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Title

Imperfect reversibility of fuel demand for road transport: Asymmetric and hysteretic effects of income and price changes in Korea

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Abstract

Existing literature lacks empirical evidence of the potential nonlinear effects of income and price on transport fuel demand. This paper fills this gap by investigating whether the demand responses to income and price changes are asymmetric and hysteretic. To this end, we decompose both income and price into two- and three-component series (one- and two-threshold cases). In the one-threshold case, demand effects for income are symmetric, but asymmetric for fuel price. The results of the two-threshold case show hysteretic effects for price but not for income. More specifically, the results reveal that small price changes do not significantly influence fuel demand for road transport, but substantial increases and cuts in price asymmetrically affect fuel demand, supporting the presence of an inaction band. These findings lead to the conclusion that income has linear demand effects, but demand effects for fuel price are nonlinear; therefore, disregarding nonlinearities in fuel price changes can be restrictive.

Keywords: Asymmetry; Hysteresis; Nonlinearities; Partial-sum decomposition approach

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