What Drives Total Factor Productivity Growth for Japanese Manufacturing Industry?

Sangho Kim*

Abstract

We utilize industrial panel data for Japanese manufacturing to estimate the sources of the Solow residual by simultaneously considering embodied technical progress, spillover effects, and openness, after controlling returns to scale, imperfect competition, and capacity utilization. Estimation results show the existence of considerable embodied technical progress and the inter-industry externality of capital investments positively affecting productivity growth. Embodied technical progress causes R&D capital to be insignificant in affecting productivity growth, suggesting that the impact of R&D is realized only after being embodied into other capitals. We notice heterogeneity in factors affecting productivity growth between the durable and non-durable manufacturing sectors.

JEL codes: D24; O30

Keywords: embodied technical change, externality, TFP growth.

*The author gratefully acknowledges financial support from The Japan Society for the Promotion of Science (JSPS KAKENHI Grant Number 25380273). Professor, College of International Management, Ritsumeikan Asia Pacific University, 1-1 Jumonjibaru, Beppu, Oita 874-8577 JAPAN. Email: shkim@apu.ac.jp, Telephone: +81-977-78-1259.