

Digitalization and Drivers of Energy Usage Efficiency: Evidence from Data Centers

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Abstract

This paper investigates the most significant drivers of energy efficiency in the digital economy using a global dataset covering xxx data center facilities. We relied on Power Usage Effectiveness (PUE), the ratio of power consumed by a data center to the power required to run its IT equipment, as a measure of efficiency. We investigated three sources of efficiency beyond technological progress and scale: demand, measured by income, energy availability, and digital connectivity; competition, measured by the number of DC operators and concentration of market shares; and inertia, measured by pre-existing energy efficiency and scale efficiencies. A simple OLS regression confirms that technological progress, scale, and demand are key drivers of energy efficiency. Competition and inertia did not have a significant impact on energy efficiency in data centers.

Keywords: Digital, Trade, Development

JEL Codes: L96, L14, O14

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