

Estimation of the electricity demand function in Jeju-island using temperature variable

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This paper attempts to estimate the electricity demand function in Jeju with quarterly data of average temperature, electricity price, electricity demand, and gross regional domestic product in Jeju over the period 2000 to 2015. Lagged dependent variable model and ordinary least square method had been applied as a robust approach to estimating the parameters of the electricity demand function and add seasonal dummy-variable. The results show that short-run price- and income-elasticities of the electricity demand are estimated to be -0.72 and 0.94, respectively. The relationship between temperature and electricity demand in Jeju is U-shaped relationship as many references. And the threshold temperature of electricity demand is about 12.9°C. Also long-run price- and income-elasticities are estimated to be -0.59 and 0.91, respectively. All of results of price- and income-elasticities of electricity demand are statistically significant at the 1% level. The electricity demand in Jeju is in –elastic with regard to price and income changes according to results of this study. It is shown that power of explanation and goodness-of-fit statistics are improved in the use of the lagged dependent variable model with temperature and seasonal dummy variables than conventional model without temperature variables.

Key words: temperature, electricity demand, lagged dependent variable model, Jeju