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DETERMINANTS OF GREEN PRODUCT EXPORTS IN VIETNAM: DO IMPORTERS' CHARACTERISTICS MATTER?

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Abstract – *This study examines the factors influencing Vietnam's green product exports, with a particular emphasis on the characteristics of its trading partners. Adopting the Poisson pseudo-maximum likelihood estimations for a gravity model, the study analyzes bilateral green exports from Vietnam to 169 partners from 2002 to 2022. The empirical evidence demonstrates that exchange rate fluctuations and geographical distance hinder exports, whereas free trade agreements and historical dependencies foster exports. Additionally, the study reveals that GDP per capita, population, human development, tax burden, and financial freedom among importing countries are key factors in promoting Vietnam's green exports. The results imply that promoting Vietnam's green exports requires stable exchange rates and active engagement in free trade agreements. In addition, Vietnamese exporting firms seeking to increase green exports should target countries with high GDP per capita, significant economic size, advanced human development, heavy tax burden, and well-liberalized financial systems, as well as those with a shared history of interdependence with Vietnam.*

Keywords: gravity model, green product exports, importers' characteristics, Vietnam.

I. INTRODUCTION

Export activity has played an important role in Vietnam's economic prosperity since it serves as an engine promoting domestic production and creating more jobs for Vietnamese [1 –3]. By improving competitiveness, exports facilitate greater penetration into international markets. This, in turn, accelerates the adoption of advanced technologies in production, thereby boosting economic development. Notably, Vietnam's trade activities have witnessed a substantial increase following its accession to the World Trade Organization in 2007. The export value has experienced a dramatic rise, escalating from $48.56 billion in 2007 to approximately $371.3 billion in 2022 [4]. Despite Vietnam's export accomplishments, the detrimental environmental consequences of industrial development, including pollution emissions, resource depletion, and global warming, pose significant threats to the long-term sustainability of countries and have emerged as a primary concern for the government [5, 6].

Numerous nations have actively sought solutions to climate change and other environmental challenges. OECD [7] indicates that the 2030 Agenda for Sustainable Development is a universal framework, encompassing both developed and developing nations. The United Nations Environment Programme [33] has highlighted green trade as a powerful tool for countries to protect the environment while pursuing long-term economic development. Green products are those that incorporate technologies and processes aimed at reducing energy consumption and mitigating environmental damage from energy consumption [8]. Promoting exports of green products can incentivize the development of environmentally friendly technologies, leading to increased efficiency and reduced pollution [9]. Moreover, the lower tariffs applied to green products can improve the exporting firms' competitiveness in the international markets, providing them with more chances of export success [10, 11]. Thus, boosting green exports should be a top concern of authorities to ensure a sustainable future for Vietnam.

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The determinants of green exports have been discussed in the literature [5, 9, 12–14]. In those studies, the authors indicated that stricter environmental regulations, digital technology applications, research and development activities, firms' capabilities of accessing loans, and green credit are positively correlated with green export performance. Although numerous studies have examined the drivers of Vietnam's exports [15–19], none of them has focused on green product exports. Therefore, the contribution of this study is to investigate the potential factors that impact Vietnam's green product exports, with a particular emphasis on the characteristics of its trading partners.

II. LITERATURE REVIEW

Existing studies have recognized some drivers of green export performance [5, 9, 12–14]. In the research on around 230,000 Chinese manufacturing firms over 2005–2007, Li et al. [13] discovered that research and development activities and firms' capabilities of accessing loans are positively correlated with green export sophistication. Focusing on Chinese manufacturing firms during 1998–2007, Ge et al. [12] show that stricter environmental regulations promote green exports, while financial constraints hinder green technology adoption in manufacturing production. Perceiving the crucial role of green credit in encouraging firms to participate in environmental governance, Zhou et al. [14] employ the 2012 Green Credit Guideline (GCG) as a quasi-experimental design and utilize data from Chinese firms from 2007–2016 to investigate the impact of GCG on export green-sophistication. The results reveal that GCG stimulates firms' research and development expenditures, fostering their ability to produce environmentally friendly products for export. Notably, the GCG's influence on enhancing export green sophistication is more pronounced in non-subsidized firms, regions with underdeveloped financial markets, state-owned enterprises, and firms with greater equity incentive schemes. In a study of 26 European countries from 2003 to 2015, Fabrizi et al. [9] investigated the impact of green innovation and participation in European environmental research programs on green exports. Their findings suggest that these two factors have a synergistic effect in promoting green exports. Analyzing data from 622 Chinese firms, Wang et al. [5] demonstrate that the application of digital technology can reduce information costs and facilitate green research, consequently expanding destination markets for green products.

Several studies have paid attention to the drivers of Vietnam's exports [15–19]. Employing a gravity model for a dataset covering Vietnam's exports to RCEP countries during 2000–2013, Nguyen [18] reveals that while tariff reductions had no significant effect on Vietnam's agricultural exports, they substantially increased exports of several manufacturing products, including footwear and garments. By focusing on Vietnam's agricultural exports to European countries from 2006 to 2016, Hoang et al. [17] display that financial market development, technological readiness, trade freedom, and labor freedom are positively associated with exports. Nguyen [15] examines factors influencing Vietnam's rice and coffee exports during 2000–2018 by adopting Poisson pseudo-maximum likelihood (PPML) and fixed effects estimators for a gravity model. The findings indicate that the economic growth of Vietnam's trading partners is beneficial for its coffee exports, but it has an adverse effect on its rice exports. By contrast, Vietnam's gross domestic product (GDP) is a driving force for exports of both coffee and rice. In addition, the author notes that Vietnam's technological development is essential for overcoming the geographical challenges. Nguyen [16] relies on Vietnam's agricultural exports to 187 partners from 1996 to 2021 and concludes that exchange rate volatility and regional trade agreements boost exports. Focusing on some characteristics of the trading partners, the author demonstrates that GDP per capita, population, policy stability, and financial development positively influence Vietnam's exports. Vo et al. [19] analyze the factors affecting Vietnam's coffee exports to 20 countries from

2005 to 2019 and show that the GDP and population of trading partners promote exports, whereas exchange rate fluctuations, the geographic distance between countries, tariffs, and non-tariff obstacles hinder exports.

Despite the useful insights gained from the aforementioned studies, the empirical analyses on the determinants of Vietnam's green exports remain unexplored in the literature. Therefore, this study extends the present understanding of the factors prospectively affecting green product exports in Vietnam. Particularly, based on the environmental-friendly product lists proposed by World Trade Organization (WTO) [20], Asia-Pacific Economic Cooperation (APEC) [21], and Sauvage [22], this study constructs a comprehensive list of 485 green products. Moreover, this research adopts a broader approach by employing the most extensive dataset encompassing Vietnam's green exports to 169 partners from 2002 to 2022.

III. RESEARCH METHODS

A. Data processing method

Data processing for this study was conducted using Stata 14 software. A gravity model for empirical analysis was employed. Drawing inspiration from Newton's law of universal gravitation, the gravity model of trade proposes that the volume of bilateral trade between countries is positively correlated with their economic size and inversely related to the geographical distance between them [23, 24].

Zero trade values and heteroscedasticity are the primary challenges in applying the gravity model. To address the problem of zero trade values, Silva et al. [25] propose utilizing the PPML estimator with a multiplicative trade value specification. Also, the authors highlight the PPML estimator's ability to effectively address heteroscedasticity. In addition, Yotov et al. [24] suggest incorporating country-time fixed effects in the gravity model to account for country-specific factors that change over time.

B. Model specification

Empirical analysis follows Yotov et al. [24] to include Vietnam-year fixed effects, represented by '$\mu_{VN,t}$', in the model to capture all time-varying characteristics of Vietnam that may affect Vietnam's green exports. This approach allows us to incorporate importers' features to examine their impacts on trade flow. The empirical model is expressed in Model (1).

$$\begin{aligned}\text{green}_{\text{exp}_{VN,i,t}} = \exp[&\beta_0 + \beta_1 \ln(\text{exv})_{VN,i,t} + \beta_2 \ln(gdpc)_{i,t} \\ &+\beta_3 \ln(pop)_{i,t} + \beta_4 hdi_{i,t} + \beta_5 \ln(tax_{burden})_{i,t} \\ &+\beta_6 \text{fin}_{\text{free}_{i,t}} + \beta_7 ln(geo_{dist})_{VN,i} + \beta_8 \text{FTA}_{VN,i,t} \\ &+\beta_9 COL_{VN,i} + \mu_{VN,t}] * \varepsilon_{VN,i,t} \quad (1)\end{aligned}$$

where '$green_exp_{VN,i,t}$' indicates the value of green products that Vietnam exported to partner i in year t. Green products prioritize environmentally friendly production methods that reduce pollution, conserve resources, and protect the environment. They focus on minimizing waste, noise, and ecological disruption through cleaner technologies [10]. The WTO's members established a list of 411 green products, following the Doha Declaration's goal of lowering tariffs and other trade restrictions on environmental goods [20]. APEC members constructed a list of 48 environmental products and committed to lowering tariffs on these items to no more than 5% by 2015 [21]. Sauvage [22] presented a list of 248 environmental-friendly products on behalf of the OECD, focusing on air pollution control, wastewater management, renewable energy monitoring, and environmental analysis. By analyzing the Harmonized System (HS) codes of green products identified by WTO [20], APEC [21], and Sauvage [22], this study develops a dataset containing 485 green products categorized at the 6-digit level in HS2002. After that, the authors merge the green product list with the CEPII's BACI database and isolate Vietnam's exports of green products to 169 partners from 2002 to 2022. Drawing on existing research on export drivers, this study examines several factors that may influence Vietnam's green exports.

Exchange rate volatility: Fluctuations in exchange rates can negatively impact trade activities by raising transaction costs, and changing product prices in foreign markets, thereby affecting consumer demand, reducing exporters' market share, and probably lowering traders' predicted profits [26]. To measure the exchange rate volatility, monthly exchange rate data for national currencies against the USD from the IMF was used to calculate the exchange rate between Vietnamese Dong and the currency of each partner. The annual consumer price indices from the World Development Indicators of the World Bank database are adopted to convert the nominal exchange rates into real exchange rates. Following Giofré et al. [27], this research measures the annual real exchange rate for year t, denoted by '$exv_{VN,i,t}$', by the standard deviation of the first difference of the logarithm of the monthly real bilateral exchange rate over a five-year period.

GDP per capita of partner: GDP per capita is an indicator of a country's economic health. A country with a higher GDP per capita has a greater financial capacity to purchase goods from other nations. Nguyen [16] shows that the GDP per capita of importing countries matters for Vietnam's agricultural exports. Thus, we include the natural logarithm of the GDP per capita of Vietnam's trading partners, represented by '$ln(gdpc)_{i,t}$', as a potential explanatory variable for Vietnam's green exports.

Population of partner: The population of importing countries, which reflects domestic demand and market size, is likely to have a significant impact on the export performance of exporting nations. It is hypothesized that larger market sizes of importers lead to greater demand for imported goods, resulting in an increase in Vietnam's exports. The study incorporates the natural logarithm of the population number in importing countries, symbolized by '$ln(pop)_{i,t}$', as a driver of Vietnam's green exports.

Human development index of partner: The United Nations [34] defines the human development index as a composite metric that evaluates a country's progress in three fundamental aspects of human development: life expectancy, education level, and standard of living. Countries with advanced levels of human development tend to prioritize environmental sustainability and implement stringent regulations to protect their living environments. Therefore, they may prefer more environmentally friendly imported goods. This study includes the human development index of importers, denoted by '$hdi_{i,t}$', in the baseline model.

The tax burden of partner: According to the Heritage Foundation [34], the tax burden reflects the total tax payments made by individuals and businesses, taking into account the marginal tax rates on personal and corporate income and the overall level of taxation, including both direct and indirect taxes imposed by federal, state, and local authorities. Countries with heavier tax burdens tend to import more green products since those products are less vulnerable to import tariffs [10]. The natural logarithm of the tax burden is added as a percentage of the GDP of importers, represented by '$ln(tax_burden)_{i,t}$', into the model.

Financial freedom of partner: Manova et al. [28] and Kumarasamy et al. [29] document that improved financial accessibility substantially boosts firms' export capacity, enriches their export basket, and expands their export markets. By facilitating access to foreign capital at lower costs, financial liberalization can empower countries to expand their imports for domestic consumption, which in turn creates favorable conditions for exports in other nations. Consequently, the financial freedom index of importers, represented as '$finfree_{i,t}$', is included as a potential determinant of Vietnam's green exports.

Distance: Geographical distance between countries, reflecting trade costs, is a common control variable in a gravity model. It is predicted to hinder trade flows between the two countries. Therefore, the natural logarithm of the geographical distance between Vietnam and partner i, represented as '$ln(geodist)_{VN,i}$', is incorporated into the empirical model.

Free trade agreement: The free trade agreement is a bilateral or multilateral agreement aimed at reducing trade barriers among its members. Unlike member countries, non-member countries are subject to less favorable external regulations. A free trade agreement is expected to be a factor in facilitating Vietnam's green exports. Thus, the study includes '$FTA_{VN,i,t}$' dummy variable in the model. The variable equals 1 if Vietnam and partner i are part of a trade agreement in year t, and 0 otherwise.

Colonial relationship: Colonial relationship is often a control variable in gravity models. Countries with a shared dependent history often exhibit similar characteristics and tend to have stronger trade relationships. A dummy variable '$COL_{VN,i}$' is added to the model. This variable is equal to 1 if Vietnam and partner i have a shared dependent history and 0 otherwise.

The dataset for this study consists of Vietnam and 169 partners over the period from 2002 to 2022. The basic description of all variables used for empirical analysis is displayed in Table 1.

IV. RESULTS AND DISCUSSIONS

A. Description of Vietnam's green exports

Recognizing the role of green exports in the sustainable development path, Vietnam's green exports have achieved remarkable achievements. Data from the BACI-CEPII reveals that although the volume of green exports only accounted for a small portion of total exports, it went up sharply from 2002 to 2022. To be more specific, after a gradual rise from 544 million US dollars in 2002 to 3,634 million US dollars in 2008, Vietnam's green export value experienced a slight decline in 2009 due to the global financial crisis, falling to about 3,215 million US dollars. Subsequently, the value experienced a dramatic increase, reaching approximately 55,400 million US dollars in 2022. The ratio of green product exports to Vietnam's total exports follows a similar trend. Green exports accounted for roughly 3.6 percent of Vietnam's total exports in 2002, but this figure had risen to nearly 14 percent by 2022.

Table 2 lists the top ten countries based on Vietnam's green export values in 2002 and 2022. The primary destinations for Vietnam's green exports in 2002 were Japan, Thailand, and Germany. Japan emerged as the top importer of Vietnam's green exports, accounting for approximately 26.7 percent of the total value, followed by Germany and Thailand. Although the United States ranked only seventh in 2002, with green imports from Vietnam valued at approximately 20.9 million US dollars, it experienced a dramatic surge of over 837 times in 2022, becoming the leading importer in recent years. Like the United States, the Netherlands also showed a significant increase in green imports from Vietnam, rising by about 146 times between 2002 and 2022 and climbing from the tenth to the fifth position. In contrast, Thailand's green imports from Vietnam experienced a less significant increase in 2022, rising by approximately eighteen times. As a result, Thailand's ranking among Vietnam's green export destinations declined. Germany, Singapore, Mexico, Hong Kong, the United Kingdom, and Italy also exhibited a similar trend. The top ten markets for Vietnam's green exports accounted for more than 70 percent of the total green export volume between 2002 and 2022.

B. Regression results and discussions

This study utilizes the PPML estimator for Model (1) to investigate the factors affecting Vietnam's agricultural exports, with the results summarized in Table 3. The dependent variable is the green product exports from Vietnam to each partner, measured in thousands of US dollars. As indicated in Table 3, the exchange rate volatility variable, denoted by '$ln(exv)_{VN,i,t}$', is negatively significant with an estimated coefficient of -0.227. The result implies that given other factors remain unchanged, a 10 percent rise in bilateral real exchange rate volatility leads to a 2.27 percent decrease in Vietnam's bilateral green exports. Fluctuations in exchange rates can increase the expenses of export firms and reduce their financial flexibility by tying up internal resources and limiting external funding [35]. The unpre-

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Sources
$\text{green\_exp}_{VN,i,t}$	2821	117882.58	622110.6	.046	17497640	The BACI-CEPII database, WTO [20], APEC [21], Sauvage [22]
$\ln(\text{exv})_{VN,i,t}$	2821	-3.896	.731	-6.91	.188	Authors' calculation using data from the IMF [30]
$\ln(gdpc)_{i,t}$	2821	8.77	1.411	5.569	11.63	World Development Indicator – World Bank [31]
$\ln(pop)_{i,t}$	2821	16.103	1.764	11.138	21.072	
$\text{FTA}_{VN,i,t}$	2821	.111	.315	0	1	The CEPII gravity dataset [32]
$ln(geo\_dist)_{VN,i}$	2821	8.997	.702	5.352	9.883	
$COL_{VN,i}$	2821	.129	.335	0	1	
$hdi_{i,t}$	2821	.726	.154	.271	.967	The United Nations Development Programme [33]
$\ln(tax\_burden)_{i,t}$	2821	4.317	.186	3.395	4.605	The Heritage Foundation [34]
$\text{fin\_free}_{i,t}$	2821	53.46	18.372	0	90	

Source: Authors' elaboration

Table 2: The primary destinations for Vietnam's green exports in 2002 and 2022

Rank	2002			2022		
	Country	Value (Million US$)	%	Country	Value (Million US$)	%
1	Japan	145.16	26.65	USA	17,500.00	31.59
2	Thailand	72.79	13.36	China	6,895.13	12.45
3	Germany	47.60	8.74	Korea	4,340.25	7.83
4	Singapore	32.38	5.94	Japan	2,705.00	4.88
5	Mexico	25.74	4.73	Netherlands	2,162.30	3.90
6	Hong Kong	23.21	4.26	India	1,815.14	3.28
7	USA	20.90	3.84	Germany	1,779.79	3.21
8	United Kingdom	18.66	3.43	Thailand	1,285.03	2.32
9	Italy	17.34	3.18	Indonesia	953.03	1.72
10	Netherlands	14.82	2.72	Australia	934.24	1.69
	Top 10	**418.60**	**76.84**	**Top 10**	**40,369.90**	**72.87**
	Total	**544.76**	**100**	**Total**	**55,400.00**	**100**

Source: Authors' calculations based on data from the BACI-CEPII database

dictability of exchange rates hampers exporters' revenue forecasting, which can discourage investment in environmentally friendly technologies and ultimately reduce green product exports. The finding of this study is in line with Musa et al. [36] and Khan et al. [37], who consistently highlight the detrimental effects of exchange rate fluctuations on trade flows. In particular, the outcome of this study supports the conclusion of Nguyen [16] that exchange rate volatility negatively impacts Vietnam's agricultural exports.

Shifting the focus to the importers' characteristics, the GDP per capita variable reveals a positive and statistically significant coefficient, suggesting that the importer's per capita income matters for Vietnam's green exports. Countries with higher levels of income are more likely to import products to satisfy domestic demand. This variable has an estimated coefficient of 0.554, suggesting that given other factors remain un-

changed, a 10 percent rise in the GDP per capita of an importing country is associated with a 5.54 percent increase in green exports from Vietnam to that country. The positive and statistically significant coefficient for the population variable at the 1% level suggests that a larger population in Vietnam's trading partners is associated with higher agricultural exports from Vietnam. The estimated coefficient for this variable is 0.944, indicating that if the population of a trading partner increases by 10 percent, bilateral agricultural exports from Vietnam to that country can be expected to rise by 9.44 percent. This result complements the conclusion of Wati [38] and Nguyen [16], who demonstrate that the population of importing countries can positively impact Indonesian shrimp exports and Vietnamese agricultural exports, respectively. The human development index has a positive and significant coefficient, suggesting that a higher human development level among partners is correlated with increased Vietnam's green exports. The result is in line with our expectation, that is, advanced economies with strong environmental protections exhibit a greater preference for imported goods that align with their sustainability goals. The estimated coefficient of this variable is 4.728, implying that a 0.1 unit increase in a trading partner's human development index is associated with a 47.28 percent rise in Vietnam's green exports to that country.

The regression finding shows that the tax burden of Vietnam's partner positively affects its green exports. The coefficient for this variable is statistically significant at the 5% level, with an estimated value of 0.619. The outcome reveals that given other factors remain unchanged, a 10 percent increase in a trading partner's tax burden is associated with a 6.19 percent rise in Vietnam's bilateral green exports to that country. The research findings are in accordance with Gaigné et al. [39], who document that to a certain extent, environmental taxes will promote green product trade.

The analysis reveals a strong positive relationship between financial freedom in Vietnam's trading partner and its green exports. The estimated coefficient of the financial freedom variable is 0.019, indicating that a 1 unit increase in financial liberalization in Vietnam's trading partner can boost Vietnam's green exports to that country by 1.9 percent. Indeed, by reducing barriers to foreign capital inflows and lowering financing costs, financial liberalization empowers countries to expand their domestic consumption through increased imports. This, in turn, stimulates demand for exports in other nations, fostering a more interconnected and interdependent global marketplace. Previous research has highlighted the importance of financial freedom in exporting countries for promoting exports [28, 29]. However, the findings suggest that financial development in importing countries is equally essential for increasing export flows.

In addition, the traditional gravity model control variables reinforce the core principles of the gravity model. The analysis shows a strong negative relationship between geographic distance and bilateral trade between Vietnam and its trading partners. Specifically, a 10 percent increase in the distance between Vietnam and a trading country is associated with a 5.22 percent decline in Vietnam's green exports to that country, indicating that geographic proximity is a crucial factor in determining trade flows. By contrast, the results suggest that free trade agreements have a positive and significant impact on Vietnam's green exports. The estimated coefficient of the 'FTA' dummy variable is 0.38, divulging that simultaneous membership in a trade agreement is associated with a 46.2[i] percent increase in bilateral green trade flows. Consistent with the expectation, colonial ties are found to have a positive and significant impact on trade flow. More specifically, countries with a historical colonial or dependent relationship with Vietnam tend to import significantly more Vietnamese green products, with an estimated increase of 309.6[ii] percent.

[i] $(e^{0.38} -1)*100 = 46.23$

[ii] $(e^{1.41} -1)*100 = 309.6$

Table 3: Vietnam's green exports' determinants, 2002–2022

VARIABLES	green_exp
$\ln(exv)_{VN,i,t}$	-0.227***
	(0.0540)
$\ln(gdpc)_{i,t}$	0.554***
	(0.0980)
$\ln(pop)_{i,t}$	0.944***
	(0.0226)
$FTA_{VN,i,t}$	0.380***
	(0.0891)
$hdi_{i,t}$	4.728***
	(1.089)
$ln(geo\_dist)_{VN,i}$	-0.522***
	(0.0470)
$COL_{VN,i}$	1.410***
	(0.137)
$\ln(tax\_burden)_{i,t}$	0.619**
	(0.287)
$fin\_free_{i,t}$	0.0190***
	(0.00199)
Constant	-13.84***
	(1.824)
Vietnam-year fixed effects	YES
Observations	2,821

Source: Authors' calculations based on data from the BACI-CEPII database

V. CONCLUSION AND IMPLICATIONS

While Vietnam's exports have experienced substantial growth, the environmental consequences of industrialization have become increasingly apparent. In response, the government has prioritized sustainable development initiatives, including the promotion of green trade. This study discovers the drivers of Vietnam's green product exports by applying the PPML estimators to a gravity model. The dataset for empirical analysis covers bilateral green exports from Vietnam to 169 trading partners from 2002 to 2022.

The empirical evidence suggests that fluctuations in the exchange rate between the Vietnamese Dong and foreign currencies have a negative impact on Vietnam's green exports. The findings also demonstrate that importers' characteristics, including GDP per capita, population size, human development level, tax burden, and financial freedom, positively correlate with Vietnam's green exports. Moreover, the study reveals that geographical distance is a barrier to bilateral green trade, while free trade agreements and historical colonial connections can facilitate trade flows.

Given the crucial role of green trade in Vietnam's sustainable development, developing solutions to boost the export of green products is necessary. The empirical evidence from this study offers valuable insights. First, maintaining stable exchange rates can significantly promote Vietnam's green exports. for example, the governments can adjust interest rates, intervene through the foreign exchange market by selling or buying currencies, and implement capital controls, such as restrictions on capital inflows or outflows, to regulate currency flows and stabilize exchange rates. Second, actively participating in free trade agreements is crucial for expanding the market access of Vietnam's green products. Third, potential trading partners for Vietnam's green exports include countries with high GDP per capita, substantial economic size, advanced human development, heavy tax burden, and well-liberalized financial systems, as well as those with a shared history of interdependence with Vietnam. These implications provide important guidance for Vietnam's exporting firms, helping them choose trading partners that can contribute to the success of Vietnam's green exports.

Although this study offers valuable insights into the determinants of Vietnam's green exports, the study remains limitations. While this study has examined green export volumes, other dimensions of export performance for green products, such as export margins, export diversification, and export quality, have yet to be discovered. Hausmann et al. [40] emphasize that the growth prospect of an economy not only depends on how much it exports but also on what it exports. Therefore, future research on the determinants of green export margins, green export diversification, and green export quality would be fascinating extensions of this study.

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