

Equilibrium supply security in a multinational electricity market with renewable production

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Abstract An increasing reliance on solar and wind power has raised concern about system ability to consistently satisfy electricity demand. This paper examines countries' unilateral incentives to achieve supply security through capacity reserves and market integration in a multinational electricity market. Capacity reserves protect consumers against blackouts and extreme prices, but distort consumption and investment. Market integration alleviates supply constraints, but requires costly network reinforcement. Capacity reserves can be up- or downward distorted, but network investment is always insufficient in equilibrium. Capacity reserves are smaller when there are financial markets or when dispatched solely to resolve domestic supply constraints.

Keywords Capacity mechanism, decentralized policy making, multinational electricity market, network investment, security of supply

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