

FACTORS AFFECT EXPORTING OF VIETNAM'S FISHERY TO US AND EUROPE MARKET. REALITIES AND SOLUTIONS

Ngan Thi Pham – Tu Thanh Nguyen – Phung Phi Tran Thi

Abstract

The article employs gravity model to identify and assess the effects of the factors impact on exporting revenue of Viet Nam Seafood to European and American markets. The data consists of 26 national board of the American and European countries were analyzed using econometric methods: Fixed Effect and Random Effect. The results show that seafood exported from Vietnam to these markets can be affected by different elements such as GDP of importing nations; GDP of exporting countries, the population of the countries; exchange rate and geographical distances. Of which GDP of importing countries and exporting countries, the population and exchange rate have a correlation with exports while geographical distances have counter effects on exports. Otherwise, seafood import duty of these countries ultimately not affect exports of seafood from Vietnam to US and Europe. Based on the research findings, the article suggests solutions to develop and expand Vietnam seafood export to these potential markets.

Keywords: Exporting seafood, Gravity model, Viet Nam Fishery, EU market - The US market.

JEL Classification: F10, F16

INTRODUCTION

Fisheries are not only one of the prospective sectors but also a high of important export items of Vietnam, and the largest consuming market related to European and American. Along with the constant of integration, boosting seafood exports of Vietnam to this market will bring high value and as a result, the investment in this segment should be highly stressed on investment in the current period and the next stage.

Before the trade context of Vietnam is on track to transition to deeper integration, in particular for the seafood export markets of Vietnam is focusing on European and American markets. The study evaluated the factors affecting the fisheries export turnover of Vietnam to this

potential market is a current urgent task not only for researchers but also is practical significance for the commercial policy makers of the Vietnam.

The objective of the article to clarify the following issues: (i) Analysis of the factors impact on seafood exports from Vietnam to the American and European markets; (ii) Import taxes have an impact on how the value growth of Vietnam seafood. From the research results, Posts give some recommendations to commercial policy makers of Viet Nam so as to adjust in the coming period.

1 LITERATURE REVIEW

Based on classical economic theories shows that the population of the country reflects the consumption of a particular commodity as the population increases, the demand for a higher product. This motivates countries to import more goods from the export countries. Hence, Population could also promote national impact export more goods. Meanwhile, the theory of comparative advantage given the currency back to that the fluctuation of the exchange rate also affect exporting nations. The domestic currency devaluation will cause the currency declined versus hard foreign currency. Therefore, countries export more will get more amount of foreign currency, thereby stimulating the growth of imports. The import duties are also seen as a trade barrier. This may impact on export activities of the exporting countries.

In physics, Newton's law of gravity, the gravitational force between two objects is proportional to the mass and inversely proportional to the square of their distance. Gravity equation is expressed as follows: $F_{ij} = G \frac{M_i M_j}{D_{ij}^2}$

Where: F_{ij} is gravity; M_i and M_j is the mass of objects; D_{ij} is the distance between two objects; G is the gravitational constant. The application of this equation to explain many different phenomena have been proven in practice by Bergstrand (1985).

There are many models to study the factors that impact on exports of a country area; model Gravity is one of the models are widely used in the study of the factors affecting turnover trade between the export markets and import markets. Tinbergen (1962) was the first to apply this model to analyze trade flows as follows:

$$T_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3}$$

In which, market: the export of country i to country j ; Y_i : GDP of countries i ; Y_j : j country's GDP; D_{ij} : distance between countries i and j .

Gravity model of trade expansion:

$$T_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} A_{ij}^{\alpha_4} u_{ij}$$

With T_{ij} : total exports revenue of nation i into the country j ; Y_i and Y_j are GDP of countries i and country j respectively; A_{ij} illustrates that the factors that could affect bilateral trade, D_{ij} seems the distance between two markets and u_{ij} is random elements, dependent variable is the flow of trade between the countries A and B , GDP and geography gap is independent. Research results show that trade flows as opposed to distance, GDP turned positive impact on the trade flow between the two countries; the study results also indicate national economic scale greater economic and closer distances tend to trade together than in other countries.

After Tinbergen had many applications hesitated attractive model to study the issues related to enhancing export turnover. Bergstrand (1985) made a significant contribution in proving the important theoretical basis of using this model in economic research. Deadorff (1995) found the theoretical foundation of the gravity model of trade was the main content of the theory of international trade of Hechscher - Ohlin. Helpman (1998) for the gravity model of commerce that would be appropriate in a study of intra-industry trade and would be useful means to determine the factors that affect the trade turnover between the countries. M.Faruk Aydin (2004), R.Rustam (2009), Tran Trung Hieu (2010) proved the exchange rate has an impact on exports. Helga Kristjansdottir study (2005) also concluded similar, Iceland's exports was affected by GDP, population and geographical distance of the countries compared to Iceland. Research by Mohamed A. Elshehawy (2014) indicated that exports of Egypt affected by the following factors: GDP of the exporting country, the GDP of the importing country, the population of the country, while the distance geographical no impact.

In Viet Nam, there also had many applications author gravity models of trade in their studies. Thai Tri Do (2006) said two-way trade between Vietnam and the EU 23 European countries affected by the scale economy, market size and the fluctuations of foreign currency exchange rate while the impact of geographical distance factor is not clear. Tran Trung Hieu (2010) also let out a somewhat identical result.

Apparently, trade turnover between the countries depends on the size of the economy, market size, the fluctuations of foreign currency exchange rate along with geographical factors have many different conclusions in different experimental studies. The application of gravity model to research the factors affecting seafood export turnover in Vietnam is still blank in the study. This article applies the gravity model to examine the factors impact on fishery export turnover of Vietnam to the European and American markets. This model has inherited the results of previous commercial studies in other sectors, such as using either Importer's GDP or Exporter's GDP, the population of 26 countries, exchange rate and geographical distance. Additionally, this study assumes the import duty fishery duties of European and American

countries has an impact on seafood exports from Vietnam into the European and American markets. To reduce the amplitude of volatility, the article uses quantitative models as the Log below:

$$\ln(\text{Export}_{ijt}) = \beta_0 + \beta_1 \ln(\text{GDP}_{it}) + \beta_2 (\text{GDP}_{jt}) + \beta_3 \ln(\text{Pop}_t) + \beta_4 \ln(\text{Exrate}_t) + \beta_5 \ln(\text{Taft}_i) + \beta_6 (\text{Distance}) + e_{ijt}$$

In which $j=1,2,\dots,26$; $i=1$ (VietNam). $t=2006, 2007, \dots, 2015$; Export_{ijt} : shows the export turnover of Vietnam's fishery into country j in year t . GDP_{it} means gross domestic product of Vietnam in the year t . GDP_{jt} indicates gross domestic product of countries j in the year t . Pop_t mentions the inhabitants of countries j in the year t . ExRate_t is the exchange rate of Vietnam compares with nation j in year t (compared with the U.S. dollar); Taft is the import fishery duties of nations j in year t ; Distance considers how far from Vietnam to that country j . Software Eview 8.0 is used so as to estimate the impact of these factor impact on fishery's export turnover of Vietnam.

2 METHODS AND DATA

The variables are described in Table 1. The data were collected from various sources including the Gross Domestic Product (GDP). Population (Pop) was received from the data source of the World Bank (World Bank). The exchange rate was taken from the World Monetary Fund (IMF). The Seafood export turnover of Vietnam into the other nations obtained from sources of the World Trade Centre (ITC). Import duties was taken from the report of the WTO over the years. The geographical distance was taken from the database of Distancefromto.

This study uses panel data set with 270 observations of 26 countries among Europe; America and Vietnam during the period from 2006 to 2015.

Tab. 1: Data sources

Variable names	Describe variable	Data source
Export_{ijt}	Export turnover of Vietnam Seafood and nations i in the year t	ITC
GDP_{it}	Gross Domestic Product of Vietnam in year t	The World Bank
GDP_{jt}	Gross Domestic Product of other countries j in year t	The World Bank
Pop_t	The population of countries in the year t	The World Bank
ExRate_t	Exchange rate of Vietnam compares with other countries j in year t	IMF
Taft	Seafood Imports Duties of Nations j in year t	WTO
Distance	Distance from Vietnam to that country i	Distancefromto

The above data can implement regression by three ways: Original Least Square (OLS), fixed effects (FEM) and random effects (FEM). However, the application of gravity models to

actual data need no mandatory regulations to use anyway to have the most efficient results of regression. According to Verbeek (2004), some statistical tests including F-test and Hausman test are used to find the most useful estimate for the data above. Additionally, the Durbin-Watson test is used to determine the phenomenon of autocorrelation in the model or not.

Likelihood accreditation is used to choose between OLS method and fixed effects FEM, with the assumption: H0: Pooled OLS model is appropriate. H1: Fixed effects model is appropriate. If $\alpha > p$ -value allows conclusions H0 hypothesis is rejected. Then we conclude FEM is more suitable than OLS. Conversely, OLS fit for the model if the assumption H0 is accepted.

Hausman accreditation is used to select the appropriate method for estimating the two methods among the fixed effects (FEM) and random effects (REM).

Hypothesis H0: There is no correlation between the explanatory variables and random components (Select REM). Hypothesis H1: There is a correlation between the explanatory variables and random components (select FEM). If $\alpha > p$ -value allows conclusions H0 hypothesis is rejected, then we conclude FEM is appropriate. In contrast, REM is suitable for H0 models if the hypothesis is accepted.

3 EMPIRICAL RESULTS.

Tab. 2: The summary of the results

Variable	OLS		FEM		REM	
	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob
C	-10.418	0.015	-98.81	0.007	-9.707	0.003
Log(Gdp)	0.513	0.000	0.211	0.294	0.344	0.039
Log(Gdp_vn)	0.319	0.050	0.201	0.102	0.386	0.001
Log(Pop)	0.593	0.000	5.94	0.009	0.754	0.001
Log(Exrate)	0.017	0.664	0.200	0.001	0.147	0.004
Log(Taf)	0.068	0.003	0.011	0.553	0.016	0.369
Log(Distance)	-0.476	0.000	0.774	0.691	-0.541	0.000
R2	0.820		0.951		0.415	
F-statistic	200.4		139.7		31.11	
Prob	0.00		0.00		0.00	
Durbin-Watson stat	0.82		0.95		1.85	

Source: computational authors from research data

The results show among OLS, FEM and REM (p-value of F-statistic < 0.05). Hence, we have to check and choose the estimate appropriate model.

Tab. 3: The result of Likelihood Test

Effects Test	Statistic	D.f.	Prob.
Cross-section F	23.472261	(27,236)	0.0000
Cross-section Chi-square	352.18130	27	0.0000

Source: computational authors from research data

With 95 percent reliability, we can see $p = 0,000 < 0,05$. It means H_0 hypothesis is rejected. Therefore more suitable to use FEM than Pooled OLS.

Tab. 4: The result of Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	11.665400	6	0.0699	
Variable	Fixed	Random	Var(Diff.)	Prob.
Log(gdp)	0.211413	0.344961	0.012569	0.2336
Log(gdp_vn)	0.201597	0.386394	0.006113	0.0181
Log(pop)	5.940292	0.754286	3.093714	0.0032
Log(exrate)	0.200526	0.147266	0.001132	0.1135
Log(taf)	0.011638	0.016479	0.000048	0.4862
Log(distance)	0.774564	-0.541385	3.775977	0.4983

Source: computational authors from research data

Test results show that $P\text{-value} = 0.0699 > 0.05$. Reject H_0 , so there is no correlation between the explanatory variables and random components. So REM is suitable for analyzing the gravity model of trade.

Tab. 5: Estimate by Random Effect Method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.707030	3.245957	-2.990499	0.003
Log(Gdp)	0.344961	0.166978	2.065914	0.039
Log(Gdp_vn)	0.386394	0.094733	4.078784	0.001
Log(Pop)	0.754286	0.191398	3.940920	0.001
Log(Exrate)	0.147266	0.051428	2.863556	0.004
Log(Taf)	0.016479	0.018340	0.898523	0.369
Log(Distance)	-0.541385	0.117155	-4.621088	0.000
R-squared	0.415158	Mean dependent var	3.168306	
Adjusted R-squared	0.401816	S.D. dependent var	0.717448	
S.E. of regression	0.517834	Sum squared resid	70.52386	
F-statistic	31.11567	Durbin-Watson stat	1.854140	
Prob(F-statistic)	0.000000			

Source: computational authors from research data

Overall, REM regression results show that the factors impact on fishery's export turnover between Vietnam and the US - European countries were: GDP of the importer (GDP), the GDP of Vietnam (GDP_VN); Population (POP), exchange rates (Exrate); Geographical distance (Distance). The test values respectively $p\text{-value} = 0.039$ (GDP); $p\text{-value} = 0.0001$

(GDP_VN); p-value = 0.001 (POP); p-value = 0.004 (Exrate); p-value = 0.0000 (Distance).

With a significance level of 5%, the value of this test are statistically significant.

GDP of importing countries GDP tends to impact positively on export turnover of Vietnam Seafood Assuming that other factors is constant, the GDP of the countries increase by 1% leads to the aquatic turnover increase by 0.344%; Vietnam's GDP impact on seafood exports by positive tendency. Meanwhile, The Vietnam's GDP increased by 1% lead to the turnover of exporting fishery into the European and American countries increase by 0.386%. Other factors consist of Population (POP), exchange rates (Exrate) lead Fishery's export turnover increased 0.754%; 0.147% respectively. Conversely, Geographical distance has negatively impact on exporting make turnovers decrease by 0.54%. Moreover, The estimation results also show that seafood import duty does not have an impact on aquatic export turnover. Because p-value = 0.369 > 0.05 no statistically significant with a 95% confidence level.

The coefficient of determination has $R^2 = 0.415$. This suggests that the independent variables explained 41.5% of the variation of export turnover of Vietnam fishery into the European and American markets. The value of Durbin - Watson coefficient, $d = 1.85$ in the range [1,3]. Therefore, there is no autocorrelation of the string variables in the model. Also the worth of F-statistic = 31.11 with p-value 0.000 < 0.05. Since then, we conclude that the estimated model perfectly suited for REM analysis.

Obviously, we can see that the export of Vietnam seafood to the European and American markets is affected by the GDP of importing country, GDP of Viet Nam, population, exchange rate and geographical distance.

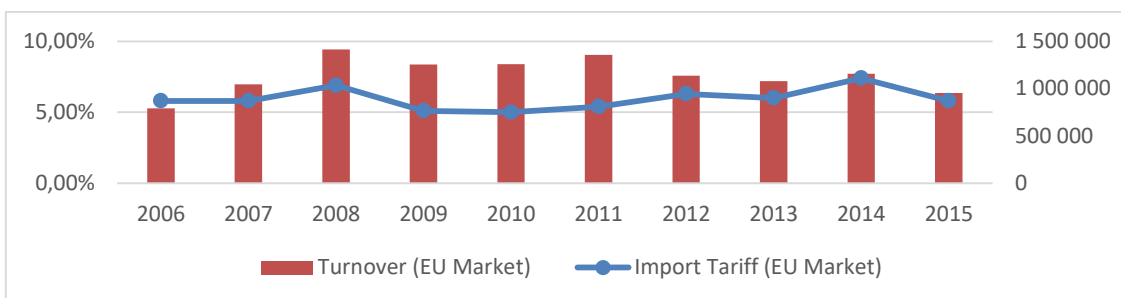
The size of the economy is expanding, large GDP growth will tend to promote seafood export. This relationship can be explained as the impact from the supply curve shifts in the market (if we consider the world market is one common - market). If Vietnam can increase production, it seems that export capacity is also growing abroad. According to the results of the model estimates, the GDP of seafood importing countries grew by 1% would lead to an increase in 0.344% in the fishery export turnover. Vietnam's GDP increased by 1%; the turnover rises 0.386%. Estimated results explain the positive impact of increased GDP of trading partners - the importing country (country j) for seafood exported from Vietnam. These characteristics and comparative advantage of abundant labor resources, coastline. Vietnam has favorable conditions for aquaculture and fishing are high quality and competitive prices. This also explains why the demand of developing countries while increasing the country's GDP surged. Research by Tinbergen (1962), the Jewish Prophet (2006) also let out a similar result.

According to the theory of macroeconomics, the population growth makes the market size increase lead to the demand increase. According to the estimation results show that, while the population increased by 1% that make seafood exports increase by 0.754%. Clearly, with the positive impact of population, some countries have dense populations often have the higher demand for seafood. Thus, gravitational interaction force will make these nations meet the needs of the market. Mohamed A. Elshehawy Research (2014) and Celine Carrere (2003) also let out the similar results. The exchange rate tends to impact the same way for seafood exports. According to the estimated results, the rate increased by 1%, the seafood exports increased 0.147%. When the exchange rate of this increase, that can bring benefit to exporters because the amount of foreign currency on the domestic currency convert into much more thus stimulating exports. Conversely, when the exchange rate fails, the currency rises, the amount of foreign exchange earned from exports will drop. Revenue from exports to the domestic currency calculation shrink, exports are not recommended. Study of Thai Tri Do (2006), Tran Trung Hieu (2010) also impact results in the same direction.

Geographical distance has the opposite effect on the seafood export turnover. The estimation results show that, when the gap between Vietnam and importing countries increase by 1%, the seafood export turnover of Vietnam in these countries fall by 0.541%. Geographical distance becomes a factor hindering trade. This is easy to understand the geographic range synonymous with increasing the cost of exports spend more on transport, fisheries preservation. Waheed Akram Butt's study (2003), Helga Kristjansdottir (2005) also produced similar results. In this study, the variable of seafood import duties of European and American countries include in the analysis. Nevertheless, import duties have no effect on export turnover of Vietnam seafood in these countries. Demonstrating this phenomenon as follows:

Most countries import seafood from Vietnam are the countries of the European Union. Which apply a tariff rate:

Fig. 1: Import Tariff and Seafood turnover exported from Viet Nam into the EU



Source: UN Comtrade

First of all, the turnover from 2006 to 2008 went up, and the import tariff of fishery went up. From 2011 to 2013 this figures of turnover had no significant changes, the import tax increase strongly. Meanwhile, the period of 2011 and 2013, the turnover went down, but the import duty also raised. This shows that the duty import fisheries of the EU had no apparent impact. Secondly, the main importer of fishing products of Vietnam is the United States. In the period of 2007 and 2009, The import tariff of the fishery was strong fluctuated, but the turnover had no significant change. From 2010 to 2013, the import duty went up slightly, but turnover increased sharply. Meanwhile, from 2014 to 2015 the import tariff increased strongly, but the turnover went down slightly. Finally, Vietnam joined the World Trade Organization - WTO on 11/1/2007. WTO membership had reduced the impact of tariff barriers to trade in Vietnam in general and in particular seafood exports. So the period 2006 - 2015, this is a substantial basis to explain why fisheries import duty does not affect exports of seafood from Vietnam.

4 CONCLUSIONS

This study review and analysis the factors affecting the exports of Vietnam by an application of the gravity model. Economic techniques and analysis of quantitative data in the table of 26 countries in Europe and America and Vietnam during the period from 2006 - 2015. The GDP Growth of Vietnam and other countries have a positive impact on the seafood export turnover of Vietnam to the US and European countries. Similarly, population and exchange rates have a positive impact on exports. Geographical distance factors have adverse effects on aquatic export turnover. However, the impact of import duties of European and American countries have no apparent effect in this study.

Suggestions

Firstly, Adjust the structure of export markets; maximize trading in the potential market. Besides the improvement in production capacity, the government should make the most efficient exporter for the most potential market. Therefore, the selection of the primary markets is critical and requires in-depth analysis and thorough. Factors for determining target markets for Vietnam seafood exports were: Level of economic growth of a country, the size of the market. Quantitative analysis shows that a country with strong economic growth is an attractive market for seafood exports. Countries with bigger GDP spending level of the people is increasing. So the EU market and America is a very attractive market for seafood exports from Vietnam. However, the considerations of geographical distance are a very vital factor in the promotion of trade.

Secondly, Develop relationships domestically and internationally through trade promotion activities, expanding cooperation wide with organizations and individuals in the country and internationally through organizing and participating in workshops, projects, and forums. There must have a connection between Vietnam enterprises with non-governmental organizations and international non-profit. The introduction of activities and projects in the field of fisheries for partners and international customers is improved to attract attention and investment cooperation in Vietnam. Release the documents, books, magazines to promote seafood products of Vietnam to the world. It is necessary to find out grasp and tastes of the market to provide information on consumer trends and forecast prices for businesses.

Thirdly, Use an effective rate policy combined with other systems. The government can influence the exchange rate by lowering the rate of exchange to make the reduction, which facilitates exports. That may impact the tax rate by reducing the surface exports, or subsidies, makes export costs lowered thereby reducing the cost of creating favorable conditions for competing with manufacturers of the same type found in other countries. However, it should apply the exchange rate policy in a flexible manner based on the economic situation as well as the economic development goals of each stage.

Finally, Promote the conclusion of bilateral trade agreements and the current multi-channel. Viet Nam has signed free trade agreements (FTA) with Chile - a single American country. So to remove trade barriers and facilitate general and exports in particular fisheries, Vietnam should accelerate the process of negotiating bilateral and multilateral for European and American countries, especially the EU.

However, This study is still limited. The analysis on a large market of 26 countries in Europe and the US will not reflect the impact of culture, politics from these countries. On the other hand, the coefficient $R^2 = 0.415$ low means missing some of the variables in the research model; this will be the direction for the next study.

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Contact

First and last name of author: Ngan Pham Thi
Institution: Ton Duc Thang University
Mail: phamthingan@tdt.edu.vn

First and last name of co-author: Tu Nguyen Thanh
Institution: Ton Duc Thang University
Mail: 71206172@student.tdt.edu.vn

First and last name of co-author: Phung Tran Thi Phi (Correspondent)
Institution: Ton Duc Thang University
Mail: tranthiphiphung@tdt.edu.vn