

The Role of Technology in Inter-Fuel Substitution: A Combined Cross-Section and Time Series Approach

Kurt Kratena and Michael Wueger

Austrian Institute of Economic Research, Vienna, Austria
Corresponding author: <kratena@wifo.ac.at>

This paper describes inter-fuel substitution for coal, oil, gas and electricity at a level of 12 activities. We use cross section data in each activity for appliance technologies (heating/cooling, steam generation, industrial processes, motors) to estimate fuel input demand equations by appliance technology in a panel estimation with fixed effects for activities and a uniform effect of technical progress across appliance technologies. In a synthesis with the time series approach we estimate fuel input demand equations at the 'aggregate' level of activities as the weighted sum of appliance technologies by inserting parameters from the panel estimation. In this 'disaggregated' model the impact of prices and of technical progress in each activity can be decomposed into two effects: (i) changes in the share of appliance technologies and (ii) fuel switch within appliance technologies.

Key words: Inter-fuel substitution, appliance technologies, panel data estimation

JEL classification: Q41, O33, C33

Abstract for the International Energy Workshop
jointly organized by the
Energy Modeling Forum (EMF), International Energy Agency (IEA) and IIASA.
24-26 June 2003 at IIASA Conference Center, Laxenburg, Austria