ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION
AEGIS PROJECT FOR DEFENDING U.S. TECH LEADERSHIP

Tip of the Iceberg: Understanding the Depth of Big Tech's Contributions to US Innovation and Competitiveness

HILAL AKA | OCTOBER 2025

EXECUTIVE SUMMARY

The Issue

American Big Tech companies face unprecedented bipartisan criticism on issues ranging from their market power to their influence as conduits for speech and their practices in handling sensitive data. This has spurred regulatory proposals from antitrust breakups to content-liability reforms. Yet these policy debates focus almost exclusively on alleged harms while ignoring tangible benefits. For example, the five companies most frequently tagged with the moniker "Big Tech"—Apple, Amazon, Alphabet, Meta, and Microsoft—invest $227 billion annually in research and development (R&D), which produces positive spillovers for other sectors, from health care to defense. So, particularly as leading U.S. firms compete with China's state-backed champions, policies that weaken them without accounting for their broader contributions risk dismantling capabilities essential to U.S. technological leadership.

ITIF's Analysis and Findings

Current critiques of Big Tech focus on the "tip of the iceberg"—consumer platforms—while ignoring vast positive spillovers across seven dimensions:

1. innovation investment exceeding federal non-defense R&D;
2. open research and talent development;
3. strategic infrastructure countering China's Digital Silk Road;
4. dual-use defense technologies;
5. spillovers transforming health care, materials, agriculture, and other sectors;
6. start-up ecosystem support; and
7. American soft power.

These contributions are essential for competing with China's state-directed model, which provides companies with hundreds of billions in subsidies. Policies treating Big Tech primarily as a problem risk weakening the assets that underpin U.S. competitiveness.

The Depth of Contributions Below the Tip of the Iceberg

The consumer platforms that define Big Tech in the public consciousness represent only the surface layer of these companies' impact.

Big tech companies have become de facto national research labs, investing in experimental technologies and new innovations at scales far exceeding the capabilities of most other companies—and governments.

Innovation Investment

Unlike most traditional corporate research, which remains proprietary, big tech companies publish extensive research and release many tools freely, creating knowledge spillovers that enable innovation across the entire economy.

Open Research & Talent Concentration

Private companies now build and operate the digital infrastructure such as data centers and undersea cables that entire economies depend on, filling gaps that governments can't afford.

Strategic Infrastructure

The Pentagon's technological advantage is increasingly dependent on commercial R&D conducted by leading tech firms, as dual-use consumer technologies become key components of military capability.

Dual-Use Technologies & National Security

Computational power and AI developed for consumer products are solving previously intractable problems.

Spillovers Into Other Strategic Sectors

With IPOs declining, acquisitions and support from big tech firms have become the primary exit path and funding source, keeping the U.S. start-up ecosystem alive.

Nurturing the Startup Ecosystem

American platforms shape global culture, economic practices, and technology standards, projecting U.S. influence more effectively than traditional diplomacy alone.

American Soft Power

Innovation Investment

- Big tech invested $227B in R&D in 2024, exceeding most countries' entire public and private R&D investments and the U.S. government's non-defense R&D budget.
- Amazon lost $25B on Alexa alone (2017–2021) while advancing voice AI; Alphabet's X division sustains $3 to $4B annual losses on moonshot projects.

Open Research & Talent Concentration

- The five big tech companies ITIF studied account for over 40 percent of highly cited AI publications from the private sector.
- Open-source frameworks from Google and Microsoft account for 62 percent of the machine-learning tools market.

Strategic Infrastructure

- Big tech operates 36% of global GPU clusters (73% of U.S. capacity). Without them, the U.S. share would plummet from 50% to just 20%of global compute power.
- Big tech controls approximately two-thirds of global cloud infrastructure.
- Big tech develops custom silicon and experiments with underwater data centers and novel cooling technologies.

Dual-Use Technologies & National Security

- Microsoft's HoloLens AR gaming headset transformed into $22B military contract for soldier augmentation systems.
- Military drone intelligence relies on computer vision algorithms originally developed by leading tech firms for autonomous vehicles and consumer photography.

Spillovers Into Other Strategic Sectors

- Google DeepMind's AI system mapped 200 million protein structures in 18 months, work that otherwise could have taken centuries.
- Microsoft's AI screened 32.6 million potential battery materials and identified more than 500,000 stable candidates in just 80 hours.

Nurturing the Startup Ecosystem

- Big Tech provided $7 billion in free cloud credits to more than 330,000 startups, enabling them to build without venture funding.
- Nine out of 10 unicorn exits (91 percent) now happen through acquisition compared to 17 percent in 2010. Without this avenue, start-ups would lack liquidity.

American Soft Power

- US platforms reach more than 3 billion users globally, creating channels for American cultural and economic influence through voluntary adoption.
- Mobile money platforms enabled by U.S. technology reduced extreme poverty by 22% in Kenya, demonstrating development impact without foreign aid.
- Alphabet's health-care initiatives have screened 600,000 people in developing nations for diabetic retinopathy at no cost to taxpayers.

Policy Recommendations

The current regulatory approach to large tech companies systematically undervalues their contributions to U.S. economic and technological leadership. Policymakers should instead conduct comprehensive impact assessments to account for the "full iceberg" of costs and benefits that big tech companies provide—not just consumer platforms, but also scientific and technological innovation, strategic infrastructure, and other contributions to national competitiveness.

Read the Full Report

Hilal Aka, "Tip of the Iceberg: Understanding the Full Depth of Big Tech's Contribution to US Innovation and Competitiveness" (ITIF, October 2025), https://itif.org/publications/2025/10/06/tip-of-the-iceberg-understanding-big-techs-contribution-us-innovation-competitiveness/.

About ITIF

The Information Technology and Innovation Foundation (ITIF) is an independent 501(c)(3) nonprofit, nonpartisan research and educational institute that has been recognized repeatedly as the world's leading think tank for science and technology policy. For more, visit itif.org/about.