Introduction

This paper argues that Keynes' pre-1929 endorsement of free trade is emphatically urgent in today's age of technological innovation, especially for three inputs of AI: talent, data, and hardware. Similar to Keynes' recommendation, economies should promote free trade by minimizing the effects of political frontiers. Based on the endogenous growth theory, free trade strengthens incentives for innovation and knowledge sharing. Restricting trade represents a pure deadweight loss for digital services that have near zero marginal costs of reproduction. Despite common critiques, free trade actually strengthens international security from mutual dependence and leads to savings from pooling global R&D efforts.

People may be surprised to know that before 1929, Keynes was a strong believer of free trade (Turnell 2002). He argued in 1920 that political frontiers and collective animosities impoverish everyone involved (Keynes 1920). Felbermayr et al. support this claim with a 3.95% gain in welfare for WTO members engaging in free trade (2022). While Keynes' post-1929 hands-on approach in demand management is more widely adopted, it is now time to pay more attention to his pre-1929 claims that champion free trade. As Frédéric Bastiat once declared, "when goods cannot cross borders, armies will" (Griswold 1998).

This paper will first introduce theoretical frameworks of endogenous growth theory and the economics of abundance applicable to digital services. It will demonstrate economic benefits of free trade and address the often mentioned critique that trade restrictions are necessary for national security. Then, it will justify why free trade is beneficial for each of the three inputs of

AI: talent, data, and hardware.

Endogenous Growth Theory

The endogenous growth theory strengthens the case for free trade in the context of technological innovation. The theory posits that long-run economic growth is achieved with purposeful, profit-maximizing innovation resulting from deliberate R&D investments (Grossman et al. 1991).

Free trade expands domestic markets to a global one, increasing expected returns for successful innovation and R&D investments (Grossman et al. 2018). The increased competition from free trade also makes innovation essential in maintaining market position. Firms are therefore incentivized and compelled for more innovation.

While this may look like an arms race of research and development, free trade actually leads to a win-win scenario. Trade encourages the international spillovers of knowledge (Grossman et al. 1991). Countries then benefit from global innovations by importing new technology and research. This has the effect of pooling global R&D efforts, boosting domestic productivity, and accelerating wage growth, even for nations that are not at the cutting edge of technology (Grossman et al. 2018).

Economics of Abundance

Beyond endogenous growth, the unique nature of digital goods deepens the case for free trade. AI services are "digital goods," characterized by an economics of abundance rather than scarcity. Economist Danny Quah defines digital goods as **non-rival** and **infinitely expansible** (2002). This means that one person's consumption does not diminish another's. The marginal cost of reproduction also approaches zero.

As the marginal cost of digital service becomes effectively zero, any trade barrier such as a tariff, quota, or ban prevents a mutually beneficial transactions from occurring. This imposes a price on something that is intrinsically abundant, creating a deadweight loss to the global economy. The non-rivalrous and infinitely expansible nature of digital goods mean that international trade can reach near Pareto efficiency, a point at which no individual can be made better off without harming others (Quah 2002).

National Security

Despite strong economic arguments, critics cite national security as a barrier to free trade. Around the end of the Great Depression, Keynes laid the foundation to this train of thought, arguing that a trade deficit is undesirable, framing free trade in terms of winners and losers (Keynes 1933). Scholars like Friedrich List and Kenneth Waltz go on to worry that free trade for sensitive sectors could make a country too dependent on imports, preventing development of infant industries (List 1841; Waltz 1979).

While these are valid concerns, Ricardo and Heckscher point out that trade balances reflect comparative strengths of each country, not welfare losses (Ricardo 1817; Heckscher 1919). Not to mention, Bonfatti et al. point out that trade dependence only becomes a problem when strategic imports are denied through a blockade, as seen in Japan's attack in 1941 and Germany's expansion during World War II (2014). These cases suggest that free trade is that much more essential to avoid conflict.

The inverse of trade dependence is that other countries become dependent on the home country's efficient industries as well. Montesquieu argues that mutual dependence can reduce the likelihood of military conflict (1748). Russett and Oneal corroborate this argument with empirical evidence on interstate conflict (2001). A 2024 analysis by Samuel Gregg reinforces the idea that free trade enhances national security by bolstering economic growth and fostering better relations with allies.

Human Talent and Data

Building on these broader theoretical and security considerations, next sections will review whether free trade is necessary for three inputs of AI: human talent, data, and hardware.

Human talent is the most obvious case for free trade. A global talent pool including high-skilled workers increases patent production and innovation rates by up to 23% (Hunt & Gauthier-Loiselle 2010) Trade restrictions on high-skilled workers, in turn, reduces AI competitiveness by up to 40% over a decade (Kerr 2022) and GDP growth by 0.3-0.5 percentage

points annually (Keller and Yeaple 2013).

For data, diverse use cases from international sources are essential for AI development. Trade restrictions would reduce innovation by 20-30% over a decade (Goldfarb and Trefler 2018). Brynjolfsson and McAfee confirm that artificial intelligence systems require diverse use cases, and trade restrictions would stagnate development by 15-25% (2017).

Hardware

Free trade is foundational for the third input of modern innovation: hardware. This includes GPUs and advanced semiconductors. This input differs from the previous two inputs because hardware production is especially capital and R&D intensive. Scaling requires a global supply chain and broad market access. Free trade will help diversify supply sources, making firms less vulnerable to domestic shocks like natural disasters.

Export controls can actually harm the very firms they are meant to empower. Trade restrictions shrink firms' potential markets, cash flows, and incentives for R&D (Fuchs 2023). Denying China access to foreign-made advanced chips, for example, can act as a powerful incentive to accelerate its own semiconductor industry (Carnegie Endowment 2023). U.S. export controls can accelerate Chinese innovation timelines by 2-3 years (Barczentewicz 2025). A successful attempt by Beijing to foster an independent, competitive industry would render export controls obsolete as well.

Considering the "smile curve" economics of semiconductor production—where value is concentrated in design and marketing rather than manufacturing—trade restrictions would disrupt optimal resource allocation across the value chain (Mack and Mazzucato 2023).

Conclusion

The wisdom of a pre-1929 Keynes remains relevant. This paper has argued that free trade is essential for the three inputs of AI: talent, data, and hardware. Endogenous growth theory has illustrated that free trade acts as an R&D multiplier, increasing incentives and productivity of investments. The economics of abundance has shown trade restrictions to be a deadweight loss. Despite common critiques around national security, the mutual dependence from trade is a powerful deterrent to military conflict.

Access to international data and talent pools have proved to boost innovation. For capital-intensive hardware manufacturing, global supply chains, the smile curve, and acceleration of foreign competitors are strong reasons to keep hardware trades open.

Ultimately, it would be a mistake to apply Keynes' protectionist post-1929 views to the current innovation economy. As Frédéric Bastiat warned, when goods cannot cross borders, armies will. The future of AI depends on a world that is more, not less, trade-friendly.

References

Barczentewicz, Mikołaj. 2025. “US Export Controls on AI and Semiconductors.” Portland, OR: International Center for Law & Economics.

Bonfatti, Roberto, and Kevin O’Rourke. 2014. “Growth, Import Dependence and War.” NBER Working Paper 20326. Cambridge, MA: National Bureau of Economic Research.

Brynjolfsson, Erik, and Andrew McAfee. 2017. Machine, Platform, Crowd: Harnessing Our Digital Future. New York: W. W. Norton & Company.

Carnegie Endowment for International Peace. 2023. “The Geopolitics of the Semiconductor Industry and India’s Place in It.” Washington, DC: Carnegie Endowment for International Peace

Felbermayr, Gabriel, Mario Larch, Erdal Yalcin, and Yoto V. Yotov. 2022. *On the Heterogeneous Trade and Welfare Effects of GATT/WTO Membership.* WIFO Working Papers 643/2022, February.

Fuchs, Erica R. H. 2023. “The CHIPS Act and Industrial Policy: Economic Analysis and Welfare Implications.” American Economic Review: Insights 5 (2): 247–264.

Goldfarb, Avi, and Daniel Trefler. 2018. “AI and International Trade.” NBER Working Paper 24254. Cambridge, MA: National Bureau of Economic Research.

Griswold, Daniel. 1998. “Peace on Earth, Free Trade for Men.” Cato Institute, December 31.

Gregg, Samuel. 2024. “A Free, Prosperous, and Secure America.” AIER Papers no. 02, July 15.

American Institute for Economic Research.

Grossman, Gene M., and Elhanan Helpman. 1991. *Innovation and Growth in the Global Economy*. Cambridge, MA: MIT Press.

Grossman, Gene M., and Elhanan Helpman. 2018. “Growth, Trade, and Inequality.” *Econometrica* 86 (1): 37–83.

Heckscher, Eli. 1919. “The Effects of Foreign Trade on the Distribution of Income.” Ekonomisk Tidskrift 21: 497–512.

Hunt, Jennifer, and Marjolaine Gauthier-Loiselle. 2010. “How Much Does Immigration Boost Innovation?” American Economic Journal: Macroeconomics 2 (2): 31–56.

Keller, Wolfgang, and Stephen R. Yeaple. 2013. “The Gravity of Knowledge.” American Economic Review 103 (4): 1414–1444.

Kerr, William R. 2022. The Gift of Global Talent: How Migration Shapes Business, Economy & Society. Stanford, CA: Stanford University Press.

Keynes, John Maynard. 1920. The Economic Consequences of the Peace. New York: Harcourt, Brace, and Howe.

Keynes, John Maynard. 1933. “National Self-Sufficiency.” London: Macmillan.

List, Friedrich. 1841. The National System of Political Economy. Philadelphia: J.B. Lippincott.

Mack, Gregor, and Mariana Mazzucato. 2023. "A Developmental, Entrepreneurial State in the

Making: The Case of the US Semiconductor Industry." UCL Institute for Innovation and Public Purpose Working Paper Series (IIPP WP 2023-01). London: University College London.

Montesquieu, Charles de Secondat. (1748) 1989. The Spirit of the Laws. Edited and translated by Anne M. Cohler, Basia C. Miller, and Harold S. Stone. Cambridge: Cambridge University Press.

Ricardo, David. 1817. On the Principles of Political Economy and Taxation. London: John Murray.

Russett, Bruce, and John R. Oneal. 2001. Triangulating Peace: Democracy, Interdependence, and International Organizations. New York: W. W. Norton & Company.

Turnell, Sean. 2002. “Keynes, Economics and War: A Liberal Dose of Realism.” Macquarie University Department of Economics Research Papers 0207

Waltz, Kenneth N. 1979. Theory of International Politics. Reading, MA: Addison-Wesley.