

# The Pollution Outsourcing Hypothesis: An Empirical Test for Japan

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## Abstract

This paper investigates whether firms that engage in outsourcing improve their environmental performance using Japanese firm-level data for the period 2009-2013. To identify the causal effect of production outsourcing on firm CO<sub>2</sub> emission intensities we employ a non-parametric approach combining propensity score matching (PSM) and difference-in-differences (DiD). Our results show that, relative to the control group, the growth in CO<sub>2</sub> emission intensities (relative to the year before treatment) of new production outsourcers is 5.1% lower the year when they start outsourcing, and 6.6% and 9.5% lower one and two years after outsourcing. When we decompose firms' outsourcing activities into domestic and foreign outsourcing according to the destination of the outsourced production we find that the outsourcing effects on emission intensity growth is driven by overseas outsourcing: compared. Firms that outsource part(s) of their production overseas have a 7.3% lower emission intensity growth when they start outsourcing and a 7.7% reduction the year following. However, overseas production outsourcing is not found to have significant impact on other performance indicators such as sales, capital intensity, employees' wages, labor productivity and R&D intensity. We also investigate whether the decision to import or export has an impact on firm level environmental performance as predicted by the more traditional PHH literature. Firms are found to have a 3.3% lower growth rate of CO<sub>2</sub> emission intensity when they start to import, but no significant impact is found for exporting.

**Key words:** outsourcing, environment, propensity score matching, difference-in-differences.

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