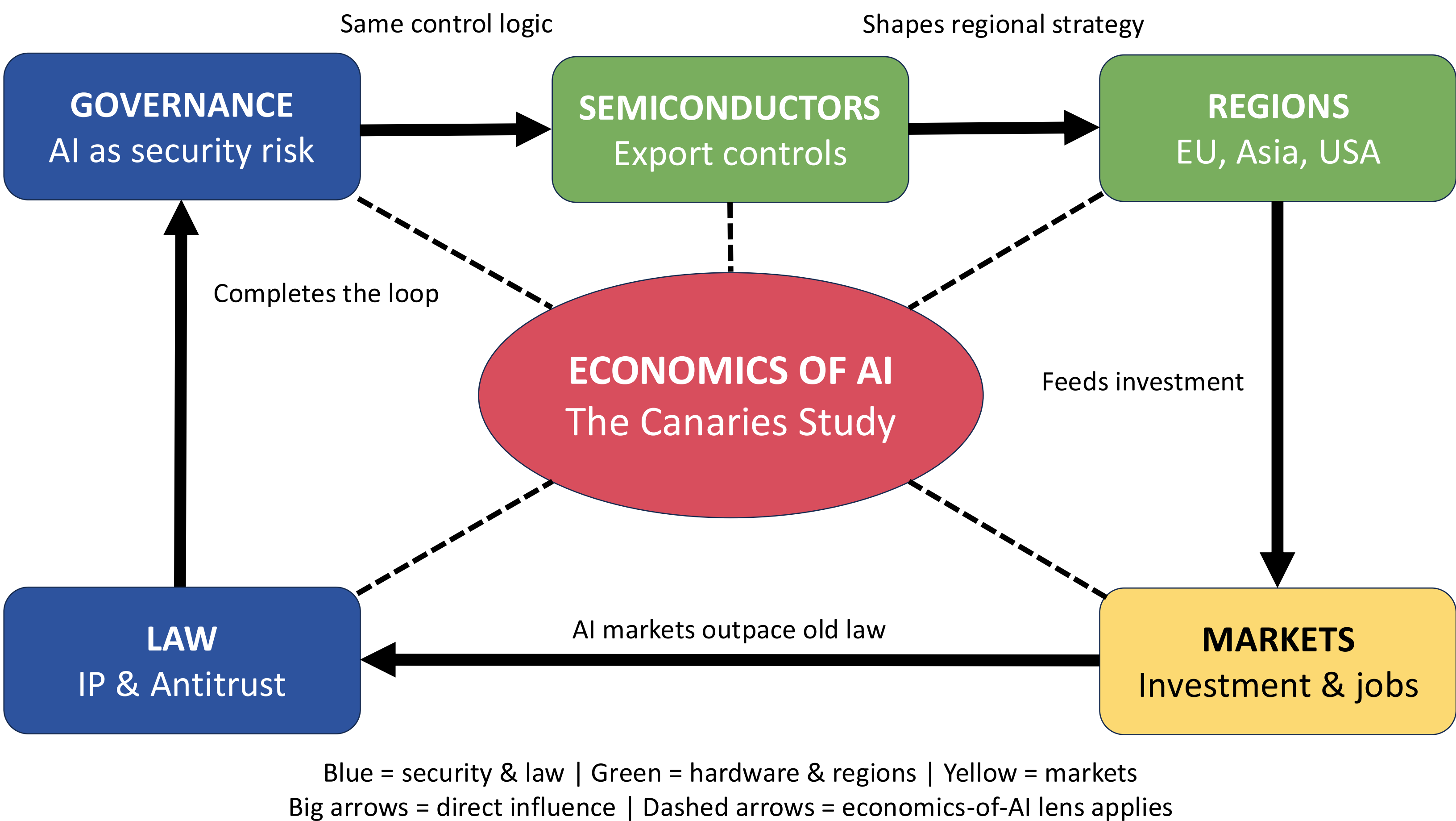
Governments are now deciding who may develop, supply, and access these technologies, through military AI disputes, model review, and export controls.

The EU, South Korea, Taiwan, and China are each responding differently, based on their own technological capabilities and position in the global economy.

THE CANARIES STUDY¹

Using high-frequency ADP payroll data on millions of US workers (through June 2026), researchers find no evidence of broad, economy-wide AI job losses. But employment for 22-25-year-olds in AI-exposed occupations now sits 19% below where it would be had it tracked older, less-exposed peers — a gap that has widened steadily since first documented in August 2025, driven mainly by reduced hiring, not firing.

Canaries thesis: The authors frame this deliberately as an early, descriptive indicator rather than causal proof — treat partial signals as meaningful before certainty arrives, because by the time proof exists, the moment to act has passed.



ECONOMICS OF AI

Governance: The Pentagon’s “supply-chain risk” designation and the Fable/Mythos suspension are themselves canaries – government acting on early signals of AI-security risk before any settled legal or empirical standard exists for what counts as one.²

Semiconductors: 180-day licence delays and smuggled chips aren’t proof export controls are failing – they’re early indicators being tracked in real time, the same evidentiary posture the Canaries authors take toward their own data.³

Regional responses: The EU’s sovereignty push and Korea/Taiwan’s expansion are hedges against anticipated risk, not reactions to an already-realised crisis – strategy built on leading indicators.⁴

Markets & labour: The 19% youth-employment gap is the direct, literal application – framed by its own authors as a canary, not a causal verdict.

Law: Courts in *Bartz v. Anthropic* (AI training and copyright fair use) and the Google case (search-monopoly antitrust remedies reshaped by AI rivals) are visibly reasoning without settled doctrine, reacting to early signals of how AI reshapes markets rather than applying finished law.⁵

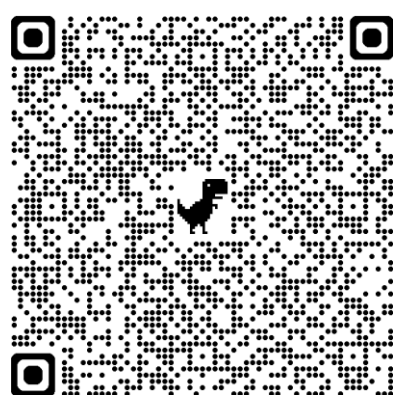
CONCLUSION

Two patterns recur across this research: a speed mismatch, where AI capability and investment outpace the administrative, legal, and statistical systems meant to track them, and a tension between security logic and market logic, as governments push to restrict and re-shore while firms run global, efficiency-driven supply chains.

Both trace back to the same problem the Canaries study names directly: institutions built to act on confirmed, causal evidence are confronting a technology that only ever offers early indicators. The present period is defined less by a settled equilibrium than by the friction between institutions built for a slower pace of change and a technology that will not wait for them.

REFERENCES

- 1 Brynjolfsson, Erik, Bharat Chandar, and Ruyu Chen. "Canaries in the Coal Mine? Six Facts about the Recent Employment Effects of Artificial Intelligence." Working paper, Stanford Digital Economy Lab. Revised 12 August 2026.
- 2 Reuters. "Pentagon Designates Anthropic a Supply Chain Risk." 5 March 2026; Anthropic. "Statement on the US Government Directive to Suspend Access to Fable 5 and Mythos 5." 12 June 2026.
- 3 Center for Strategic and International Studies. "Delays and Uncertainty in the Export Licensing Process: Findings from a CSIS Survey of U.S. Technology Exporters." 21 April 2026; Financial Times. "Nvidia's Banned AI Chips Double in Price on China's Black Market." 23 June 2026; Financial Times. "Samsung and SK Hynix Plan \$600bn Chipmaking Expansion." 29 June 2026.
- 4 European Commission. "Commission Proposes Tech Sovereignty Package to Strengthen Europe's Digital Autonomy and Resilience." 3 June 2026.
- 5 Bartz v. Anthropic PBC. Order on Fair Use. U.S. District Court for the Northern District of California, 23 June 2025; United States et al. v. Google LLC. Memorandum Opinion. U.S. District Court for the District of Columbia, 5 August 2024.



ACKNOWLEDGEMENT

I would like to thank Lord Laidlaw and the Laidlaw Foundation for making this research opportunity possible; special thanks as well to my supervisor, Dr William Vlcek, and the Laidlaw team at the University of St Andrews for their support.