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Smart Meters and Distributed Generation: Panel Causality Evidence

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ABSTRACT

Both the relevant literature and the regulatory authorities' policy reports suggest that there is a relationship between smart meters and distributed generation and that an essential tool for the integration of distributed generation into electric systems is the smart meter technology. However, to date, there has been no formal or scientific test of this proposition. This article examines the relationship between advanced metering infrastructure (AMI) and distributed generation (DG), which are expected to be among the critical components of future electricity markets. For this purpose, long monthly time series data were used for four different consumer groups (commercial, industrial, residential and small- and medium-sized enterprises) for the network reporting regions in New Zealand and a panel Granger causality analysis was conducted. The econometric results establish a two-way causality relationship between AMI penetration and DG uptake rate. These findings are in line with the propositions in the literature and policy papers, and they comprise policy implications.

KEYWORDS Smart meters; distributed generation; panel causality analysis; New Zealand

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