INFORMATION OF DOCTORAL DISSERTATION

Doctoral dissertation title: THE RELATIONSHIP BETWEEN ECONOMIC DIVERSITY AND ECOLOGICAL FOOTPRINT IN VIETNAM

Major: Economics Major Code: 9310101

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1. DISSERTATION SUMMARY

Empirical studies have shown that economic diversity is not only related to a country's future economic development but also to its ecological environment. However, this relationship varies across countries and regions. Vietnam is considered a country with low economic diversity, reflected in an export structure that lacks variety and features high concentration. Additionally, the rapid increase in Vietnam's ecological footprint in recent years has raised concerns about the country's ability to achieve sustainable development goals in the future. To meet these goals, Vietnam needs to pursue economic growth and development in a more in-depth manner, aiming to diversify its economy while minimizing environmental degradation. This raises the critical question: Can Vietnam simultaneously achieve both economic diversification and a reduction in ecological footprint? Is there a trade-off between these two objectives in Vietnam's context?

Motivated by this issue, this study aims to analyze and clarify the relationship between economic diversity and ecological footprint in Vietnam. Economic diversity is measured by the diversity and complexity of a country's export basket, using the Economic Complexity Index (ECI) approach developed by Hausmann and Hidalgo. The ecological footprint of production is employed as a representative indicator of the environmental impact of human activities.

Based on the research model and estimation methods, the author conducts an empirical analysis of the relationship between economic diversity and ecological footprint in Vietnam. Using time-series data from 1986 to 2022 and the Autoregressive Distributed Lag (ARDL) estimation method, the author examines the impact of economic diversity on ecological footprint. Additionally, the study analyzes the influence of the ecological footprint on

Vietnam's economic diversity in comparison to several developing countries in Southeast Asia through the Pooled Mean Group (PMG) estimation method.

The estimation results reveal a bidirectional relationship between economic diversity and ecological footprint. Economic diversity influences ecological footprint in an inverted U-shaped pattern. Conversely, ecological footprint has a statistically significant negative impact on economic diversity in the long run. Based on the empirical findings, the study proposes several policy implications to minimize ecological footprint intensity, particularly policies leveraging economic diversification. These measures not only contribute to reducing ecological footprints but also serve as a foundation for enhancing the level of economic diversity in Vietnam.

2. THE NEW SCIENTIFIC FINDINGS

One of the highlights of this study is the examination of whether the Environmental Kuznets Curve (EKC) exists in the relationship between economic diversity and ecological footprint in Vietnam. To achieve this, the study employs a nonlinear model using the Economic Complexity Index (ECI) and its squared term. The findings confirm that economic diversity impacts ecological footprint in Vietnam in support of the EKC hypothesis (an inverted U-shape). Specifically, at the initial stages, when economic diversity is low, the relationship is positive. However, as economic diversity in Vietnam increases to a certain threshold (an ECI value of 1.35), the impact reverses direction.

Additionally, the study identifies varying roles of economic diversity across the individual components of Vietnam's ecological footprint. Increasing economic diversity does not have a uniformly positive effect on all ecological footprint components. While economic diversity can negatively affect the footprints of built-up land, grazing land, and water area, it exhibits an inverted U-shaped relationship only with the carbon absorption land footprint.

Beyond economic diversity, economic growth—measured by annual growth rate—is another factor included in the analytical model. The results reveal that economic growth plays a crucial role in improving Vietnam's ecological footprint. While economic diversity reflects the “quality” of growth, the annual growth rate represents the “quantity.” The findings suggest that improvements in both the quality and quantity of economic growth contribute to reducing ecological footprint intensity in Vietnam. This indicates that economic growth contributes to mitigating environmental degradation, aligning with Vietnam’s context.

The study also confirms the "pollution haven" hypothesis regarding the impact of foreign direct investment (FDI) on ecological footprint. Specifically, FDI exacerbates the intensity of Vietnam's ecological footprint.

Moreover, this research is among the first to explore the role of ecological footprint in influencing economic diversity, particularly in Vietnam. The results provide evidence that policies aimed at reducing ecological footprint intensity in Vietnam can promote higher levels of economic diversity in the long run. This offers an intriguing validation of Integrated Assessment Models (IAMs) proposed by pioneers such as Nordhaus and Romer, who adapted economic theories to better assess the effects of environmental issues and technological progress on economic growth.

Furthermore, the study presents statistical evidence supporting the role of physical capital, information and communication technology (ICT), foreign direct investment, and urbanization in improving economic output through enhanced economic diversity.

3. APPLICATIONS/ APPLICABILITY IN PRACTICE AND SUGGESTION FOR FURTHER STUDIES

Based on an innovative approach to economic diversity (measured through export baskets) and environmental degradation (measured through ecological footprint), this study provides valuable practical contributions. The findings serve as a foundation for policymakers to consider appropriate solutions that avoid trade-offs between achieving economic diversification and minimizing environmental degradation. Increasing economic diversity not only enhances the nation's competitiveness in the global market but also serves as an effective solution for Vietnam to reduce the risk of ecological footprint intensity. Moreover, reducing ecological footprint is expected to have a positive impact on production structures, further promoting economic diversification. This demonstrates that Vietnam can simultaneously achieve both critical objectives during its economic growth and development process.

Despite the author's efforts to achieve the research objectives, the dissertation has certain limitations. The first limitation stems from reliance on secondary data, resulting in a lack of full alignment in the temporal and spatial dimensions when analyzing the impact of economic diversity on ecological footprint and vice versa. Secondly, the study does not identify which variable is the driving force in the model, and thus, Granger causality testing was not performed. Additionally, the study does not compare differences in the relationship between economic diversity and ecological footprint versus economic diversity and CO_2 or

greenhouse gas emissions in Vietnam. Finally, the policy implications are primarily based on factors within the proposed research model. As a result, these policies may not fully address the dual goals of reducing ecological footprint intensity and enhancing economic diversity in Vietnam.

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