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Storing Power: Market Structure Matters

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Abstract We asses how firms' incentives to operate and invest in energy storage depend on the market structure. For this purpose, we characterize equilibrium market outcomes allowing for market power in storage and/or production, as well as for vertical integration between storage and production. Market power reduces overall efficiency through two channels: it induces an inefficient use of the storage facilities, and it distorts investment incentives. The worst outcome for consumers and total welfare occurs under vertical integration. We illustrate our theoretical results by simulating the Spanish wholesale electricity market for different levels of storage capacity. The results are key to understand how to regulate energy storage, an issue which is critical for the deployment of renewables.

Keywords Storage, electricity, market structure, investment, vertical relations

JEL Classification L22, L94.

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