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European Department

Chasing the Sun and Catching the Wind: Energy Transition and Electricity Prices in Europe**Prepared by Serhan Cevik and Keitaro Ninomiya¹**

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Abstract

European power markets are in the midst of unprecedented changes, with a record-breaking surge in energy prices. This paper investigates the impact of green power resources on the level and volatility of wholesale electricity prices at a granular level, using monthly observations for a panel of 24 European countries over the period 2014–2021 and alternative estimation methods including a panel quantile regression approach. We find that renewable energy is associated with a significant reduction in wholesale electricity prices in Europe, with an average impact of 0.6 percent for each 1 percentage points increase in renewable share. We also find evidence for a nonlinear effect—that is, higher the share of renewables, the greater its effect on electricity prices. On the other hand, while quantile estimation results are mixed with regards to the impact of renewables on the volatility of electricity prices, we obtain evidence that renewable energy has a negative effect on volatility at the highest quantiles. Overall, our analysis indicates that policy reforms can help accelerate the green transition while minimizing the volatility in electricity prices.

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