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ELECTRIC APPLIANCE OWNERSHIP AND USAGE: APPLICATION OF CONDITIONAL DEMAND ANALYSIS TO JAPANESE HOUSEHOLD DATA

Abstract:

Although both appliance ownership and usage patterns determine residential electricity consumption, it is less known how households actually use their appliances. In this study, we conduct conditional demand analyses to break down total household electricity consumption into a set of demand functions for electricity usage, across 13 appliance categories. We then examine how the socioeconomic characteristics of the households explain their appliance usage. Analysis of micro-level data from the Nation Survey of Family and Expenditure in Japan reveals that the family and income structure of households affect appliance usage. Specifically, we find that the presence of teenagers increases both air conditioner and dishwasher use, labor income and nonlabor income affect microwave usage in different ways, air conditioner usage decreases as the wife's income increases, and microwave usage decreases as the husband's income increases. Furthermore, we find that households use more electricity with new personal computers than old ones; this implies that the replacement of old personal computers increases electricity consumption.

Keywords:

Appliance Usage; Conditional Demand Analysis; Micro-level Data

JEL Classification: Q41, J22, Q50