

# Technology Adoption and Late Industrialization\*

Jaedo Choi

University of Michigan, Ann Arbor

Younghun Shim

University of Chicago

## JOB MARKET PAPER

October, 2021

[Click here for the latest version](#)

### Abstract

We study how the adoption of foreign technology and its local spillovers contributed to late industrialization in developing countries during the postwar period. Using novel historical firm-level data for South Korea, we provide causal evidence of direct productivity gains to adopters, and local productivity spillovers of the adoption. Based on these empirical findings, we develop a dynamic spatial model with firms' technology adoption decisions and local productivity spillovers. The spillovers induce dynamic complementarity in firms' technology adoption decisions. Due to dynamic complementarity, the model potentially features multiple steady states. Temporary adoption subsidies can have permanent effects by moving an economy to a new transition path that converges to a higher-productivity steady state. We calibrate the model to the micro data and econometric estimates, and evaluate the impact of temporary adoption subsidies provided by the Korean government in the 1970s. Had no adoption subsidies been provided, Korea would have converged to an alternative less-industrialized steady state in which the heavy manufacturing GDP share and the aggregate welfare would be 15% and 10% lower than the steady state with successful industrialization. Thus, temporary subsidies to technology adoption had permanent effects.

*Keywords:* Technology Adoption, Industrialization, Knowledge Spillover, Path Dependence

*JEL Codes:* O14, O33, O53, R12

---

\*We are extremely grateful to Andrei A. Levchenko, Dominick Bartelme, Jagadeesh Sivadasan, and Sebastian Sotelo for their guidance and invaluable suggestions and encouragement. We also thank Maria Aristizabal-Ramírez, Barthélémy Bonadio, Javier Cravino, Alan Deardorff, Kyle Handley, Yongjun Kim, Nishaad Rao, Linda Tesar, and seminar participants at MWIT, ETSG, and the University of Michigan for helpful comments. We also thank the National Archives of Korea for sharing data. We would like to gratefully acknowledge research support from Kwanjeong Educational Foundation. E-mail: [jaedochi@umich.edu](mailto:jaedochi@umich.edu).