ENERGY AND ECONOMY

Coupled asymmetrically*J. Econ. Asymmetries* **21**, e00141 (2020)

Energy consumption in a country generally grows with gross domestic product (GDP) or incomes. However, economists have also noted some elasticity in this relationship, that is, in the long run not all change in income leads to a proportional change in energy consumption. To estimate this elasticity, economists generally assume that both increases and decreases in incomes affect energy consumption similarly. Now, Brantley Liddle at the National University of Singapore and Perry Sadorsky at York University, Canada, show that there is asymmetry in how GDP affects energy consumption, with a decrease in GDP reducing consumption by almost as much as twice the increase that would result from an increase in GDP of the same magnitude.

The researchers compile GDP, energy consumption and price data in 91 countries, including 38 high income countries. The data ranges from 1960 to 2016. They estimate the change in energy consumption with GDP in both high and low income countries as well as the whole group. They find that while a 1% increase in GDP leads to a 0.35% increase in energy consumption, a 1% decrease in GDP was linked to a 0.68% decrease in energy consumption. Not only would future elasticity estimations have to take this asymmetry into account, future investigation of the reasons for this asymmetry could lead to a better understanding of the mechanisms underlying the energy–GDP coupling and may provide deeper insights into ways energy use can be decoupled from growth.

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Published online: 18 March 2020

<https://doi.org/10.1038/s41560-020-0591-z>