POLICY BRIEF

A summary for decision making of key research findings

Does private financial development present a trade-off for CO₂ emissions reduction in Oman?

Summary

"This research investigates the impact of financial development on CO₂ emissions in Oman. It underscores the importance to weigh the trade-offs associated with fostering financial development within climate change mitigation endeavors. It has been shown that financial development can drive producers toward environmentally friendly projects."

The potential implications of financial development on environmental indicators, specifically carbon dioxide (CO2) emissions, have become a subject of concern. This work investigates the impact of financial development on CO2 emissions in Oman, along with other control variables including energy consumption, trade openness, and economic growth, using a Markov switching model. The analysis is conducted for the period from 1989 to 2020 and focuses on two regimes of high and low carbon emissions. The results of the Markov switching model show that energy consumption, gross domestic product (GDP), and private financial development have a significant positive effect on CO2 emissions. Although the study confirms the Kuznets curve, our results suggest a higher likelihood of Oman remaining in the high CO2 emissions regime. This underscores the importance for policymakers to carefully weigh the trade-offs associated with fostering financial development, particularly within climate change mitigation endeavors. These findings are highly relevant for policymakers striving to balance economic growth with the reduction of carbon emissions in Oman.

 As one of the nations that ratified the Paris Climate Agreement, Oman announced its commitment to achieve net zero emissions by 2050.

Key messages

- The study is the first to explore the impact of financial development on CO₂ emissions in Oman using a Markov switching approach.
- It is shown that financial development can drive producers toward environmentally friendly projects by providing low-cost production and leading to investment in new and efficient energy technologies.
- It is evident that energy consumption, economic growth, and private financial development have exerted a significant and positive effect on carbon emissions in Oman.
- Legislators can decide to provide fiscal tools to incentivize companies to transition to a green economy.
- The government should impose an extra tax to reduce the production of excessive pollutant emissions.
- Conclusions & policy recommendations derived from this work contribute to the achievement of the Sustainable Development Goals, especially to the improvement of SDG 7 and SDG 13.



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Background

There is a complex interplay between financial development, energy consumption and economic growth considering environmental outcome. Through our review of previous studies on the relationship between financial development and environmental quality indicators; there is a focus on financial development as the main variable and an environmental indicator as the dependent variable, mostly CO₂ emissions and ecological footprint. It is observed that on one side, financial development can stimulate consumption and productions, thus the expansion of energy consumption and increase in air pollution & environmental degradation. On the other financial market development facilitates hand, investment by reducing costs and purchasing environmentally friendly equipment with efficient energy consumption, contributing to increased economic growth, less/green energy consumption, & mitigation of pollution. Hence, despite this complexity, financial development can both positively and negatively impact environmental quality.

Oman being one of nations that ratified the Paris Climate Agreement has announced its commitment to achieve net zero emissions by 2050. Therefore, in order to address the existing environmental problems in Oman, and to expand the existing literature, we test the effect of private financial development on CO_2 emissions in Oman.

Method

Our research aims to examine the impact of economic growth (GDP), energy consumption (EN), trade openness (TR), & private financial development (PFD) on CO₂ emissions. The research model is derived from Shahbaz et al. (2016) and Li et al. (2021). This study employs the Markov switching ARMA (0,0) approach to model the time-varying dynamics of the variables under investigation. It allows us to capture the time-varying behavior of the variables under investigation and to account for the of multiple regimes presence or economic environments. The analysis is conducted for the period from 1989 to 2020 and focuses on two regimes of high and low carbon emissions.

Key findings

Based on the findings of Markov switching ARMA (0,0), it is evident that energy consumption, economic growth, and private financial development have exerted a *significant* and positive effect on carbon emissions in Oman. Conversely, the trade variable yielded a positive but not significant outcome.

The regression analysis reveals a positive and significant correlation between PFD and CO_2 emissions. Specifically, a 1% increase in private financial development results in a 0.11% increase in CO_2 emissions.

The variable energy consumption indicates a positive and significant relationship with CO_2 emissions. It suggests that as energy consumption increases by 1%, the CO_2 emissions increases by 0.48%. LGDP has a significant positive relationship with CO2 emissions.

A 1% increase in GDP correlates with 27% increase in CO_2 emissions. The coefficient of square of GDP is negative (-3.65) and statistically significant at 1% significance level, indicates a negative and significant relationship with CO_2 emissions. It confirms the Kuznets curve's presence, in which CO_2 emissions initially rise with economic growth but fall after a certain point.

There is a positive but not statistically significant relationship between trade openness and CO_2 emissions. Therefore, trade openness may not have a significant impact on CO_2 emissions in Oman.

The carbon dioxide emissions regime has been changing over the years. This study examines the carbon emissions for two different regimes, one with low carbon emissions from 1990–2000 and the other with high carbon emissions from 2000–2020.

The results indicate a 95% probability of remaining in the high carbon emissions regime (regime 0) and an 89% probability of remaining in the low carbon emissions regime (regime 1). Thus, the probability of remaining in the regime with high CO_2 emissions is higher.

Conclusions & Policy Implications

Financial development can lead to an increase in pollution by increasing industrial activities and expanding polluting industries. On the other hand, it can also attract direct foreign investment, higher environmentally compatible technology, and direct capital toward research on environmental pollution reduction. Hence, It is important to support Oman's financial and economic development from a sustainable angle. Some recommendations to achieve this are:

- Legislators can decide to provide new fiscal tools to incentivize companies to transition to a green economy.
- To create clean and sustainable industries and lower emissions of greenhouse gases, enterprises should be provided with a variety of incentives or tax benefits.
- Policymakers should provide subsidies to organizations and businesses that use renewable energy sources.
- Government institutions should support the development of the circular economy and the use of more efficient techniques that allow for recycling, reuse, and the reduction of toxic and polluting products.
- In the face of excessive pollutant emissions by companies, the government should impose an extra tax to reduce the production of excessive pollutant emissions.
- The government should explore creating an Innovation Fund and to allocate sufficient funds to finance clean technology projects that contribute to greater energy efficiency.

The conclusions and policy recommendations derived from this work should contribute to the achievement of the Sustainable Development Goals and the improvement of the environment in Oman, especially to the improvement of SDG 7 and SDG 13.

Future research work could focus on exploring the underlying channels through which financial development influences carbon emissions in Oman to provide a more complete understanding of the relationship between financial development and carbon emissions in the country. In addition, future work could analyze whether events such as COVID-19 or the war in Ukraine have led to a change in the level of carbon emissions in Oman. It would also be possible to analyze, as has been done for CO_2 , whether private financial development has an impact on the reduction of the ecological footprint, and to apply new econometric models.

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