Geographic Barriers in Trade Between Vietnam and RCEP Countries

Thi Anh Tuyet LE[1]

Abstract

The article focuses on understanding the role of geographical barriers in trade between Vietnam and RCEP countries. Based on the theory of gravity model, the study proposes a research model using panel data with two main variables representing geographical barriers: distance and border effect. The article's quantitative research demonstrates that geographical distance is no longer a barrier, and the border effect no longer has a positive meaning for Vietnam's trade with RCEP countries. On the contrary, the economic size and trade openness of RCEP member countries positively impact Vietnam's trade with RCEP countries. Based on this result, the study also proposes several recommendations to increase Vietnam's trade with RCEP countries including (1) Implementing policies to develop the internal resources of Vietnam's economy, reducing the gap in economic ways with developed countries in RCEP; (2) Develop a plan to focus on promoting exports to major markets such as Australia, Japan, Korea, and New Zealand in RCEP; and (3) The Vietnamese Government needs to better implement trade management policies with countries sharing borders.

Keywords: Trade, RCEP, Vietnam, import, export, geographical, border.

1. Introduction

The Regional Comprehensive Economic Partnership (RCEP) is a free trade agreement (FTA) between 10 ASEAN countries and 5 partners: China, South Korea, Japan, Australia and New Zealand. RECP will help Vietnam boost exports and gain better access to major consumer markets. This agreement will help manufacturers in Vietnam reduce costs and access supply chains throughout the Asia-Pacific region. Most of the raw materials for Vietnam's exports are imported from countries participating in RCEP. However, the countries in RCEP have very different geographical characteristics from Vietnam. So the question here is whether there exist geographical barriers in trade relations between Vietnam and RCEP countries.

Geographical barriers are not a new topic in international trade research. Previous studies by Disdier and Head (2008) , Wei (1996) , Anderson and Wincoop (2003) , Coughlin and Novy (2013) ... all believe that geographical factors greatly affect trade between countries. In particular, most studies have concluded that trade decreases significantly with distance, trade not only decreases with distance but is also affected by borders. Distance and border effects represent geographical barriers between trading partners, as well as different transportation costs between partners... However, the estimated magnitude of the geographical barrier effect is uncertain between countries and study periods. Additionally, due to increasing globalization and advances in transportation

---

[1] Faculty of International Economics, Ho Chi Minh University of Banking, Vietnam

technology, one might expect that the distance coefficient will decrease over time. Therefore, the author wrote this article to measure the specific impact of geographical barriers on Vietnam's trade with RCEP countries, on that basis implying some policies for Vietnam in the development of trade with RCEP countries.

2. Theoretical overview

The gravity model in economics is derived from Newton's Law of Universal Gravitation, in which the force of gravity is proportional to the product of the masses of two objects and inversely proportional to the distance between them. Tinbergen (1962) was the first scholar to apply the gravity model to consider the relationship between economics, distance, and trade levels. Then, with the development of the theoretical foundation and widespread application, the gravity model became the most successful model in international trade analysis (Anderson, 2016) .

The traditional gravity model in international trade has the following formula:

$T_{ij} = G\, Y_i Y_j / D_{ij}$ (1)

In which, T is the trade flow between country i and partner j, usually measured by the total value of import and export turnover. Y is the size of the economy, often determined by gross domestic product (GPD) or gross national product (GNP). D is the physical distance between two countries. And, G is the gravitational coefficient.

$\ln T_{ij} = \ln G + \ln Y_i + \ln Y_j + \ln D_{ij} + e_{ij}$ (2)

In fact, there are many variations of the gravity model developed and applied in international trade analysis. There is a universal view using the gravity equation proposed and developed by Anderson and Wincoop (2003) . This is the most successful and most commonly applied equation. Anderson and Wincoop (2003) argue that the classical gravity model gives biased results because it does not consider the influence of multilateral barriers. Therefore, the two scholars added the factor of multilateral barriers to their model. The gravity model of Anderson and Wincoop (2003) is specifically expressed as follows:

$\ln T_{ij} = \alpha 0 + \alpha_1 \ln Y_i + \alpha_2 \ln Y_j + \alpha 3 \ln D_{ij} + \alpha 4 \ln R_{ij} + \alpha 5 \ln \pi_{ij} + e_{ij}$ (3)

In there:

$\alpha 0$ is a constant; R is the multilateral barrier; π are dummy variables; and e is the random error.

3. Research overview

According to Magerman, Studnicka & Van Hove (2016) compared different estimation methods commonly used in gravity models of international trade. In it, the author estimates a gravity model for global bilateral trade flows using different empirical methods and focuses on comparing techniques that cross-evaluate distance and path effects border. For border effects, the author takes into account neighborhood effects as well as differences between intraregional and interregional trade. The results show that distance has a significant negative effect and proximity effect has a significant positive effect in all estimation methods, although the size of the effects varies significantly between methods... Global regional border effects are much more sensitive in both size and direction of impact across all estimation methods used.

According to Bergstrand, Larch & Yotov (2015) estimated the declining impact of "international borders" on world trade in the context of deepening international economic

integration wide. At the same time, the authors also proposed some solutions to the problem of distance elasticity in international trade.

Franco-Bedoya & Frohm (2022) argue that reduced border effects account for most of the increase in international manufacturing trade. Country border costs are estimated to have decreased by about 4.3% per year for final goods trade and 2.8% for intermediate input trade. Furthermore, the authors show that it is important to control for differential border effects on final goods and intermediate inputs when estimating the trade impact of FTAs in the gravity equation. Franco-Bedoya & Frohm (2022) argue that reduced border effects account for most of the increase in international manufacturing trade. Country border costs are estimated to have decreased by about 4.3% per year for final goods trade and 2.8% for intermediate input trade. Furthermore, the authors show that it is important to control for differential border effects on final goods and intermediate inputs when estimating the trade impact of FTAs in the gravity equation. Given this improvement, the results of this study show that FTAs increase final goods trade by 52% after ten years, with no statistically significant difference in intermediate input trade. This study is evidence that more comprehensive FTAs like the European Union have a larger trade impact than average FTAs. Given this improvement, the results of this study show that FTAs increase final goods trade by 52% after ten years, with no statistically significant difference in intermediate input trade. This study is evidence that more comprehensive FTAs like the European Union have a larger trade impact than average FTAs.

Daumal & Zignago (2010) estimate the degree of trade integration between Brazilian states and the severity of barriers faced by exporters in the 1990s. Use Using the border effects approach, the author shows that the Brazilian market remains highly fragmented, although integration is increasing.

Gallego & Llano (2014) estimated internal and external border effects using a new dataset capturing domestic and international shipments between Spanish regions Den and regions in eight European countries using alternative treatments of the non-linear relationship between distance and trade.

Borchert & Yotov (2017) argue that the effect of distance has decreased while the effect of proximity and regional trade agreements has increased over time. The study shows considerable heterogeneity across countries in the extent to which the distance elasticity has varied. Countries in the middle of the per capita income distribution have the gap coefficients falling the most. At the same time, distance as a trade conflict has not lost its effect on some low-income countries, which could jeopardize their integration into global markets. This evidence suggests that heterogeneous changes in distance elasticities are associated with long-term changes in the structure of exports.

The study by Egger (2008) addresses the role of distance in partial equilibrium models of bilateral trade and tests the hypotheses in a large panel data set on trade flows. This analysis raises three implications regarding the empirical characterization of trade conflict in the gravity model.

Salas-Olmedo, García-Alonso & Gutiérrez (2016) provide a coherent correction of impedance parameters affecting trade (edge effects based on the best available official data have and reasonable estimate of the distance as well as the distance reduction parameter using network-based measurements).In addition, the study has also identified the market potential of various hindered countries to what extent by boundary effects. The analysis shows that correcting for distance decay and considering boundary effects yields more realistic results. These results demonstrate that peripheral regions are sensitive to the estimation of the distance reduction parameter, while the main urban areas are less affected by both distance reduction and border effects.

Giuliano, Spilimbergo & Tonon (2014) argue that geographical proximity and economic variables are strongly correlated. Explaining the impact of these factors is important to

explain these correlations. The study shows that geographic factors that shaped genetic patterns in the past are also linked to current transportation costs and may explain the correlation between trade flows and genetic distance. The study makes its case by building a database on geographic barriers, introducing a new data set on shipping costs, and proposing a new way of classifying goods depending on their needs, according to how easy they are to transport.

4. Propose a research model

To clarify the impact of geographical barriers on trade between Vietnam and countries in RCEP, the article uses the extended gravity model proposed by Anderson Wincoop (2003). The extended gravity model is presented as follows:

$T_{ij} = \alpha_0 + \alpha_1 GDP_i + \alpha_2 GDP_j + \alpha_3 OPEN_i + \alpha_4 OPEN_j + \alpha_5 D_{ij} + \alpha_6 BE_{ij} + e_{ij}$

In there,

T: Trade between Vietnam and RCEP countries

GDP: Gross domestic product

OPEN: Trade openness of a country

D: Geographic distance between Vietnam and RCEP countries

BE: Border effects on Vietnam's trade in RCEP

i: Countries in RCEP

j: Vietnam

Variable	Interpretation and unit	Expectation sign	Data sources
T	Trade between Vietnam and RCEP countries by year (total import-export turnover between Vietnam and RCEP countries)	/	Uncomtrade
GDP	Gross domestic product	+/-	World Bank
OPEN	Trade openness	+/-	World Bank
D	Distance from the capital of Vietnam to the capitals of countries in RCEP in Km	+/-	https://www.timeanddate.com/
BE	Countries that share a border with Vietnam have value 1, otherwise it has value 0	+/-	

In this article, panel data will be used for the gravity model estimation process. Panel data is data that has a scale of both time and space. The table data structure is combined from two components: cross-section data component and time series data component. Combining two types of data has many advantages and disadvantages in analysis, especially when you want to observe and analyze changes in research groups after events or over time as well as analyze changes in research different subjects between groups of research subjects. Panel data regression in fundamental analysis often has the following two methods: FEM (fixed effects), and REM (random effects).

In the REM model, the differences between units affect the dependent variable. In which, the residual of each unit (uncorrelated with the explanatory variable) is considered a new explanatory variable.

5. Empirical Results and Discussion

5.1. Estimation by regression model using least squares method (POOL OLS)

Table 1. Estimation results by regression model using least squares method (POOL OLS)

Trade	Coef.	Std. Err.	t	P>|t|	Beta
GDP_i	0.00000875	0.000000949	9.22	0.000	1.057797
GDP_j	0.0000437	0.0000819	0.53	0.595	0.0193347
$OPEN_i$	7187.837	19073.01	0.38	0.707	0.0614339
$OPEN_j$	114137.9	249501.7	0.46	0.648	-0.1205187
D_{ij}	-1429.061	570.3946	-2.51	0.014	-0.1205187
BE_{ij}	-22100000	11800000	-1.87	0.065	-0.20727
_cons	-21200000	18600000	-1.14	0.258	

Performing a heteroskedasticity test of the POOL model gives the result that Prob = 0.0001 is less than 0.05, so the POOL model has heteroscedasticity. This shows that this estimate gives misleading and inefficient results. Therefore, the author continues to perform estimation using fixed effects (FEM) and random effects (REM) models.

5.2. Estimation according to fixed effects and random effects models

Table 2. Estimation results by fixed effects model (FEM)

Trade	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GDP_i	0.0000138	0.000000753	18.35	0	0.0000123	0.0000153
GDP_j	0.0000244	0.0000321	0.76	0.449	-0.0000394	.0000882
$OPEN_i$	-48781.37	55794.97	-0.87	0.384	-159735.8	62173.04
$OPEN_j$	88097.83	97036.63	0.91	0.367	-104870.1	281065.8
D_{ij}	0 (omitted)					
BE_{ij}	0 (omitted)					
_cons	-2.42e+07	8907538	-2.71	0.008	-4.19e+07	-6449811

Table 3. Estimated results by random effects model (REM)

Trade	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
GDP_i	0.0000136	7.40e-07	18.37	0.000	0.0000121	0.000015
GDP_j	0.0000277	0.0000319	0.87	0.386	-0.0000349	0.0000902
$OPEN_i$	-16104.8	44156	-0.36	0.715	-102649	70439.37
$OPEN_j$	85052.85	96798.82	0.88	0.380	-104669.4	274775
D_{ij}	-1895.926	2143.716	-0.88	0.376	-6097.533	2305.68
BE_{ij}	-8.10e+07	2.08e+07	-3.90	0.000	-1.22e+08	-4.03e+07
_cons	-1.32e+07	1.34e+07	-0.99	0.322	-3.94e+07	1.30e+07

Performing the Hausman test to see whether to choose the FEM or REM model, the test results show that Prob = 0.6103 is greater than 0.05, so the REM model is accepted.

Performing a heteroscedasticity test for the REM model shows that Prob = 0.0000 is less than 0.05, so the REM model has heteroscedasticity.

Checking the correlation of the REM model shows that Prob = 0.0001 is less than 0.05, so the REM model has autocorrelation.

Therefore, the author continues to implement the GLS model to overcome the phenomenon of heteroskedasticity and autocorrelation of the REM model, the estimated results are as follows:

Table 4. Estimated results according to the GLS model

Trade	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
GDP_i	4.05e-06	1.25e-06	3.23	0.001	1.59e-06	6.50e-06
GDP_j	0.0000413	0.0000219	1.88	0.060	-1.69e-06	0.0000843
$OPEN_i$	31105.99	18095.86	1.72	0.086	-4361.235	66573.22
$OPEN_j$	74055.16	18751.2	3.95	0.000	37303.49	110806.8
D_{ij}	610.213	1604.265	0.38	0.704	-2534.088	3754.514
BE_{ij}	-2.98e+08	6.04e+07	-4.94	0.000	-4.16e+08	-1.80e+08

_cons	-3407628	1.24e+07	-0.28	0.783	-2.77e+07	2.09e+07

Thus, the research results show that trade between Vietnam and RCEP countries is expressed by the following equation:

Tij = 0.00000405*GDPi + 0.0000413*GDPj + 31105.99*OPENi + 74055.16*OPENj + 610.213*Dij - 298000000*BEij -3407628

Research results show that the factors of economic scale and trade openness will positively impact trade between Vietnam and RCEP countries. Meanwhile, factors related to geographical barriers in trade have different impacts on trends. Specifically, geographical distance has a positive effect but borderlines cause negative effects on trade between Vietnam and RCEP countries.

6. Conclusion and Policy Implications

Research results show that geographical distance is not a barrier to trade between Vietnam and RCEP countries. The results of this research will change people's views on distance barriers in international trade in the current context of strong scientific and technical development and international integration. As we know, the Regional Comprehensive Economic Partnership (RCEP) is a free trade agreement (FTA) between 10 ASEAN countries and 5 partners: China, Korea, Japan, Australia and New Zealand. Zealand. Thus, most of the countries in RCEP are geographically close to Vietnam and are both in Asia, only Australia and New Zealand are on different continents and are geographically far away from Vietnam. Reality also shows that countries on the same continent have the advantage of geographical distance, but sometimes they rarely trade with each other because often countries have quite similar natural characteristics, so they have a comparative advantage quite similar. Therefore, the national product structure is relatively similar, so the need to exchange products with each other rarely occurs. The trade between these countries is mainly in technological items due to the difference in technical levels between these countries. This is also true in the case of trade between Vietnam and countries in RCEP. Vietnam mainly imports electronic components and input materials for production from developed countries in Asia such as Singapore, Thailand, Korea, and Japan, and exports to other countries. This family is quite modest. At the same time, Vietnam also does very little trade both in terms of export and import with the remaining Southeast Asian countries because the national product structure of Vietnam and these countries is quite similar, and the difference in qualifications is also quite similar, so trade with these countries does not bring much-added value to the products. Meanwhile, although Australia and New Zealand are very far away geographically from Vietnam, due to the huge difference in national product structure and large economic scale, there is a need to import. Huge agricultural products from Vietnam. These are two potential export markets of Vietnam for products such as agricultural products, seafood, coffee, cashew nuts, computers, phones, electronic products, textiles, footwear, and construction build materials...

Therefore, Vietnam's export turnover and trade volume to Australia and New Zealand occupy a dominant position in RCEP. This result partly changes old-fashioned views that geographical distance is a barrier to trade between countries. Today, as science and technology are increasingly developing, as the ability to connect international transport increases, and the resistance of ships and planes increases, geographical distance is no longer a barrier that is difficult to overcome in international trade for countries with favorable locations in international transport connections. This result holds for Vietnam's trade case in RCEP. Vietnam is a country with advantages in geographical location, a relatively developed seaport system, and a pretty good international transport connection index, so geographical distance is no longer a barrier but an advantage for Vietnam in trade with countries in RCEP. Thus, participating in the RCEP Agreement will further

strengthen Vietnam's great opportunity to access the two large markets of Australia and New Zealand. The relationship between Vietnam Australia and New Zealand is also coordinated and mutually supported in cooperation mechanisms and frameworks such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), Asia-Pacific Economic Cooperation Forum (APEC). This result implies that the Vietnamese government needs to have specific policies to take advantage of opportunities and limit challenges to promote trade with Australia and New Zealand, which must be considered two strategic partners. Vietnam's very important strategy in the South Pacific. In parallel with the Government, Vietnamese businesses should also seriously study the market characteristics of Australia and New Zealand, as well as carefully understand the commitments in the Agreements between Vietnam and these two countries. On that basis, businesses build appropriate product strategies to take advantage of international opportunities to penetrate Australia and New Zealand.

Quantitative results also show that the border effect has a negative sign, meaning that sharing a border does not bring a positive effect on Vietnam's trade in RCEP. Vietnam shares borders with three countries: Laos, Cambodia, and China, which are also three member countries of the RCEP Agreement. Among them, Laos and Cambodia have small economic scales, national products have low technology content, and the structure of agricultural products is quite similar to Vietnam, so Vietnam also has quite little trade exchange with other countries. China is Vietnam's largest trading partner, but the reality is that this is also the market where our country suffers the largest deficit with a trade deficit of up to tens of billions of USD/year and will continue to trend next year. Our country's trade deficit is larger than last year. The main reason for this situation is that China has always been a country with a cost advantage, so it has quite low product prices and the supply of inputs for production from most countries in the world, Vietnam is also not one of them. Exception. Therefore, Vietnam mainly imports machinery and input materials for production from China. Vietnam is in the process of industrialization and modernization of the economy, so the demand for equipment, machinery, and raw materials for production is still very high. Therefore, China has always been Vietnam's main import market. However, the structure of Vietnam's agricultural products is quite similar to China's, while Vietnam's product prices are still high compared to China's, so it is very difficult for Vietnam to officially export to China. This shows that, despite sharing borders with China, Laos, and Cambodia, Vietnam does not have many advantages in promoting trade with these countries. In other words, the border effect does not have a positive impact on Vietnam's trade with countries in RCEP in particular or on international trade in general. This result implies that Vietnam should have better management policies for border trade and have a strategy to exploit positional advantages in trade with common borders in RCEP.

On the contrary, empirical research results show that trade between Vietnam and RCEP countries is proportional to the economic scale of Vietnam and RCEP countries. This shows that market capacity and market supply and demand scale are important factors that positively affect Vietnam's trade with RCEP countries. This shows that participating in RCEP is a good opportunity for Vietnam to promote trade with developed countries with large economies such as Australia, New Zealand, Japan, and Korea... However, this research result also noted that Vietnam needs to have appropriate economic development policies to increase the scale of the economy and gradually reduce the economic gap with developed countries. Because when the economic gap between countries is closer, the gap in the quality of national products is also reduced. This means that the quality of Vietnamese products will be easily accepted by consumers in developed countries, thereby easily accessing the markets of demanding countries in RCEP such as Australia, New Zealand, Japan, and Korea... and taking advantage of the quality of Vietnamese products. Take advantage of the opportunities that the RCEP Agreement brings to Vietnam.

Similar to the economic scale, the trade openness of countries in RCEP as well as that of Vietnam both have a positive impact on trade between Vietnam and RCEP countries. This is completely understandable because a country's trade openness is associated with the level of trade barriers eliminated in each country. When a country has high trade openness, it shows that the country tends to open the free trade market, cut high tariffs, and eliminate unnecessary technical barriers... Therefore, import and export with these markets are quite favorable. RCEP members have reached high-level rules on trade facilitation customs procedures, inspection and quarantine, and technical standards. Once these regulations come into force, the agreement will significantly reduce regional trade costs, increase the competitiveness of regional products, and unlock further trade demand, thereby bringing in more business opportunities for businesses and more choices and benefits for customers./.

References

Disdier, A. C., & Head, K. (2008). The puzzling persistence of the distance effect on bilateral trade. The Review of Economics and statistics, 90(1), 37-48.

Wei, S. J. (1996). Intra-national versus international trade: how stubborn are nations in global integration?.

Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. American economic review, 93(1), 170-192.

Coughlin, C. C., & Novy, D. (2013). Is the international border effect larger than the domestic border effect? Evidence from US trade. CESifo Economic Studies, 59(2), 249-276.

Tinbergen, J. (1962). Shaping the world economy; suggestions for an international economic policy.

Anderson, J. E. (2016). The gravity model of economic interaction. Boston college and NBER, 3, 391-7.

Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. American economic review, 93(1), 170-192.

Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. American economic review, 93(1), 170-192.

Magerman, G., Studnicka, Z. & Van Hove, J. (2016). Distance and Border Effects in International Trade: A Comparison of Estimation Methods. Economics, 10(1), 20160018. https://doi.org/10.5018/economics-ejournal.ja.2016-18

Bergstrand, J. H., Larch, M., & Yotov, Y. V. (2015). Economic integration agreements, border effects, and distance elasticities in the gravity equation. European Economic Review, 78, 307-327.

Franco-Bedoya, S., & Frohm, E. (2022). Reduced 'border effects', free trade agreements and international trade. The World Economy, 45(4), 1112-1139.

Daumal, M., & Zignago, S. (2010). Measure and determinants of border effects of Brazilian states. Papers in Regional Science, 89(4), 735-758.

Giuliano, P., Spilimbergo, A., & Tonon, G. (2014). Genetic distance, transportation costs, and trade. Journal of Economic Geography, 14(1), 179-198.

Borchert, I., & Yotov, Y. V. (2017). Distance, globalization, and international trade. Economics letters, 153, 32-38.

Egger, P. (2008). On the role of distance for bilateral trade. World Economy, 31(5), 653-662.

Salas-Olmedo, M. H., García-Alonso, P., & Gutiérrez, J. (2016). Distance deterrence, trade barriers and accessibility. An analysis of market potential in the European Union. European Journal of Transport and Infrastructure Research, 16(2).

Giuliano, P., Spilimbergo, A., & Tonon, G. (2014). Genetic distance, transportation costs, and trade. Journal of Economic Geography, 14(1), 179-198.

Result from stata 14 sofware

Result from stata 14 sofware

Result from stata 14 sofware

Result from stata 14 sofware