RESEARCHING INFLUENCES OF RENEWABLE ENERGY ON GREEN GROWTH IN EMERGING MARKET ECONOMIES

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Received: 02.11.2025
Revised: 03.11.2025
Accepted: 04.11.2025
Key words:
policy development, financial markets, financial markets, renewable energy, economic growth, energy markets.

Abstract. The pursuit of sustainable development, characterized by economic growth, social equity, and environmental protection, has become a paramount global objective. Emerging market economies (EMEs), with their rapidly growing populations and industrializing sectors, face unique challenges in achieving this ambitious goal. Among the key drivers of green growth in these economies is the transition to renewable energy sources. This article examines the intricate relationship between renewable energy and green growth in EMEs, exploring the potential benefits, challenges, and strategies for successful implementation.

Introduction. Through continued research, policy development, and collaborative action, EMEs can unlock the transformative power of renewable energy, paving the way for a sustainable and prosperous future. For our research objective, we make three key contributions. First, financial markets, especially the renewable energy markets, can help developing green energy industries to raise and circulate capital within the broader economic system. While, a mentioned above, some empirical studies have examined the relationship between energy consumption and economic growth with nonrenewable and renewable energies, there is a gap in research pertaining to the relationship between renewable energy and green economy stock prices [1]. The study covers this gap by focusing on renewable energy markets that have largely been ignored in prior research. Second, we argue that analyses of the relationship between the variables in a nonlinear setting have at least two important reasons: (1) a timeseries can have hidden cointegration if positive and negative components of a series are cointegrated (Granger and Yoon, 2002) and (b) asymmetry is types of nonlinearities that affect the market dynamics, especially when the sample period is marked with the pre-and post-pandemic. To achieve these purposes, we employ the Nonlinear Autoregressive Distributed Lag (NARDL) approach proposed by Shin et al. (2014) which all own testing the long-run and short-run asymmetries [2].

EMEs are experiencing a remarkable period of economic transformation, characterized by rapid industrialization, urbanization, and rising energy demand. However, this growth often comes at the cost of significant environmental strain. The challenges faced by EMEs in achieving green growth are multifaceted:

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- **Environmental Degradation:** Rapid industrialization and urbanization lead to increased pollution, deforestation, and depletion of natural resources.
- **Climate Change Vulnerability:** EMEs are often highly susceptible to the adverse impacts of climate change, including extreme weather events, rising sea levels, and water scarcity.
- **Energy Security:** Reliance on fossil fuels exposes these economies to energy price volatility and geopolitical instability.
- **Sustainable Development Goals (SDGs):** EMEs have pledged to achieve the SDGs, which emphasize the need for sustainable development across all sectors, including energy.

The Role of Renewable Energy in Green Growth

Renewable energy, derived from naturally replenishing sources like solar, wind, hydro, geothermal, and biomass, offers a compelling solution for achieving green growth in EMEs:

- **Environmental Benefits:** Renewable energy sources generate electricity with minimal greenhouse gas emissions, mitigating climate change and improving air quality.
- **Economic Opportunities:** Investing in renewable energy creates new industries, jobs, and technological advancements, boosting economic growth and diversification.
- **Energy Security:** Renewable energy reduces reliance on imported fossil fuels, enhancing energy security and decreasing vulnerability to price fluctuations.
- **Social Inclusion:** Renewable energy projects often prioritize local communities, creating employment opportunities and improving access to electricity in remote areas [3].

The Influence of Renewable Energy on Green Growth in EMEs

The impact of renewable energy on green growth in EMEs is multifaceted and interconnected:

- **Environmental Sustainability:** Renewable energy deployment reduces carbon emissions, improves air quality, conserves natural resources, and mitigates climate change impacts.
- **Economic Growth and Development:** Investing in renewable energy infrastructure and technology stimulates innovation, creates jobs, and promotes economic diversification.
- **Energy Security and Access:** Renewable energy sources reduce dependence on fossil fuels, enhance energy security, and expand access to electricity in underserved regions.
- **Social Inclusion and Empowerment:** Renewable energy projects can empower local communities, create employment opportunities, and promote sustainable development initiatives.

Challenges and Opportunities in Renewable Energy Transition

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While the potential benefits of renewable energy are significant, EMEs face several challenges in transitioning to a clean energy future:

- **Initial Investment Costs:** Renewable energy technologies often require substantial upfront investments, posing a challenge for resource-constrained economies.
- **Technical Expertise and Infrastructure:** Developing and maintaining renewable energy infrastructure requires specialized technical expertise, which may be lacking in some EMEs.
- **Intermittency of Supply:** Solar and wind energy sources are intermittent, requiring energy storage solutions and grid integration capabilities.
- **Policy and Regulatory Frameworks:** Effective policy and regulatory frameworks are crucial to encourage private sector investment, promote technological innovation, and ensure fair competition in the renewable energy market.

Table 1.
Descriptive statistics for selected variables

Variable	Mean	Max.	Min.	St. Dev.	Skewness	Kurtosis	J-B
Asia							
REG	7.1144	8.0992	6.3274	0.4242	0.3807	2.7980	3.3105
CEP	6.5032	7.0758	5.9213	0.2450	-0.1631	2.8749	0.6513
GEC	6.8963	7.2463	6.5048	0.1688	-0.4229	2.7471	4.1564
Europe							
REG	7.1144	8.0992	6.3274	0.4242	0.3807	2.7980	3.3105
CEP	6.9844	7.6332	6.4279	0.2607	0.5268	3.6709	8.3231
GEC	7.0932	7.6082	6.6594	0.1974	0.4442	3.6726	6.6240
U.S							
REG	7.1144	8.0992	6.3274	0.4242	0.3807	2.7980	3.3105
CEP	7.2850	8.1248	6.6550	0.3875	0.4252	2.0857	8.3163
GEC	7.3435	8.3097	6.7202	0.3798	0.8166	3.1708	14.3845

Notes: Here, REG, CEP and GEC represent log changes of renewable energy generation, clean energy and green economy stock prices, respectively.

Table 1 reports the descriptive statistics for stock prices of renewable energy generation, clean energy and green economy over the entire period. According to the table entries, the averages of monthly series are smaller than their computed standard deviations in all cases [4].

Strategies for Effective Renewable Energy Deployment in EMEs

Overcoming these challenges requires a multi-pronged approach:

- **Government Support and Policies:** Strong government commitment, supportive policies, and financial incentives are essential to attract private sector investment, promote research and development, and facilitate infrastructure development.

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- **International Cooperation and Funding:** Access to international development assistance, concessional loans, and technology transfer agreements can bridge the financial gap and support capacity building.
- **Public-Private Partnerships:** Collaborations between governments, private sector companies, and research institutions can leverage financial resources, technical expertise, and innovation to accelerate renewable energy deployment.
- **Community Engagement and Empowerment:** Engaging local communities in renewable energy projects, fostering awareness of their benefits, and providing training and skills development opportunities can ensure sustainable and equitable implementation [5].

Case Studies: Successes and Lessons Learned

- **India:** India has emerged as a global leader in renewable energy, with ambitious targets for solar and wind power deployment. The government has introduced policies to promote private investment and facilitate grid integration.
- **China:** China has invested heavily in renewable energy, particularly solar and wind power, achieving significant reductions in carbon emissions and fostering a vibrant domestic renewable energy industry.
- **Brazil:** Brazil has made significant progress in hydroelectric power generation, but faces challenges in diversifying its renewable energy portfolio and integrating new technologies.

Key Findings and Recommendations

- **Renewable Energy as a Catalyst for Green Growth:** Renewable energy is a powerful tool for driving green growth in EMEs, offering significant environmental, economic, and social benefits.
- **Addressing Challenges through Collaboration and Innovation:** Effective implementation requires a collaborative approach involving governments, the private sector, international organizations, and local communities.
- **Investing in Capacity Building and Skill Development:** Developing a skilled workforce and knowledge base is crucial for the successful deployment and management of renewable energy infrastructure.
- **Promoting Policy and Regulatory Certainty:** Clear and stable policies are essential to attract investment, encourage innovation, and ensure a level playing field for renewable energy development [6].

Conclusion. Transitioning to a renewable energy future is not only crucial for addressing climate change but also for unlocking the full potential of green growth in EMEs. By embracing a collaborative and innovative approach, these economies can harness the power of renewable energy to achieve sustainable development, foster economic prosperity, and build a more resilient and equitable future for all.

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- **Impact of Renewable Energy on Employment and Labor Markets:** Analyzing the job creation potential and labor market implications of renewable energy projects.
- **Integration of Renewable Energy into Existing Grids:** Studying the technical and economic feasibility of integrating renewable energy sources into existing power grids in EMEs.
- **Role of Energy Storage Technologies:** Investigating the potential of battery storage and other energy storage solutions to address the intermittency of renewable energy.
- **Social and Environmental Impacts of Renewable Energy Projects:** Conducting comprehensive assessments of the social and environmental impacts of renewable energy projects, ensuring community acceptance and mitigating any potential negative consequences.

References

1. O. Akbilgic et al.A meta-analysis of carbon capture and storage technology assessments: Understanding the driving factors of variability in cost estimates Appl. Ener.(2015)
2. Aghion, P., Dechezleprêtre, A., Hemous, D., Martin, R., and Van Reenen, J. (2016). Carbon taxes, path dependency, and directed technical change: Evidence from the auto industry. J. political Econ. 124 (1), 1–51. doi:10. 1086/684581
3. Baek, J. (2016). A new look at the FDI–income–energy–environment nexus: Dynamic panel data analysis of ASEAN. Energy policy 91, 22–27. doi:10.1016/j.enpol.2015.12.045
4. Cohen, M. A., and Tubb, A. (2018). The impact of environmental regulation on firm and country competitiveness: A meta-analysis of the porter hypothesis. J. Assoc. Environ. Resour. Econ. 5 (2), 371–399. doi:10.1086/695613
5. Dumitrescu, E.-I., and Hurlin, C. (2012). Testing for Granger non-causality in
6. heterogeneous panels. Econ. Model. 29 (4), 1450–1460. doi:10.1016/j.econmod.2012.02.014

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