Electricity Supply Constraints and Comparative Advantage: A Neoclassical Approach[*]

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Abstract

Since the nuclear-power-plant accident caused by the Great East Japan Earthquake, electricity supply constraints has raised serious concerns about the impact on Japanese economy among businesses and policy makers. This paper examines the extent to which electricity supply constraints would affect manufacturing production in Japan. For this purpose, an empirical model is estimated for measuring how sectoral output share is influenced by electricity capacity and productivities, using data from 1990-2008 for 15 OECD countries and 12 manufacturing sectors. Our estimates on productivity–adjusted electricity capacity are statistically significant and meaningful in most sectors, suggesting that decreases in productivity-adjusted electricity capacity will variously affect output share according to sectors. Among them, electrical equipment, transport equipment, machinery, chemicals, and paper products have relatively large negative impact. Japan tends to have high output share in electrical, transport, and machinery relative to other OECD countries, which implies that electricity supply constraints may weaken Japan's comparative advantage.

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