



The Impact Of The Iuu Yellow Card On Vietnam's Tuna Exports To The Eu Market

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Abstract

Research purpose:

This research aims to examine the impact of the IUU (Illegal, Unreported, and Unregulated) yellow card issued by the European Union on Vietnam's tuna exports to the EU market.

Research motivation:

The motivation behind this study stems from the significant economic implications of the IUU yellow card for Vietnam, a major exporter of tuna. With the EU being a crucial market for Vietnamese seafood, understanding the consequences of the yellow card on tuna exports is essential for assessing the economic impact on exporters and the industry's adaptability. This insight is vital for policymakers and industry stakeholders aiming to address compliance issues and restore market access.

Research design, approach and method:

This study utilizes the gravity model of to examine the fluctuations in the export value of tuna, swordfish, sharks, and rays amidst the context of the European Commission's (EC) issuance of the IUU yellow card warning to Vietnam's seafood sector.

Main findings:

The research demonstrates the overwhelming negative impact of COVID-19, which outweighed the expected benefits of the EU-Vietnam Free Trade Agreement (EVFTA) on Vietnam's exports. Simultaneously, the yellow card warning from the EC against Vietnam's seafood industry has had a strong negative impact on the export of tuna, swordfish, sharks, and rays to the EU (27), highlighting the urgent need to remove the IUU yellow card for Vietnam's seafood industry.

Practical/managerial implications:

Policy makers and industry leaders in Vietnam should make efforts to lift the IUU yellow card to minimize its negative impact on trade and restore market access. To achieve this, it is essential to strengthen compliance with IUU regulations, improve monitoring and control systems, and enhance transparency in fishing practices.

Keywords: IUU, yellow card, tuna, Vietnam, EU

1. INTRODUCTION

The European Union (EU) has emerged as a global leader in the fight against illegal, unreported, and unregulated fishing (IUU), posing a considerable threat to the sustainability of marine ecosystems and the global fish populations. As part of its comprehensive strategy to combat IUU fishing, the EU has implemented a system of cards (yellow card, red card) to countries that are identified as having inadequate measures to address IUU fishing practices (European Commission, 2017). These cards serve as formal warnings to nations and can escalate to trade sanctions, including the prohibition of seafood exports to the EU, if the countries do not undertake necessary reforms and demonstrate compliance with international fishing standards.

In October 2017, Vietnam received a yellow card warning from the EU, marking a critical point in the country's seafood trade relations with the EU. This decision was driven by concerns over Vietnam's management of its fishing industry and

its regulatory framework for ensuring that its seafood products, including tuna, meet the stringent sustainability criteria imposed by the EU (European Commission, 2017). After five years of being under the yellow card, the share of seafood exports to the EU market fell to 9.4% in 2022 (VASEP, 2023). If the yellow card were to be upgraded to a red card, the potential export losses specifically to the EU could reach up to \$518 million. The seafood extraction and processing industry could experience a reduction of at least 30% compared to its current capacity (Pham Thi Thanh Binh, Vu Nhat Quang, 2024).

The tuna industry plays a vital role in Vietnam's economy, contributing significantly to both national growth and employment. Vietnam, a major exporter of tuna to the EU, faced potential disruptions to its key export markets and increased scrutiny over its seafood export practices (WTO, 2020). The implications of the IUU yellow card are profound, affecting not only trade dynamics but also the livelihoods of thousands of individuals who depend on this industry. The issuance of the yellow card has forced Vietnam to address the deficiencies in its fishing practices and to implement measures to align with international standards, including enhancements in monitoring, control, and surveillance systems.

This study aims to examine the impact of the IUU yellow card on Vietnam's tuna exports to the EU market, analyzing both the immediate impacts and long-term effects on trade patterns, regulatory practices, and industry practices. By evaluating the regulatory challenges faced by Vietnam and the measures taken to address these challenges, this study contributes to helping Vietnam's seafood industry in general and the tuna sector in particular to overcome the challenges and enhance awareness of the importance of resolving the IUU yellow card issue.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The EU is strongly committed to sustainable development, prioritizing environmental protection, social responsibility, and economic growth. As a result, EU is a market with a stringent system of non-tariff barriers and strict regulations on imported products. The impact of these regulations significantly affects Vietnam's export activities. Therefore, studying the EU's non-tariff barriers and their effects on Vietnam's exports is essential, especially in the context of the implementation of the Vietnam-EU Free Trade Agreement (EVFTA). Many scholars have focused on this issue, such as Kieu (2002); Van (2019); Linh and Thien (2013); Chi (2004); and Tung (2008). These authors have analyzed the characteristics of the EU market and the non-tariff barrier system that the EU applies. They have shown that the EU is a vast and highly demanding market for foreign goods seeking to enter, as it employs numerous measures to limit the entry of foreign goods, particularly non-tariff measures. These measures are sophisticated and stringent, especially for goods from developing countries, including Vietnam. Products imported into this market must overcome a variety of non-tariff barriers such as quotas, sanitary and phytosanitary standards (SPS), technical standards (TBT), as well as regulations on labor safety and environmental protection. Among these, IUU (Illegal, Unreported, and Unregulated fishing) is one of the most stringent technical measures applied by the EU.

Illegal, unreported, and unregulated (IUU) fishing, addressed by the UN Food and Agricultural Organization (FAO) in its International Plan of Action to combat IUU fishing, includes various practices that violate national, regional, and international laws. This encompasses activities such as failing to report, inaccurately reporting, or underreporting fishing operations and their catches; fishing by vessels without a nationality; conducting fishing in areas governed by Regional Fisheries Management Organizations (RFMOs) by vessels not affiliated with those organizations; and engaging in fishing practices that are unregulated by any state and difficult to monitor or track.

On December 9, 2016, the U.S. National Oceanic and Atmospheric Administration (NOAA) issued the final rule to establish the Seafood Import Monitoring Program (SIMP). The program applies to certain imported seafood species and requires necessary reporting and record-keeping to prevent the importation of seafood into the United States that is illegally caught, unreported, and unregulated (IUU) and/or falsely labeled (NOAA, 2016).

The EU Regulation on the Prevention and Elimination of IUU Fishing has been effective since January 1, 2010. This regulation applies to all port calls and transshipments involving EU and non-EU fishing vessels at EU ports, as well as all seafood product transactions to and from the EU. Its primary objective is to prevent illegally caught seafood from entering the EU market (European Commission, 2017).

Since the EU's illegal fishing regulation was implemented in 2010, several countries have received a "yellow card" warning for not enhancing their fisheries management. Many of these nations implemented substantial reforms and were eventually removed from the yellow card list. However, other countries did not comply and were later penalized with a red card, accompanied by sanctions (European Commission, 2018). During the period from 2012 to 2020, the EU identified IUU fishing practices in 26 exporting countries. Among these, 7 countries were penalized, and 3 of the 6 countries facing red cards, including Sri Lanka, Belize, and Guinea, may potentially have their red cards withdrawn (iuuwatch.eu, 2020).

Thailand was issued a yellow card warning in 2015 but had it revoked by the EU after almost four years of efforts to improve the situation (Garnchanok et al., 2021). The "yellow card" had a negative impact on the seafood industry, both in terms of revenue and reputation. Thailand's seafood exports to the EU have continuously declined, particularly in the export of canned and processed products to this market (Garnchanok et al, 2021; Sakda Thanitcul, 2019). In 2012, the

European Commission issued a yellow card to Sri Lanka for failing to fulfill its international responsibilities as a flag state in the fight against IUU fishing. According to various analyses (Mundy, 2019; Sandaruwan et al., 2018; and others), the EU's seafood trade ban had a severe impact on Sri Lanka's economy.

On October 23, 2017, the EU officially issued a yellow card to Vietnamese seafood exports to this market due to insufficient efforts to meet regulations against illegal, unreported, and unregulated (IUU) fishing. Simultaneously, the EU provided 9 recommendations that Vietnam has to address in order to be evaluated for the removal of the yellow card (European Commission, 2017). Although the Vietnamese government has made efforts to implement measures to address the yellow card, as of now, Vietnam has not yet succeeded in lifting the IUU yellow card warning (Phuong et al, 2022).

The prolonged issuance of the yellow card has led to a continuous decline in Vietnam's seafood exports to the EU market (Phuong et al, 2022). Within just two years of being affected by the yellow card, seafood export value to the EU dropped by 12%, equivalent to \$183.5 million in 2019 (General Statistics Office, 2020). The downward trend worsened further in 2020, as the combined impact of the COVID-19 pandemic and the yellow card led to an additional 5.7% decrease in seafood exports to the EU compared to 2019, reaching only \$959 million. By 2022, the EU had fallen from the 2nd to the 4th position among Vietnam's seafood export markets, behind the United States, Japan, and China (General Statistics Office, 2023).

Immediately after Vietnam received the yellow card, nearly 100% of the goods were halted at EU customs for inspection, resulting in significant additional costs, delays in delivery, and a reduction in export volume to the EU by 20-30% (Pham Thi Thanh Binh, Vu Nhat Quang, 2024). Certain specialized products for the EU market also faced significant difficulties when attempting to shift to other markets. Furthermore, as other markets became aware of Vietnam's difficulties with the EU, they began to exploit the situation to drive down prices, demonstrating the extensive cascading impact of the yellow card (Pham Thi Thanh Binh, Vu Nhat Quang, 2024). Vietnam's exports of canned tuna to the EU have declined due to the impact of the IUU yellow card. In the first eight months of 2019, imports of canned tuna from Vietnam by EU countries totaled over \$21 million, a decrease of nearly 12% compared to the same period in 2018 (WTO, 2020).

Over the seven years under the yellow card warning, Vietnam has made significant efforts to implement the European Commission's (EC) recommendations, particularly in improving the legal framework for fisheries, monitoring the fishing fleet, and ensuring traceability of seafood products (WTO, 2024). These improvements have been acknowledged by the EC through multiple inspections. In response, the Government, the Prime Minister, and the Ministry of Agriculture and Rural Development (MARD) have issued numerous legal documents to combat IUU fishing over the past seven years. These include amending the 2017 Fisheries Law and a series of regulations to combat illegal, unreported, and unregulated (IUU) fishing. Notable actions include Directive No. 45/CT-TTG dated December 13, 2017, on urgent tasks and solutions to address the EC's warnings on combating IUU fishing, and Resolution No. 89/NQ-CP dated July 6, 2018, on joining the Port State Measures Agreement to prevent, deter, and eliminate illegal, unreported, and unregulated fishing. However, the remaining challenge is believed to lie in local-level implementation. On several occasions, the EC inspection teams have acknowledged improvements at the central level and that the enacted policies reflect the central leadership's political commitment (WTO, 2024).

3. METHODOLOGY

The gravity model of trade was developed based on Newton's law of universal gravitation, published in 1667, to analyze factors affecting international trade flow fluctuations. Numerous empirical studies utilizing this model affirm its basis in the law of universal gravitation, wherein the scale of bilateral trade is explained by the size of economies (GDP or GNP) and the geographical distance between countries. This model was first applied in studies evaluating bilateral trade between European countries by Tinbergen (1962) and Poyhonen (1963) with the following form:

$$T_{ijt} = K_0 \frac{M_i^{\beta_1} \times M_{jt}^{\beta_2}}{D_{ij}^{\beta_3}} e_{ijt} \quad (1)$$

Where T_{ijt} is the bilateral trade flow; M_i and M_{jt} are the sizes of the two countries' economies; D_{ij} is the distance between them during period t ; K_0 is an unknown constant; and e_{ijt} is the random error term. Many studies have proven that GDP serves as a proxy for economic size—if a country's economy is large, its export capacity and potential are also greater. However, research by Disdier & Marette (2010) and Feenstra (2004) demonstrated that GDP is less relevant to trade flows compared to other macroeconomic factors. Thus, in line with the recent trend in trade gravity models (Burger et al. 2009), this study excludes GDP from the model. Furthermore, Frankel (1997), Helpman, and Krugman (1985) showed that bilateral trade is influenced by many factors beyond those previously mentioned. Bilateral population dynamics also explain the advantage of economies of scale (Linnemman 1963), while additional variables such as borders, proximity to the sea, trade agreements, and tariff and non-tariff measures are used to extend the model.

This study employs a gravity model with balanced panel data to examine the factors influencing Vietnam's annual exports

of tuna, swordfish, sharks, and other shark species to the EU (27) market (excluding the UK) from 2008 to 2022, with data collected from UN Comtrade. With more data, panel estimation is more likely to avoid multicollinearity, detect, and better measure the impacts that cannot be observed in purely time-series or cross-sectional data (Baltagi 2003). The gravity model used in this study is expanded to incorporate exchange rates, non-tariff measures, and specifically consider export fluctuations amid the EC's IUU “yellow card” warning for Vietnam's seafood products, alongside the official implementation of the EVFTA and the COVID-19 outbreak. Vietnam's export data for tuna, swordfish, sharks, and other shark species to the EU (27) include many instances of zero values, which would bias the results if estimated using the traditional log-linear OLS regression method by ignoring the zero values. To overcome this issue, this study uses the Poisson Pseudo Maximum Likelihood (PPML) method to identify factors influencing the likelihood of exporting Vietnam's key seafood products to the EU (27) market, particularly the impact of the IUU dummy variable regarding the presence of the “yellow card” warning on Vietnam's seafood from 2017. This method has been shown to outperform traditional OLS in dealing with data characterized by heteroskedasticity and zero trade flows (Fally 2015). Additionally, PPML regression with panel data addresses the bias in regression coefficients from country heterogeneity (Westerlund & Wilhelmsson 2011). The PPML estimates also allow for fixed effects to control for unobserved country-specific factors affecting trade (Head & Mayer 2014). Therefore, applying the PPML estimation method by Santos Silva & Tenreiro (2006), the gravity model's estimation equation is as follows:

$$\exp_{ijt} = \exp[\beta_0 + \beta_1 \ln(POP_i) + \beta_2 \ln(POP_{jt}) + \beta_3 \ln(DIST_{ij}) + \beta_4 \ln(EXR_{ijt}) + \beta_5 \ln(REER_{jt}) + \beta_6 \ln(NTM_i)] + \epsilon_{ijt} \quad (2)$$

Where:

i=1: Vietnam

j=1,...,27: EU-27 member countries

ϵ_{ijt} : Random error

Table 1: Main Exported Tuna, Swordfish, Sharks, and Other Shark Species Products (HS6)

Species	Product Form	HS6 Code
Tuna, Swordfish, Sharks	Processed or preserved	160414
	Fresh, chilled, or frozen	030342; 030349; 030361; 030357; 030375; 030381; 030487; 030421; 030484

Table 2: Description and Measurement of Variables in the Model

Variable Name	Description	Unit	Source
Dependent variable			
$\exp_{ijt}$	Export value of tuna, swordfish, sharks, and other shark species between Vietnam and EU countries in year t	Thousand USD	trademap.org
Independent variables			
POP_i	Population of Vietnam in year t	Million people	databank.worldbank.org
POP_{jt}	Population of EU(27) member states in year t	Million people	databank.worldbank.org
$DIST_{ij}$	Distance between Vietnam and EU (27) countries	Thousand Km	CEPII - GeoDist
NTM_{iht}	Number of non-tariff measures applied by the EU (27) on Vietnam's tuna, swordfish, sharks, and other shark species		trainsonline.unctad.org
EXR_{ijt}	Average exchange rate between Vietnam and EU (27) countries in year t	Thousand VND	ofx.com

$REER_{jt}$	Real effective exchange rate of importing country j in year t (2010 = 100)	% (2010 = 100)	databank.worldbank.org
FTA_COV	Dummy variable for EVFTA's effectiveness and COVID-19 outbreak; FTA_COV = 1 when the agreement is in effect and COVID-19 has broken out (from 2020); FTA_COV = 0 when the agreement is not yet in effect and COVID-19 has not yet broken out	Dummy	
IUU	Dummy variable for the EU's yellow card warning on Vietnam's seafood; IUU = 1 when Vietnam is under warning; IUU = 0 when Vietnam is not under warning since 2017	Dummy	

All data collected for the variables in this study are complete except for the variable $REER_{jt}$, due to the lack of publicly available real effective exchange rate data for Estonia, Lithuania, and Slovenia. However, according to Baltagi et al. (2014), the absence of this data does not affect the completeness or validity of other observations in the sample, and the remaining 360 observations provide a usable dataset, yielding reliable results.

4. RESULTS AND DISCUSSION

The time correlation and variability in country characteristics in panel data can introduce potential problems. Therefore, the PPML regression model in this study integrates a robust (cluster) weighting method for both country and time effects.

Table 3. PPML regression

EXPijt	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
POPit	.227	.042	5.42	0	.145	.308	***
POPjt	.031	.005	5.73	0	.02	.041	***
DISTijt	.505	.121	4.18	0	.268	.741	***
EXRijt	.055	.021	2.56	.01	.013	.097	**
REER	.028	.03	0.95	.342	-.03	.087	
NTMjt	-.02	.01	-2.05	.041	-.04	-.001	**
FTA_COV	-.461	.118	-3.90	0	-.692	-.229	***
IUU	-.573	.122	-4.70	0	-.811	-.334	***
Constant	-22.184	5.933	-3.74	0	-33.813	-10.555	***
Mean dependent var		3879.919	SD dependent var			7138.290	
Pseudo r-squared		0.584	Number of obs			360	
Akaike crit. (AIC)		1267047.635	Bayesian crit. (BIC)			1267082.610	

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author's calculations using Stata 17

Table 3 shows that the model explains 58.4% of the variation in the dependent variable—the export value of tuna, swordfish, sharks, and other shark species. The variables representing the population of Vietnam, the member states of the EU, and the geographical distance between them are observed to have a positive impact on the export value of these products. When Vietnam's population increases by 1%, the export value of tuna, swordfish, sharks, and other shark species increases by 0.227%. With a 1% significance level, the population of importing countries can increase the export value of these products by 0.031%. Contrary to the gravity model theory, the geographical distance from Vietnam to EU (27) member states has a positive effect on the export value of tuna, swordfish, sharks, and other shark species. The study by

Mahmudul, Gazi, and Khan (2009), which focused on Bangladesh's trade from 1985 to 2003, also showed that as geographical distance increases, trade flows become more positive. In Vietnam, research by Thai (2006) and Tu Thuy Anh, Dao Nguyen Thang (2008) demonstrated this relationship as well. Therefore, in some emerging markets like Bangladesh or Vietnam, geographical distance may not necessarily be a negative factor for trade flows between countries, especially in the context of global economic integration today.

The average exchange rate between Vietnam and EU (27) countries has a positive impact of 0.055% on the export value of this product. Trần Thanh Long and Phan Thị Huỳnh Hoa (2015) also demonstrated this positive effect on Vietnam's seafood exports. As the EUR/VND exchange rate increases, the value of VND decreases, making Vietnam's exports to the EU (27) cheaper. Therefore, the devaluation of the domestic currency benefits the increase in the export volume of Vietnam's seafood products. Additionally, the REER – the real effective exchange rate of EU member states – also has a small positive impact, only 0.028%, on Vietnam's exports of tuna, swordfish, sharks, and other shark species to the EU (27).

According to UNCTAD (2018) statistics, 70% of global trade value is affected by at least one non-tariff measure. While Baier & Bergstrand (2002) highlighted the rapid fluctuations in trade flows under the impact of non-tariff measures, the empirical study by Carrère & De Melo (2003) demonstrated that non-tariff measures significantly reduce trade flows compared to earlier results. In this study, the negative impact is recorded at 0.02% in the correlation between Vietnam's exports of tuna, swordfish, sharks, and other shark species and the number of non-tariff measures imposed by EU (27) countries. Although the estimated impact is not substantial, the reality is that Vietnam's seafood industry has consistently improved to meet the requirements of EU (27) non-tariff measures, especially concerning environmental protection and public health standards, particularly for potential products such as tuna, swordfish, sharks, and other shark species.

Gravity estimates depend on whether the variable is continuous or a dummy variable, according to Yotov et al. (2016). The impact of dummy variables such as FTA_COV and IUU can be calculated as a percentage as follows:

$$(e^{\beta_{dummy}} - 1) \times 100 \quad (3)$$

Table 4. Estimated results of the gravity of the dummy variable.

Results	FTA_COV	IUU
Coefficient	-0.461	-0.573
Explanation coefficient (%)	-36.914	-43.596
P - value	0.000	0.000

Source: Author's calculation

Since the official entry into force of the Vietnam-EU Free Trade Agreement (EVFTA) and the strong outbreak of the Covid-19 pandemic were both recorded in 2020, and both remain in effect in 2022, the impacts of these two events are combined into a dummy variable FTA_COV in the model. According to PPML estimates, the signing of the EVFTA and the outbreak of Covid-19 generally have a significant negative impact on Vietnam's exports of Tuna, Swordfish, Shark and Shark to the EU (27). With a confidence level of 99%, the simultaneous entry into force of the EVFTA and the Covid-19 pandemic will cause the export turnover of Tuna, Swordfish, Shark and Shark to decrease by 36.91% per year. This is because Covid-19 disrupts the supply chain, overwhelming the incentives that are expected to have a positive impact on Vietnam's exports thanks to the EVFTA. However, the EVFTA has only officially come into effect since 2020, so the impact of the agreement often lags behind its implementation. This lag can be up to 20 years according to Grant & Lambert's (2008) study on the impact of NAFTA/CUSTA on agricultural trade after the agreement came into effect.

The EU's IUU yellow card warning has had a strong negative impact on the export flows of Tuna, Swordfish, Shark and Shark. In fact, Tuna, Swordfish, Shark and other Shark species are the main commodities directly affected by the EU's Illegal, Unreported and Unregulated Fishing Regulation (IUU), as these species are caught and exploited at sea. Each year, the consequences of the IUU yellow card can reduce nearly 43.6% of our country's export opportunities for this commodity to the EU market (27). The negative impact of IUU on the trade flows of this commodity from 2007 to 2019 has also been demonstrated in a study published by the World Bank by Nam, NHT, & Le, NTH (2021).

5. CONCLUSION

This research has underscored the considerable effect of the IUU yellow card issued by the European Union on Vietnam's tuna exports to the EU market. The study reveals that the yellow card, coupled with the adverse effects of the COVID-19 pandemic, has severely disrupted Vietnam's seafood exports, particularly tuna, swordfish, sharks, and rays. Despite the possible advantages of the EU-Vietnam Free Trade Agreement (EVFTA), these have been overshadowed by the negative repercussions of the IUU yellow card.

The findings underscore the urgent need for Vietnam to address compliance issues related to illegal, unreported, and unregulated (IUU) fishing practices. To mitigate the adverse effects on trade and restore market access, Vietnamese policymakers and industry leaders must focus on enhancing adherence to IUU regulations. Key actions include strengthening monitoring and control systems and improving transparency in fishing practices.

By implementing these measures, Vietnam can work towards lifting the IUU yellow card, thereby reducing trade disruptions and supporting the sustainable growth of its seafood industry. This strategic approach will not only help regain market access but also contribute to the long-term sustainability of Vietnam's tuna exports and overall seafood sector.

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