

How Japan's Extreme Demographics are Shaping Technological Trajectories and a New but Familiar Industrial Policy

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The path of technology diffusion is influenced not only by technology itself, but its local contexts—political, institutional, macroeconomic, corporate, and social. To some degree, cultural aspects matter.¹ Japan has not been a major player in generating breakthroughs in digital technology,² but its domestic conditions suggest that it can play a significant role in influencing global technological trajectories by implementing digital technologies and AI.

- Japan's extreme demographic aging and shrinking is an economic and societal challenge, but also a technological opportunity for global leadership.
- Technological trajectories of *worker automation* and *worker skill augmentation* within Japan are already being shaped by the country's demographics.
- Software, robotics, and other technology deployments are transforming work in a wide range of sectors in Japan's economy across types such as blue collar, white collar, agriculture, manufacturing, and services.
- Specific ways in which Japan's demographics shapes technological trajectories include *market opportunities*, *acute labor shortages*, and *favorable political and regulatory dynamics*.
- The private sector is driving technology deployments in industrial sectors hit hard by Japan's aging population. These sectors range from construction and transportation to medical care and finance, with strong government support in each of the domains.
- Specific government support for technological deployment and business promotion to address demographic challenges are a form of *internationally and domestically uncontroversial, societally accepted industrial policy that is broadly appealing to the LDP's support base*.

¹ Carlota Perez, “Technological Revolutions and Techno-Economic Paradigms,” *Cambridge Journal of Economics*, 2009.

² This follows Japan's historical strengths in implementing and commercializing new technologies while optimizing rather than generating breakthrough innovations. Kozo Yamamura, “Germany and Japan in a New Phase of Capitalism: Confronting the Past and Future,” in *The End of Diversity? : Prospects for German and Japanese Capitalism*, ed. Kozo Yamamura and Wolfgang Streeck (Ithaca: Cornell University Press, 2003), 115–46.

- Demographically driven technological trajectories play to Japan's strengths of implementing, deploying, and improving technologies rather than generating breakthrough innovations.
- Japan's demographically driven technological trajectory can be an important platform for international technology cooperation, fitting with the top US-Japanese political leadership agreements on fostering strong innovation and technology collaboration ties.
- Japan's startup ecosystem, often in partnership with large incumbent firms, will be critical in deploying new technologies by defining new markets and providing new offerings.
- An effective analysis delves beyond broad demographic numbers to delve into specific pain points of specific segments of society to better capture their realities as they shape market opportunities that drive technological adoption.
- This introductory piece: 1) introduces key analytical concepts; 2) surveys some of Japan's key demographic shifts; and 3) highlights cases from agriculture, construction, transportation, healthcare, eldercare, land and housing ownership.