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**製造業の産業組織 I**

# Productivity, Capital Utilization, and Intra-firm Diffusion: A Study of Steel Refining Furnaces *

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**Abstract**

This paper examines the intra-firm diffusion of new technology in the Japanese steel industry. The introduction of the basic oxygen furnace was the greatest breakthrough in steel refining in the last century. Using unique panel data concerning capital utiliza- tion, the paper estimates total factor productivity by technology type, and associates the estimate with intra-firm diffusion. Estimation results reveal that the productivity difference between the old and new technologies plays an important role. The paper also finds that in operation, the old technology can better respond to changes in market demand, which brings about counter-cyclicality in the measured productivity.

*JEL:* D24, L61, O14, O33
*Keywords:* intra-firm diffusion; innovation; technological change; TFP

* “Effects of Technology Adoption on Productivity and Industry Growth: A Study of Steel Refining Furnaces”より変更。