

Spatial Bias in Technological Change and Gains from Trade

Taichi Uezono*

September 1, 2026

Abstract

This paper studies how the international distribution of R&D activity affects the gains from trade. It develops a quantitative general-equilibrium model in which trade flows and the spatial allocation of innovative activity are jointly determined. Building on a multi-country model of trade in differentiated varieties with semi-endogenous technological change, the framework allows heterogeneous researchers to relocate across countries in response to differences in the real rewards to innovation. The resulting spatial bias in innovative activity determines national stocks of varieties, which in turn feed back into trade patterns and welfare. The model yields a tractable system of equilibrium conditions that can be expressed in exact hat algebra. In particular, it delivers a closed-form welfare formula based on observable trade shares and a small set of elasticity parameters, permitting a transparent decomposition between the conventional gains from trade and the effects of endogenous R&D location. Quantitatively, allowing innovative activity to relocate substantially changes both the magnitude and the cross-country incidence of the welfare effects of trade integration.

Keywords: International trade; innovation; directed technological change; factor mobility; general equilibrium

JEL Classification: D58; F12; F22; F43; O33

*Graduate School of Economics, The University of Tokyo.