

From Airbnb to Solar: Toward a Transaction Cost Model of a Retail Electricity Distribution Platform

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Abstract

Digital technologies have reduced transaction costs and led to platform business models and the sharing economy. Platform business models are increasingly part of policy debates in electricity distribution and retail due to the proliferation of digital and distributed energy resource (DER) technologies, such as residential rooftop solar. What are the implications of falling transaction costs and platform business models in electricity distribution and retail, and in the burgeoning markets for DERs? Our core insight is that excess capacity is variable, and varies inversely with transaction costs. Digital platform business models enable asset owners to rent out this excess capacity. Here we propose a two-stage transaction cost model to represent the effects of transaction cost-reducing innovation on two aspects of such transactions: gains from trade in sharing, and the margin that divides renters from owners. We analyze the equilibrium comparative statics of the model to derive observable predictions, and find that the rental market option makes the opportunity cost of excess capacity salient. As peer-to-peer transactions in energy capacity become more feasible, our results suggest that ownership of DER capacity will be driven less by one's expected intensity of use and more by relative price concerns and subjective preferences for energy self-sufficiency or environmental attributes.

Keywords: transaction costs, platforms, digital, networks, peer-