Symmetric and asymmetric response of the renewable energy market to Indonesian economic trends

Safiullah Junejo, author

Abstrak

This study digs into the complex interplay between renewable energy market development and Indonesian economic trends. Our rigorous study aims to investigate the impact of crucial economic indicators, including gross domestic product (GDP), exchange rates, inflation, real interest rates, net inflow of foreign direct investment (FDI), and urbanisation, on the renewable energy landscape in Indonesia between 1973 and 2022. This study provides a novel insight by investigating both symmetric and asymmetric impacts in the context of Indonesia. While previous studies have limited scope with linear relationships, this study fills a gap by capturing the dynamic interplay between renewables and economic indicators. By employing a robust econometric model, we reveal interesting patterns highlighting the multidimensional nature of the renewable energy market's responses to economic trends and find that there is a long-term interplay among the variables under linear and non-linear models. We found empirical evidence indicating that the nexus is asymmetric. However, in the long term, GDP exhibits an asymmetric positive impact on renewable energy consumption in the linear model. This shows that economic growth positively correlates with Indonesia's adoption of sustainable renewable energy sources. Similarly, urbanisation shows a positive response, with expanding cities boosting demand for cleaner and greener energy. Surprisingly, exchange rates show an asymmetric response, demonstrating that depreciation of local currency has a disproportionate negative impact on renewable energy investment during economic downturns. Inflation also exhibits a negative asymmetric response due to eroding purchasing power that reduces investment in renewables. Meanwhile, net inflow of FDI emerges as a critical driver in favourable economic conditions, dramatically amplifying renewable energy capacities. Therefore, during economic recessions, FDI’s impact diminishes and emphasises the significant importance of tailored interventions. Based on the findings of this study, which demonstrate the profound interplay of how the Indonesian economy shapes and is affected by the renewable energy market, we encourage the adoption of policies that promote sustainable energy development while increasing economic resilience. We recommend that policymakers support renewable energy diversification to lessen the vulnerability of exchange rate fluctuations. Attracting FDI is also crucial, as policies can help strengthen the investment climate and bolster the renewable energy sector. Inflation-indexed incentives can help maintain confidence and foster economic growth.