Technology Adoption and Late Industrialization *

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Abstract

We study how the adoption of foreign technology and local spillovers from such adoption contributed to late industrialization in a developing country 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 spillovers. The spillovers induce dynamic complementarity in firms' technology adoption decisions. Because of this 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 our model to the microdata and econometric estimates. We evaluate the effects of the South Korean government policy that temporarily provided adoption subsidies to heavy manufacturing firms in the 1970s. Had no adoption subsidies been provided, South Korea would have converged to a less industrialized steady state in which the heavy manufacturing's share of GDP would have been 15% lower and aggregate welfare would have been 10% lower than the steady state with successful industrialization. Thus, temporary subsidies for technology adoption had permanent effects.

Keywords: Technology adoption, industrialization, knowledge spillover, path dependence
JEL Codes: O14, O33, O53, R12

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