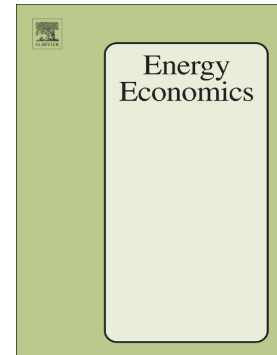


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# Capacity Payment Mechanisms and Investment Incentives in Restructured Electricity Markets

David P. Brown\*

## Abstract

We investigate the impacts of capacity payment mechanisms on generation capacity investment and subsequent energy and capacity market competition. We analyze the optimal design of capacity demand parameters. The presence of price-responsive capacity demand reduces firms' abilities to exercise market power, alleviates the volatile bimodal capacity market pricing structure, reduces market concentration, and increases expected consumer surplus. While capacity payments expand investment, the first-best aggregate level of capacity is not achieved at the optimal capacity payment parameters. We demonstrate that the addition of subsidized renewable generation capacity puts downward pressure on energy prices. When renewable output is not sufficiently positively correlated with energy demand, renewable capacity expansion reduces the expected available production capacity and increases the probability of capacity scarcity for a given level of capacity demand parameters. Consequently, the regulator must expand capacity payments to achieve the same level of resource adequacy.

Keywords: Electricity, Capacity Markets, Reliability, Market Power, Regulation, Renewables

JEL Classifications: D44, L13, L50, L94, Q40

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