Scientific Report on the PhD Thesis entitled

Green economy, poverty eradication and sustainable economic development in developing countries. Mediating role of green finance

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Doctoral field: Finance

The doctoral thesis written by Mr. Lai Van Tai examines a current topic of broad theoretical and practical relevance within the context of contemporary economic, social, and environmental challenges in the global economy. The primary objective of this PhD thesis is to develop a comprehensive theoretical and empirical framework to measure and evaluate the direct and indirect impacts of green finance on the ecological environment and poverty alleviation through both renewable energy production and consumption in developing countries. Specifically, the research aims to determine the distinct effects of renewable energy production and consumption on environmental degradation and poverty, while simultaneously assessing how green finance and the ecological footprint influence poverty reduction and sustainable development outcomes. Furthermore, the study investigates the mediating and moderating roles of green finance in addressing environmental and social challenges, examines contextual heterogeneity across different income and regional groups of developing economies, and ultimately proposes integrated macro-policy frameworks that align environmental sustainability with social protection to optimize the green transition.

The dissertation is logically, coherently, and systematically structured into five chapters, supported by an extensive bibliography and comprehensive methodological and econometric annexes.

- Chapter 1 (Introduction) establishes the global context of the study, justifies its scientific rationale, formulates four core research questions, and defines the general objective alongside five specific objectives, clearly outlining the theoretical, methodological, empirical, and policy contributions of the work.
- Chapter 2 (Literature Review) provides an in-depth conceptual analysis covering sustainable development, green economy, renewable energy, green finance, environmental degradation and the ecological footprint, and multidimensional poverty measurement. The theoretical foundation is anchored in Endogenous Growth Theory (EGT), the Environmental Kuznets Curve (EKC), the STIRPAT analytical framework, and key environmental economics hypotheses (Pollution Haven, Pollution Halo, and the Porter Hypothesis). Based on a critical synthesis of empirical debates and research gaps, the candidate develops an integrated analytical framework and formulates testable hypotheses.
- Chapter 3 (Research Methodology) details the mixed-methods research design (combining qualitative content analysis with quantitative panel econometrics), model specifications, international data sources (World Bank, IRENA, IEA, IMF, ADB), and estimation procedures.

- Chapter 4 (Empirical Results and Discussion) forms the applied core of the thesis and is organized around four major empirical themes: Determinants of green finance and the distinct roles of renewable energy production and consumption; The impact of energy transition, green finance, and economic growth on the Ecological Footprint (EF) and its six subcomponents; Poverty alleviation mechanisms driven by green factors and tests of mediating/moderating channels; Aggregate drivers of achieving Sustainable Development Goal 1 (SDG 1), and heterogeneity analyses across income brackets and geographical regions.
- Chapter 5 (Conclusion and Recommendations) synthesizes the main findings, formulates actionable macroeconomic and green financial policy recommendations, and transparently outlines the study's limitations and avenues for future research.

From an econometric standpoint, the research demonstrates a high level of scientific methodology. The empirical investigation covers a panel of 74 developing countries over a 23-year period (2000-2022). Beyond baseline static panel estimations (OLS, FEM, REM, GLS), the candidate applies the dynamic Two-Step System Generalized Method of Moments. This methodological choice is fully justified and essential for addressing endogeneity, reverse causality, and the dynamic persistence of both poverty and environmental degradation. The robustness and validity of the estimations are thoroughly verified using standard diagnostic tests, including the Hansen test for instrument validity, the Arellano–Bond AR(2) test for second-order serial correlation, and sensitivity analyses across alternative model specifications.

This thesis makes four major original contributions to the academic literature. First, unlike prior studies that treat renewable energy unilaterally, it simultaneously evaluates both renewable energy production (REP) and consumption (REC) within a unified model, revealing that while both support environmental protection, REP directly reduces poverty but constrains green finance due to high upfront costs, whereas REC fosters green finance and lowers the ecological footprint yet can worsen short-term poverty without social safeguards, creating a distinct "REC trilemma." Second, by adopting the comprehensive six-component Ecological Footprint (EF) instead of relying solely on CO_2 emissions, the study offers a far clearer assessment of how ecosystem degradation impacts the livelihoods of the poor. Third, the research validates a sequential mediation pathway (Green Growth → Green Finance → Ecological Footprint → Poverty Reduction), clarifying the dual role of green finance as a financial channel and moderating catalyst alongside the ecological footprint as an environmental mechanism. Finally, by adopting a 'Just Transition' perspective, the thesis proves that green investments do not automatically reduce poverty; instead, their success depends heavily on each country's income level and regional institutions.

Throughout his doctoral studies at Transilvania University of Brașov, Mr. Lai Van Tai has demonstrated remarkable work ethic, intellectual autonomy, analytical rigor, and perseverance. His research findings have been disseminated and peer-validated through published scientific papers and presentations at international conferences

The PhD thesis entitled ***"Green economy, Poverty eradication and Sustainable economic development in Developing countries. Mediating role of Green Finance"*** represents a mature, original, and valuable scientific contribution that succesfully integrates robust theoretical foundations with advanced dynamic panel econometrics and practical policy guidance.

Considering the high scientific quality of the research, the novelty of its contributions to the field of Finance, and its full compliance with the academic standards of the Interdisciplinary Doctoral School at Transilvania University of Brașov, I strongly recommend the public defense of this doctoral thesis and the awarding of the scientific title of Doctor (PhD) in Finance to Mr. Lai Van Tai.

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