
The Human Circuit: A Comparative Study of the Semiconductor Industry's Labor Conditions in the US and Taiwan

Ethan Chiu*[†]

¹Yale University – United States

Abstract

This pilot study investigates the evolution of labor conditions in the semiconductor supply chain from the 1960s to the present, focusing on the industry's geographic shift from the United States to Taiwan. This chip industry move mirrors persistent cycles of labor exploitation via socioeconomic, racial, and gender-based inequities. As Taiwan has risen to dominate the semiconductor sector, producing 92% of the world's advanced chips, its labor practices reflect a legacy of exploitative strategies initially developed by US-based firms like Fairchild Semiconductor, which outsourced assembly, testing, and packaging to marginalized groups, including Native American and Asian communities. In Taiwan, the labor force now includes a significant number of South and Southeast Asian migrant workers, who face systemic inequities including low wages, stringent control mechanisms, and limited labor protections. The study examines the root causes of these disparities, applying labor process theory and interviews to uncover how deskilling and structural bias perpetuate a hierarchical labor dynamic replicated across geographic and cultural borders. The analysis also identifies proximal causes-globalization, geopolitical tensions, and the rapid expansion of AI-which exacerbate exploitative chip industry labor practices. Recommendations include establishing international tech sector labor standards, promoting fair employment practices, and collaborating via public-private initiatives to support equitable labor practices. The study underscores the urgency of addressing chip industry labor disparities to prevent continued exploitation throughout the broader tech supply chain.

Keywords: Semiconductor industry, Labor conditions, Advanced manufacturing, Assembly, Testing, and Packaging (ATP), Global supply chain, Industrial policy

*Speaker

[†]Corresponding author: ethan.chiu@yale.edu