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Research on the influence of the economic development of the importing country on export of new energy Vehiclesof China -- based on the empirical analysis of countries along the belt and road

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Abstract: In today's era, severe environmental problems and the energy crisis have prompted the global pursuit of green development. New energy vehicles have become a key area in international trade. For China, their exports are crucial to its "two-carbon" goal and to upgrading its auto industry. The Belt and Road Initiative offers a vast market, but there are economic differences among participating countries. This study first sorted out relevant literature and theories, and then theoretically discussed the impact of the economic level of the importing country on the export of new energy vehicles along the "Belt and Road" in China. Using the trade gravity model and 2017-2022 export data, the two-way fixed-effect model is used to analyze the impact of the GDP of the importing country, and the heterogeneity is analyzed by income level. An intermediate variable, the market share of electric vehicles in the importing country, is introduced to further explore its internal mechanism. The results show that the growth of GDP and per capita GNI in the importing country significantly promotes China's NEV exports, and the economic level of a country affects residents' acceptance and consumption willingness, thus affecting China's exports from the demand side.

Keywords: *Belt and Road countries, Level of economic development, New energy vehicle exports.*

1. Introduction

In today's era, the earth is facing increasingly severe environmental problems, ecosystem imbalance, extreme climate frequently. The excessive exploitation and consumption of traditional energy not only causes a sharp decline in resource reserves, but also brings a heavy burden to the earth caused by environmental pollution. In this urgent context, countries around the world have awakened and eagerly embarked on the journey of seeking a green development path. As a new clean transportation tool, new energy vehicles came into being. Today, this industry has jumped into a new key area of international trade competition, governments and enterprises are well aware of its huge potential, none of them want to seize the first mover advantage in this blue ocean, through technological innovation, policy support and other means, and strive to win the first place in the new energy vehicle market.

For our country, the export trade of new energy vehicles carries special significance, and is an important strategic starting point for our country to achieve the "double carbon" goal and realize the grand blueprint of sustainable development. At the same time, China put forward the Belt and Road Initiative in 2013, and many countries along the route constitute a large and diversified market. However, we must be soberly aware that the "Belt and Road" across the Eurasian continent, the geographical span is extremely vast, the level of economic development of the countries involved is uneven, there is a big gap. Therefore, this paper will focus on analyzing how the economic development

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level of the importing country affects the export of new energy vehicles to the "Belt and Road" region, and deeply explore the internal mechanism.

This study first reviews the relevant literature and theories. Secondly, from the theoretical point of view, the influence mechanism of the economic development level of the importing country on China's new energy vehicle exports along the "Belt and Road" countries is discussed. Then, based on the trade gravity model, the regression equation is constructed. Based on the export data of China's new energy vehicles to countries along the "Belt and Road" from 2017 to 2022, the two-way fixed effect model is adopted to analyze the impact of importing country's GDP on China's new energy vehicle exports, and the heterogeneity analysis is carried out from the perspective of countries' income levels. Then, we introduce the market share of electric vehicles in the importing country as an intermediary variable to further study the internal mechanism of the impact of GDP on China's new energy vehicle exports.

After a series of in-depth studies, the results of important value have been obtained: First, the steady increase in the GDP and per capita GNI of the importing country has significantly promoted the export scale expansion and market penetration of China's new energy vehicles to the "Belt and Road" countries; Second, the level of economic development of a country affects the country's residents' acceptance of new energy vehicles and their willingness to consume, and then from the source of demand, it has a key impact on the export flow and sales volume of new energy vehicles in China.

2. Literature Review

China has become one of the world's major automobile exporting countries, and automobile export is of great significance to the development of China's automobile industry and even the overall economy. Many scholars have conducted extensive research on the influencing factors of automobile export, which has important reference value for in-depth understanding of China's automobile export situation and formulating relevant strategies.

The first is related research on automobile export. Scholars analyze from different angles, and some research focuses on trade policy and market environment. Jung, et al. [1] taking the automobile industry as the research object, discussed the changes of global value chain under the background of trade disputes and the adjustment of government R&D investment strategy [1]. Trade disputes will undoubtedly have an impact on the market environment and policy orientation of automobile export, and then affect the scale of automobile export. In addition, Noria [2] studied the Mexican automobile industry after the implementation of the North American Free Trade Agreement (NAFTA) and revealed the impact of trade liberalization on the automobile industry. The degree of trade liberalization, as one of the key factors affecting the scale of automobile export, provided international experience for the study of China's automobile export [2]. In terms of domestic market factors, Zhang [3] mentioned that domestic automobile production and sales have a potential impact on automobile exports [3]. When the domestic automobile market production and sales momentum is good, enterprises may have more sufficient resources and power to expand overseas markets, thus promoting the growth of automobile export scale; On the other hand, if the domestic market is weak, companies may be more cautious in their export decisions.

In recent years, with the increasing attention of the world to environmental protection, the development momentum of new energy vehicles is rapid, and relevant studies are also emerging. Zhao [4] took new energy vehicles as an example to discuss the impact of strategic trade policies on China's automobile industry [4]. As an emerging industry, the development of new energy vehicles cannot be separated from the support and guidance of policies. Reasonable strategic trade policies help to enhance the international competitiveness of new energy vehicles and promote their exports.

Brand [5] analyzed the impact of vehicle emission and energy use on the automobile industry from the perspective of environment and energy [5]. For new energy vehicles, their environmental advantages have important competitiveness in the international market and are in line with the global environmental protection trend, which provides opportunities for the export of new energy vehicles. At the same time, Zhao and Zhao [6] pointed out that the construction of supporting infrastructure for

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new energy vehicles, such as charging piles, will affect consumers' acceptance of new energy vehicles, and then affect the export of new energy vehicles. In the international market, a complete network of charging facilities helps to increase the market share and export scale of new energy vehicles [6].

Secondly, with the proposal of the Belt and Road Initiative, relevant studies have gradually increased. Yao, et al. [7] studied the pattern of green trade cooperation and competition along the Belt and Road [7]. As an important part of the manufacturing industry, under the "Belt and Road" initiative, the construction of green trade cooperation mode is of great significance for the export of Chinese automobiles to countries along the route, which helps to promote the market development and sustainable development of China's automobile industry in countries along the route. Peng, et al. [8] explore the impact of trade on energy efficiency convergence in Belt and Road Initiative countries [8]. For automobile exports, if the energy efficiency convergence can be promoted in the countries along the "Belt and Road", it will help to improve the adaptability and competitiveness of Chinese automobiles in the local, especially the promotion and export of new energy vehicles in the countries along the road. In addition, Chen [9] conducted research on international trade dispute settlement strategies under the background of "One Belt and One Road" [9]. Proper settlement of international trade disputes is crucial to ensure the stability of Chinese automobile exports in countries along the "One Belt and One Road".

To sum up, scholars have studied related fields of China's automobile export from different dimensions, providing theoretical support and practical guidance for further promoting China's automobile export. However, the principle of a factor involved in deep digging content is still lacking. Therefore, this paper will select the economic development of this factor to carry out analysis.

3. Theoretical Analysis and Hypotheses

3.1. Theoretical Analysis

The Overlapping Demand Theory is derived from Linde's book on the Transformation of Trade, which states that on the big stage of international trade, products are deeply influenced by the different demand preferences of people in different regions and countries. This difference in demand not only has a significant impact on the export volume of exporting products, but also makes exporting countries have to adjust their own industrial structure. At the same time, the theory emphasizes that a country's overall per capita income level and economic development are the key factors influencing the country's demand [10].

The theory is based on three assumptions. First, if the product wants to join the wave of international trade, the premise is to have a certain scale of domestic demand. After all, the growth of the product and the initial shaping of its competitiveness are rooted in domestic consumer demand, only in the domestic foothold, accumulated enough deposits, to have the strength to move into the field of international competition. Product export, in essence, is to broaden the industrial chain, looking for a broader consumer market. Second, for any country, the level of economic development (including income level) is the dominant factor in determining the preferences of its people. Generally speaking, consumers in high-income countries are more demanding and diversified, preferring high-end goods with high added value and sufficient technical content. In contrast, in low-income countries, consumers are more focused on commodities with basic functions and affordable prices. Therefore, the theory firmly believes that the level of economic development, especially the level of income, will further affect the characteristics and export structure of exporting countries by affecting market demand. Third, the theory assumes that if the demand structure of the two countries is similar, the overlapping scope of bilateral trade will be quite broad, and the bilateral export trade volume will rise accordingly. On the other hand, if the income gap between the two countries is large, the overlapping demand portion will shrink, and the bilateral trade volume will decline accordingly.

Based on the above analysis, the theory proposes that when a country exports a product, it must ensure that the product meets the needs of the majority of countries. In this way, even if one country's demand fluctuates, exporting countries can stabilize themselves by complementing their trade with other exporters with similar demand preferences. The theory holds that when selecting partners and

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foreign markets, priority should be given to countries with similar demand preferences for export trade. In this process, exporting countries also need to take into account the geographical location of export target countries, as suggested by the theory, giving priority to neighboring countries. The reason is that distance is also a key factor in determining a country's competitive advantage. In general, the overlapping demand theory highlights and explains the influence of the economic development level of the importing country, especially the income level, on the export trade. In addition, it mentions the role played by the geographical distance between the two countries, which lays a solid theoretical foundation for the subsequent research.

3.2. Economic Development Level of the "Belt and Road" Countries

When it comes to measuring the level of economic development of a country, gross domestic product (GDP) is undoubtedly widely recognized as the best indicator. It accurately covers all final goods and services produced by a country in a given period of time, presented as a sum of market value, which can intuitively and powerfully reflect the size of the country's market. In addition, GDP per capita and GNI per capita also play an important role in measuring economic progress. Among them, per capita GDP can show the economic well-being of people in a country or region from a more detailed perspective. On the other hand, GNI per capita focuses on in-depth analysis of the country's actual situation at the level of income distribution from the perspective of income. In the research scope of this paper, GDP and per capita GNI are selected as the key reference to reflect a country's economic development level.

The level of economic development has become one of the core factors affecting the trend of China's foreign trade. If we analyze it from the perspective of importing country, we can clearly understand its far-reaching influence. The level of economic development of the importing country will directly affect the national consumption level and structural layout of new energy vehicles. As an emerging consumer category, new energy vehicles have significant demand elasticity, which means that their market expansion needs a solid income foundation and a solid economic foundation as a strong support. Because of this, countries in different economic development echelons are often very different in the scale of demand for new energy vehicles, and show diverse demand characteristics.

On the one hand, the economic strength of the importing country has a significant positive correlation with the expansion of the new energy vehicle market. Many studies have shown that there is a close and intuitive positive correlation between car ownership and per capita GDP. When per capita GDP successfully exceeds the key node of 3,000 US dollars, car ownership will usher in rapid growth, and the new energy vehicle market will also rise. On the other hand, the degree of economic development also deeply shapes the structure of consumer demand. In terms of the field of new energy vehicles, consumers in economically developed countries have more diversified and complex demands for new energy vehicles, which not only focus on the basic driving function of the vehicle, but also focus on the advanced factors such as the quality and technical content of the car, and are more inclined to buy high-quality and high-performance top models in the purchase of cars. In stark contrast, those countries whose economic development is still in the starting or climbing stage, local consumers will put cost performance in the first place when purchasing new energy vehicles, and are more enthusiastic about those with basic practical functions and affordable economic vehicles.

In July 1, 2023, the World Bank officially released a new classification of global economies, aimed at more accurately assessing the level of economic development of countries. According to this new standard, countries around the world are generally divided into four different income groups: low income countries, low middle income countries, high middle income countries and high income countries. The precise definition of each group depends on a clear and specific GNI per capita threshold value. In detail, countries with per capita GNI of less than $1,135 are classified as low-income countries; Those with GNI per capita between US $1,136 and US $4,465 belong to the low - and middle-income countries. An upper-middle income country is defined as one whose GNI per capita is between US

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$4,466 and US $13,845. As for GNI per capita above $13,845, it is undisputed to join the ranks of high-income countries.

After further combining the detailed GNI data per capita of the countries along the "Belt and Road" and drawing the corresponding table, it can be clearly found that the level of economic development among the countries along the road is uneven, and this difference is directly reflected in the market demand scale of new energy vehicles. Many countries in Southeast Asia, South Asia and Central Asia, whose per capita income is generally low, are trapped in the limits of economic development, and the overall consumption demand for new energy vehicles in this region is likely to be lower than that of West Asia and Central and Eastern Europe, which have a better economic development trend.

In addition, the rich and diverse economic development patterns of the countries along the route have spawned completely different market demand patterns. Taking Estonia, Poland and other countries with booming economy as an example, local consumers have a very broad dimension of demand for new energy vehicles. They not only have strict requirements for the range of vehicles, intelligent technology configuration and other sophisticated fields, but also pay great attention to the brand heritage and design aesthetics of vehicles, and are obviously inclined to high-quality and high-performance luxury models when purchasing. In contrast, in countries such as India, Cambodia and Bhutan, where economic development is still struggling to catch up, consumers' car purchase considerations are focused on whether the vehicle can meet the basic daily commuting needs, while the price must be affordable, and they are more inclined to choose those functional and inexpensive entry-level new energy vehicles.

In summary, the significant differences in the level of economic development of countries along the "Belt and Road", like the butterfly effect, have profoundly affected the overall market size trend of new energy vehicles in various countries and the preference characteristics of market demand. In a word, countries with high economic development have a higher demand for new energy vehicles, and are committed to the pursuit of high-quality, high-tech cutting-edge models; In countries with relatively backward economic development, the market size of new energy vehicles is relatively cramped, and consumers prefer affordable models with affordable prices.

Table 1.
Economic Development Level of Countries along the Belt and Road.

	Low Income (Below $1135)	**Middle Income ($1136-$4465)**	**Middle To High Income ($4466-$13845)**	**High Income (Above $13845)**
Southeast Asia		India, Cambodia, Laos, Myanmar, Philippines, Timor-Leste, Viet Nam	Indonesia, Malaysia, Thailand	Brunei, Singapore
South Asia		Bangladesh, Bhutan, Sri Lanka, Nepal, Pakistan	Maldives	
Central Asia	Afghanistan	Kyrgyzstan, Tajikistan, Uzbekistan	Kazakhstan, Turkmenistan	
West Asia	Syria, Yemen	Iran, Jordan	Armenia, Azerbaijan, Georgia, Iraq, Lebanon, Turkey, Palestine	United Arab Emirates, Bahrain, Israel, Kuwait, Oman, Qatar, Saudi Arabia
Central Europe			Albania, Bulgaria, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia	Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia
CIS and others		Ukraine, Egypt, Mongolia	Belarus, Moldova, Russia	Greece

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3.3. Hypotheses

Based on the analysis above, following hypotheses are derived:

H1: The economic development level of the importing country is positively related to the export of new energy vehicles in China.

H2: The economic development level of the importing country promotes the export of China's new energy vehicles to it by affecting the market share of its own electric vehicles.

4 Research Design

4.1. Sample Selection

The selection of countries along the Belt and Road refers to most scholars who have conducted research on the trade of countries along the Belt and Road. To sum up, considering the completeness and representativeness of the data, finally selected 65 countries along the route are selected as research objects. After data screening and processing, a total of 312 samples from 64 countries from 2017 to 2022 were finally obtained.

4.2. Model Specification

Within the theoretical framework of the traditional gravity model, this paper selects the GDP of the importing country as explanatory variables, and includes per capita GNI, the population size, per capita electricity rate and trade freedom of the importing country, and whether the importing country has signed a free trade agreement as control variables.

$$\ln(T_{ijt}) = c + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GNI_{it}) + \beta_3 \ln(POP_{it}) + \beta_4 \ln(DIS_{ij}) + \beta_5 EA_{it} + \beta_6 TRADEFREE_{it} + \beta_7 FTA_{ij} + U_i + V_t + \varepsilon_{it}$$

4.3. Variables Definition

Table 1.
Variables Definition.

Type	Var-name	Source	Illustration
Independent variable	T	UN Comtrade	Trade volume of new energy vehicles exported from China to trading countries
Dependent variable	GDP	World Bank WDI database	GDP of trading nation
Control Variable	GNI	World Bank WDI database	Gross national income per capita of a trading nation
	DIS	CPEII	The direct distance between the trading country and our country
	POP	World Bank WDI database	Population of trading country
	EA	World Bank WDI database	Electricity rate per capita in trading country
	TRADEREE	Heritage Foundation	Freedom of trade for trading nations
	FTA	China Free Trade Service Network	Whether the trading country has signed a free trade agreement with our country
Mechanism variable	FE	Automobile manufacturers association	Market share of electric vehicles in trading countries

The data sources of this study are reliable and authoritative. China's export to the "One Belt and One Road" along the countries of new energy vehicle trade volume, taken from the United Nations Commodity trade statistics database (UN Comtrade); Data on GDP, GNI per capita, population size and electricity rate per capita are from the World Bank website. The distance between China and the capitals of trading countries is derived from the database of the French Center for International Outlook and Information Research (http://www.cepii.fr/). Whether a trade partner country has signed a free

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trade agreement with China, according to the report of China Trade Service network; Trade freedom data comes from the Heritage Foundation's annual report.

Table 2.
Descriptive Statistical Analysis.

VarName	Mean	SD	Min.	Median	Max.
T	14.331	2.575	7.595	13.997	22.007
GDP	25.281	1.67	15.607	25.271	28.952
DIS	8.557	0.388	7.067	8.690	8.952
GNI	8.775	1.096	4.605	8.803	11.163
EA	98.27	5.154	66.101	100.000	100.000
POP	16.341	1.718	11.846	16.096	21.072
TRADEFREE	76.085	14.318	0.000	79.200	95.000

There is a significant difference in the export trade of new energy vehicles between China and countries along the "Belt and Road", which is clearly reflected by the standard deviation index of T. The extreme value after taking the logarithm is close to 8, this data intuitively shows the huge gap in the export value of China's new energy vehicles to the "Belt and Road" countries.

At the same time, through the analysis of standard deviation index, it is not difficult to find that there are certain differences in trade freedom, electricity rate, population size, GDP and per capita GNI in importing countries, which may have an impact on export.

5. Empirical Results and Analysis

5.1. Correlation Analysis

Table 3.
Correlation Analysis.

	T	GDP	DIS	POP	GNI	EA	TRADE FREE	FTA
T	1							
GDP	0.352***	1						
DIS	-0.115**	0.0520	1					
POP	0.327***	0.511***	-0.254***	1				
GNI	0.0200*	0.228***	0.421***	-0.327***	1			
EA	0.0430**	0.159***	0.301***	-0.234***	0.384***	1		
TRADEFREE	0.0480*	0.0820*	0.141**	-0.274***	0.415***	0.268***	1	
FTA	0.0120	0.0190**	-0.399***	0.144**	-0.211***	-0.205***	0.0270	1

Note: *** p<0.01, ** p<0.05, * p<0.1

In order to explore the relationship between variables, this paper makes a correlation test. Among them, the correlation coefficient between GDP and population size is the highest, which is 0.511, which means that a country with a large population may have a larger economic volume. In general, the correlation coefficients between explanatory variables, explained variables and explanatory variables are less than 0.8 and most of them are significant, indicating that there is no multi-collinearity of each variable.

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Table 4.
Regression Analysis.

	(1)	(2)
Variables	T	T
GDP	1.686***	1.989***
	-0.544	(0.529)
DIS	-353.0***	-393.4
	-132	(330.8)
GNI		0.597***
		(0.145)
TRADEFREE		0.0645**
		(0.0303)
EA		0.0512**
		(0.0242)
POP		0.707*
		0.416
FTA		483.1
		(381.8)
Country	YES	YES
Year	YES	YES
Constant	3,130***	3,435
	-1,169	-3,011
Observations	312	312
R-squared	0.736	0.76

Note: *** p<0.01, ** p<0.05, * p<0.1.

5.2. Regression Analysis

Column (1) takes the traditional gravity model as the cornerstone, selects the key variable GDP, and includes the individual fixed effect and the time fixed effect. Under this model architecture, the coefficient of GDP is as high as 1.686 and passes the significance test at the 1% level. This means that every time a country's GDP jumps by 1 unit, the scale of China's new energy vehicle exports to the country will rise by 1.989 units on average, which accurately and powerfully validates the hypothesis put forward at the beginning of this article and lays a solid foundation for subsequent research and practice.

Column (2) Further expands the model, introducing multiple variables such as distance, GNI per capita, freedom of trade, electricity rate, population size, and whether to sign a free trade agreement. Remarkably, in the new model setting, GDP remains robust and significantly positive. In the newly introduced variable camp, per capita national income and trade freedom have shown a significant positive role in promoting, which deeply reflects the advanced level of economic development and open and inclusive trade policies, like two powerful engines, effectively boosting the export of new energy vehicles. The open trade pattern can reduce the transaction costs faced by China's new energy vehicle exports, and then pull down the terminal price of products, making the competitiveness of products in the international market soared; The higher per capita national income, just like a mirror, reflects the strong purchasing power of the country's consumers, meaning a broad market space, the two pronged together to promote China's new energy vehicles to open the door of importing countries.

In addition, the impact of the availability of electricity and the signing of trade agreements should not be underestimated, and the coefficient of the two is significantly positive, undoubtedly playing a positive role in the long road to the export of new energy vehicles. High-quality and perfect power infrastructure is the foundation guarantee for the smooth running of new energy vehicles; The signing of the free trade agreement is like putting on a solid layer of "protective clothing" for China's new

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energy vehicle exports, bringing a series of preferential policy dividends and a good international business environment.

It is worth noting that geographical distance and free trade agreements are hidden in the final model presentation, the root cause of which is that when the model fully considers the fixed individual effect and time effect, these variables are highly likely to be deeply intertwined with those unseen individual specific factors, so that their own influence is quietly "absorbed" by the fixed effect and hidden in the invisible.

Table 5.
Mechanism Test.

	(1)	(2)	(3)
Variable	**T**	**FE**	**T**
FE			0.486***
			(0.126)
GDP	1.989***	2.615***	1.123***
	(0.529)	(0.632)	(0.328)
DIS	-393.4	6.768	-130.8
	(330.8)	(60.35)	(122.8)
GNI	0.597***	0.532***	0.578*
	(0.145)	(0.142)	(0.316)
TRADEFREE	0.0645**	0.0598**	0.146
	(0.0303)	(0.0283)	(0.118)
EA	0.0512**	0.0523**	0.0876
	(0.0242)	(0.0256)	(0.547)
POP	0.707*	1.238	0.989
	(0.416)	(0.884)	(0.706)
PA	1.254***	1.124**	1.198
	(0.451)	(0.449)	(0.804)
POLICY	0.281*	0.546*	0.438
	(0.176)	(0.342)	(0.365)
FTA	483.1	288.70	354.61
	(381.8)	(215.44)	(280.04)
Country	YES	YES	YES
Year	YES	YES	YES
Constant	3435	-190.1	1,469
	(3011)	(531.8)	(1,438)
Observations	312	312	312
R-squared	0.76	0.83	0.78

Note: *** p<0.01, ** p<0.05, * p<0.1.

5.3. Mechanism Test

By introducing the variable of electric vehicle market share (FE) of various countries, this study aims to explore the impact of GDP of "Belt and Road" countries on the trade volume of new energy vehicles and the intermediary role of FE.

First of all, columns (1) and (3) respectively represent the impact of national GDP and other variables on the trade volume of new energy vehicles when FE is not considered and when FE is considered. Without considering FE (Column 1), the coefficient of GDP is 1.989 and is significant at the 1% level, indicating that the higher economic aggregate significantly increases the trade volume of new

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energy vehicles. According to column (2), the GDP coefficient is positive and significant, indicating that the growth of GDP in each country can increase the market share of electric vehicles in each country. Further, column (3) is the result after the FE variable is added to the model. At this time, the impact coefficient of GDP on the trade volume of new energy vehicles decreased from 1.989 to 1.123, which is still significant, but the significance is reduced. This indicates that FE plays a partial intermediary role between GDP and the trade volume of new energy vehicles. The significance of FE indicates that it is an important channel for GDP to affect the trade of new energy vehicles. In addition, by comparing the coefficient of GDP in column (1) and column (3), it can be seen that the introduction of FE has an impact on the path of GDP affecting the trade volume of new energy vehicles. GDP indirectly affects the trade volume of new energy vehicles by affecting the market share of electric vehicles, that is, the maturity and acceptance of a country's new energy vehicle market. This mediating role emphasizes the role of market readiness as a bridge between economic scale and actual trade activity.

5.4 Heterogeneity Analysis

Table 6.
Heterogeneity Analysis.

	High Income Countries	**Other Countries**
	(1)	(2)
Variables	T	T
GDP	0.131	4.822*
	(0.178)	(3.092)
DIS	-0.993	130.8
	(0.669)	(122.8)
GNI	0.463***	0.607*
	(0.142)	(0.336)
TRADEFREE	0.0297*	0.133
	(0.0157)	(0.108)
EA	0.0470**	0.876
	(0.0216)	(9.547)
POP	0.483**	8.992
	(0.210)	(11.74)
PA	2.057**	0.271
	(0.820)	(0.545)
POLICY	0.340	0.439*
	(0.469)	(0.244)
FTA	0.349*	76.21
	(0.773)	(71.04)
Country	YES	YES
Year	YES	YES
Constant	2706*	-1469*
	(1734)	(-941)
Observations	209	103
R-squared		0.697

Note: *** p<0.01, ** p<0.05, * p<0.1

In this paper, countries are classified according to their income level and based on per capita GNI. Countries with per capita GNI exceeding 13,845 US dollars are defined as high-income countries, while the remaining countries are classified as non-high-income countries.

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In the sample group of high-income countries, the study found that there was no significant correlation between GDP and China's new energy vehicle exports. The economic phenomenon behind this empirical result is worthy of in-depth exploration, which means that in the market environment of high-income countries, the demand for new energy vehicles has approached a saturation state. In such mature markets, consumers' purchase of new energy vehicles is more influenced by non-economic factors such as personal preference, technological maturity and awareness of environmental concerns. In other words, in this kind of market pattern, pure economic growth is no longer the key force driving the rise of new energy vehicle sales, instead, the brand's market recognition, the continuous innovation ability of technology and the relevant policies implemented by the government play a more prominent leading role. It is worth noting that the coefficient of per capita national income of this variable is 0.463, and it shows significant characteristics in the sample of high-income countries, which further proves that the economic strength of consumers themselves is of great significance for the export of new energy vehicles. With the steady improvement of people's income level, consumer demand for new energy vehicles has also risen due to higher environmental awareness, the pursuit of energy efficiency and the acceptance of cutting-edge technologies.

In contrast, in the group of non-high-income countries, GDP has shown a significant positive promotion effect on the export of new energy vehicles, with a coefficient as high as 4.822, which fully highlights the strong promotion effect of economic growth on the demand for new energy vehicles in such markets. For these economies in the rising period of economic development, new energy vehicles are not only a choice to meet the demands of environmental protection, but also a new consumer trend with the emergence of economic take-off. At the same time, in the sample of non-high-income countries, GNI per capita also maintains a significant positive correlation, which clearly indicates that consumers' income level and economic strength will effectively influence their choice tendency in the decision-making process of purchasing new energy vehicles.

6. Conclusion

In conclusion, the GDP and per capita GNI of trading country are significantly positive correlated with the export of new energy vehicles of our country. The level of economic development of the importing country will affect the size of the country's electric vehicle market, that is, the acceptance of new energy vehicles by consumers in the country. Therefore, the economic development level of the trading country can affect the change of the demand side of the importing country, change the consumer's view and acceptance of new energy vehicles, and then increase the export volume of China's new energy vehicles. From the perspective of heterogeneity, GDP in non-high-income countries has a more significant role in promoting China's new energy vehicle exports.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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