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Energy security and economic growth: Lessons from recent energy shocks in the EU

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Extended Abstract

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Abstract Summary

This paper examines the relationship between energy security and economic growth in the European Union over the period 1995–2024, with a particular focus on asymmetric effects. Using a recalculated multidimensional Energy Supply Security Index (ESSI) and a nonlinear autoregressive distributed lag (NARDL) framework estimated for 27 EU Member States, the analysis integrates energy security into an extended Cobb–Douglas production function alongside capital and labour. The results reveal a robust long run relationship between economic activity and production inputs, with capital investment emerging as the dominant growth driver and labour contributing positively over time.

Energy security exerts a clearly asymmetric impact on economic growth. Deterioration in energy security—reflecting supply disruptions, limited diversification, or heightened geopolitical risk—lead to statistically significant and economically meaningful losses in long run GDP. By contrast, improvements in energy security generate smaller and more gradual growth effects, reflecting investment costs, adjustment frictions, and long implementation horizons associated with diversification and renewable deployment. These findings are robust across alternative specifications, reduced country samples, and estimation methods, including FMOLS and DOLS.

Overall, the results suggest that preventing negative energy security shocks is economically more important than relying on the long term growth dividends of enhanced energy security. From a policy perspective, the findings support prioritising diversification, continued expansion of renewables, strengthened interconnections, and coordinated EU level action to enhance resilience. By reducing exposure to external shocks and volatile energy costs, such measures are critical for safeguarding EU competitiveness, supporting strategic autonomy, and underpinning a more resilient long term growth model.

Presenting Author Biography

Violeta Klyviene is a Senior Economist in the Policy Strategy and Institutional Relations Division at the European Stability Mechanism, where she has worked since February 2023. She previously served as an economist at the European Commission, contributing to macroeconomic forecasts and surveillance missions, and worked as a policy adviser to Members of the European Parliament from the Green Party. Earlier in her career, she held senior roles at Danske Bank and the Central Bank of Lithuania. She holds a PhD in Economics from Vilnius University, with research interests in public economics, fiscal policy dynamics, and energy economics.