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The Effectiveness of Environmental Policy Instruments for Promoting Renewable Energy Consumption: Command-and-Control Policies versus Market-Based Policies

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Abstract : Understanding the impact of market- and non-market-based environmental policy instruments on renewable energy consumption (REC) is crucial for the design and choice of policy packages. This study aims to empirically investigate the effect of environmental policy stringency index (EPS) and its components on REC in 27 OECD countries over the period from 1990 to 2015, and then use the results to identify what the appropriate environmental policy mix should look like. By relying on the two-step system GMM estimator, we provide evidence that increasing environmental policy stringency as a whole promotes renewable energy consumption in these 27 developed economies. Moreover, policymakers are able, through the market- and non-market-based environmental policy instruments, to increase the use of renewable energy. However, not all of these instruments are effective for achieving this goal. The results indicate that R&D subsidies and trading schemes have a positive and significant impact on REC, while taxes, feed-in tariff and emission standards have not a significant effect. Furthermore, R&D subsidies are more effective than trading schemes for stimulating the use of clean energy. These findings proved to be robust across the three alternative panel techniques used.

Keywords : environmental policy stringency, renewable energy consumption, two-step system-GMM estimation, linear dynamic panel data model
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