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INTERACTIVE EFFECT OF INCOME INEQUALITY AND ENVIRONMENTAL DEGRADATION ON HEALTH OUTCOMES IN NIGERIA

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Abstract

As environmental pollutants, particularly carbon dioxide (CO_2), pose increasing health risks, understanding how inequality influences this relationship becomes critical for policy and development planning. This study examines how income inequality and environmental degradation affect health outcomes (LER) using an ARDL model. The model includes CO_2, GINI, their interaction (CO2*GINI), PGDP, EC, GCE, and PST. The ARDL approach is chosen for its flexibility with mixed integration orders and inclusion of both current and lagged variables. To verify cointegration, the Bounds test and error correction model (ECM) are applied. DOLS estimation, preferred over FMOLS for addressing endogeneity and serial correlation, is also used (Mark & Sul, 2003; Osabuohien et al., 2014). Data from 1990–2023 are sourced from WDI, WGI, and CBN. Robustness checks include ARCH, Breusch-Godfrey, and Cusum tests. Results reveal that in the long run, most variables, including CO_2, GINI, and GINI*CO_2, had negative but statistically insignificant effects on life expectancy (LER), except in FMOLS where GINI*CO_2 was significantly negative. In the short run, CO_2, GINI, and their lags significantly increased LER, while GINI*CO_2 showed a mixed effect—negative initially, positive when lagged. PGDP and GCE had mixed impacts. The 12% error correction rate confirms adjustment to equilibrium. The null hypothesis is not rejected, as GINI*CO2 lacks significant long-run influence. Recommendations include implementing policies that reduce CO_2 emissions, promote equitable income distribution, and strengthen healthcare infrastructure to improve long-term health outcomes.

Keywords: income inequality, environmental degradation, health outcomes, ARDL model, Nigeria

Introduction

Income inequality and environmental degradation are two critical socio-economic and environmental factors influencing public health, especially in developing nations like Nigeria. While these two issues are often studied independently, the combined and interactive effects of income inequality and environmental degradation have profound implications for health outcomes in many regions. Nigeria, being an emerging economy with high levels of poverty, inequality, and environmental degradation, presents a unique case for studying the interaction of these two determinants of health. Income inequality refers to the unequal distribution of income and wealth among individuals or groups within a society. In Nigeria, income inequality has been persistently high, with the country consistently ranked among the most unequal nations globally (Francis, 2020). The health implications of income inequality are well-documented. According to Xiong and Wei (2025), societies with greater income inequality tend to experience worse health outcomes, including higher rates of mortality, mental health disorders, and infectious