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TÁC ĐỘNG CỦA NGHĨA VỤ THUẾ CỦA VIỆT NAM TRONG HIỆP ĐỊNH THƯƠNG MẠI TỰ DO VIỆT NAM - EU (EVFTA) ĐỐI VỚI XUẤT KHẨU HÓA CHẤT VÀ CÁC SẢN PHẨM LIÊN QUAN CỦA VIỆT NAM

Phạm Hương Ly[1], Nguyễn Cẩm Nhung, Trần Lâm Nhi,

Đỗ Hoàng Dương, Nguyễn Minh Hợp

Sinh viên K60 CLC Kinh tế Đối ngoại - Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Nguyễn Thu Hằng

Giảng viên Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Tóm tắt

Nghiên cứu này nhằm đánh giá tác động của các nghĩa vụ thuế quan của Việt Nam theo Hiệp định Thương mại Tự do Việt Nam - Liên minh Châu Âu (EVFTA) đối với xuất khẩu hóa chất và các sản phẩm liên quan (mã HS 28) của Việt Nam sang Liên minh Châu Âu (EU). Nhóm nghiên cứu áp dụng mô hình SMART để ước lượng tác động của việc xóa bỏ thuế quan đối với giá trị thương mại giữa hai bên, với năm cơ sở là 2019. Bằng cách mô phỏng kịch bản thuế suất 0% cho mã HS 28, nhóm nghiên cứu phân tích tổng mức thay đổi trong xuất khẩu, tác động tạo lập thương mại và chuyển hướng thương mại. Các dòng sản phẩm cụ thể trong mã HS

[1] Tác giả liên hệ, Email: k60.2112150103@ftu.edu.vn

28 được hưởng lợi nhiều nhất tiếp tục được phân loại theo mã HS 4-6 chữ số để xác định tác động chi tiết. Kết quả từ mô hình SMART cho thấy EVFTA có tác động tích cực đến xuất khẩu hóa chất và các sản phẩm liên quan của Việt Nam sang thị trường EU, trong đó hiệu ứng chuyển hướng thương mại chiếm ưu thế so với hiệu ứng tạo lập thương mại. Nhóm nghiên cứu đề xuất các khuyến nghị đối với cơ quan quản lý nhà nước và doanh nghiệp nhằm thúc đẩy xuất khẩu mặt hàng này.

Từ khóa: hóa chất và các sản phẩm liên quan, EU, EVFTA, tác động, Việt Nam.

IMPACTS OF VIETNAM'S TAX OBLIGATIONS IN EU-VIETNAM FREE TRADE AGREEMENT (EVFTA) ON VIETNAM'S CHEMICALS AND RELATED PRODUCTS EXPORTS

Abstract

This study aims to appraise the potential impacts of Vietnam's tax obligations under the European Union - Vietnam Free Trade Agreement (EVFTA) on Vietnam's exports of chemicals and related products (HS code 28) to the European Union (EU). The authors apply the SMART model to quantitatively estimate how tariff elimination under this agreement affects trade value between the two parties, with the base year of 2018. By simulating the zero-rate tariff scenario for HS code 28 (inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes), 1 the authors analyze the total change in export, trade creation, and trade diversion effects of this sector. The specific product lines within HS code 28 that benefit the most are further classified into products with 4-6-digit HS codes to identify granular impacts. The SMART outputs reveal that EVFTA positively affects the export of chemicals and related products from Vietnam to the EU market, with trade diversion dominating trade creation effects. Based on these findings, recommendations are proposed to the state authorities as well as domestic enterprises to promote the export of chemicals and related products.

Keywords: chemicals and related products, EU, EVFTA, impacts, Vietnam

1. Introduction

1.1. Research overview

Numerous studies have been conducted to evaluate the impact of the EVFTA on the Vietnamese economy, with various researchers, such as Linh, N.T et al., 2023; Nguyen & Nguyen, 2015; Veeramani, C. & Saini, G.K., 2011; and Kashif, M. & Akram, H.W., 2021, contributing to this field of research.

This study aims to assess the effects of the EVFTA on Vietnam's exports of chemical and related products to the EU, primarily utilizing quantitative methods. The research examines the extent to which the agreement has influenced the competitiveness, productivity, and profitability of the chemical sector, considering shifts in market dynamics and demand.

1.2. Significance of the study

The chemical and related products industry is a key player in driving Vietnam's overall exports. Investigating the factors influencing the Vietnamese export to the EU not only enables the demonstration and quantification of these determinants' impact on chemical and related products exports but also holds meaningful implications both practically and scientifically. This research, along with thorough qualitative analyses, will lay the groundwork for creating strategies aimed at enhancing Vietnam’s chemical exports and sustaining its competitive edge in the EU market.

1.3. Research objectives

This research aims to analyze the specific tariff reductions under the EVFTA for products within HS code 28 and evaluate the potential trade creation and diversion effects of the EVFTA on Vietnam's chemical exports to the EU. After analyzing and explaining the results, actionable recommendations will be made for Vietnamese businesses and policymakers to maximize the benefits of the EVFTA in the chemical sector. Finally, it will assess the capability of Vietnam's chemical industry to meet the increased demand from the EU market.

To implement the study and achieve research objectives, several questions are made that need to be answered:

1. What are the significant changes in Vietnam's chemicals and related products exports to the EU before and after the implementation of the EVFTA?

2. What are the challenges and benefits of the EVFTA to Vietnam's chemicals and related products exports to the EU?

3. What are recommendations for Vietnamese governments and businesses in chemicals and related industries to leverage the opportunities brought by EVFTA?

1.4. Subject and scope of the study

The research subject is the impact of the EU-Vietnam FTA (EVFTA) on Vietnam's chemicals and related products exports. The scope of the research revolves around Vietnam's chemicals and related products export data to 27 EU countries. The time frame for the data collected is from 2019 to 2023.

2. Literature review

2.1. Regarding methods to evaluate the impact of tariffs obligations on international trade

Evaluating the impact of tariff obligations on international trade involves various methodologies, each with its own strengths and applications.

Gravity model of trade

One of the most commonly used approaches is the gravity model of trade. This model, rooted in Newtonian physics, assesses the effects of trade policies by analyzing bilateral trade flows between countries. It takes into consideration factors such as the economic size of the trading partners, the distance between them, and trade barriers like tariffs. The gravity model is instrumental in understanding how changes in tariffs can influence trade patterns (Anderson & Wincoop, 2003). It assumes that larger economies have a greater pull on trade, and that geographical proximity enhances trade volumes.

Computable General Equilibrium (CGE) model

CGE models simulate how economies respond to changes in trade policies, including tariffs, by considering the interrelationships between different sectors of the economy. These models provide a comprehensive analysis of the impact of tariff changes on trade, production, and welfare. For instance, the Global Trade Analysis Project (GTAP) model is a well-known CGE model that has been widely used in trade policy analysis (Hertel & Tsigas, 1997). CGE models are valuable for

assessing the broader economic implications of tariff changes, as they account for adjustments across multiple markets and sectors.

Partial equilibrium models

Partial equilibrium models focus on specific sectors to evaluate the impact of tariff changes on trade volumes and prices. Unlike CGE models, partial equilibrium models do not consider the broader economic interdependencies but provide a detailed analysis of direct effects within a particular sector. These models are particularly useful for analyzing the impact of tariff changes on specific industries, such as chemicals and related products (Francois & Reinert, 1997). By isolating the sectoral impacts, partial equilibrium models can offer insights into how tariff changes affect trade flows, production, and pricing within a specific industry.

2.2. Empirical research on impact assessment of tariffs obligations on international trade

Empirical research on the impact of tariff obligations on international trade has yielded significant insights, particularly in the context of free trade agreements (FTAs) like the EVFTA.

For instance, studies have shown that tariff reductions under FTAs positively impact bilateral trade. A study by Nguyen & Nguyen (2015) used a gravity model and panel data analysis to assess the impact of the EVFTA on trade between Vietnam and the EU. Their findings indicate that the reduction of tariffs under the EVFTA framework enhances trade volumes between the two regions. The study highlights that tariff reductions lower the cost of exported goods, making them more competitive in the importing market.

Another empirical assessment by Felbermayr et al. (2015) focused on the EU's trade policies and revealed that tariff margins significantly affect EU imports, with sector-specific variations. The study employed a gravity model to analyze the trade effects of EU tariff policies. The research emphasizes the role of tariff obligations in shaping trade patterns and demonstrates the potential benefits of tariff reductions for export growth in various sectors.

Additionally, empirical studies have explored the impact of tariff reductions on trade dynamics within specific industries. For example, research on the chemicals industry has shown that tariff reductions can lead to increased export volumes and enhanced competitiveness in the global market. By lowering tariffs,

exporters can reduce their production costs and offer more competitive prices (Nguyen & Nguyen, 2015).

2.3. Research gap

Despite the extensive research on the impact of tariff obligations on international trade, several gaps remain that warrant further investigation.

One notable gap is the limited focus on specific sectors, such as chemicals and related products, within the context of the EVFTA. While general assessments of tariff impacts exist, there is a need for more detailed studies that examine the sector-specific effects of tariff obligations on Vietnam's chemical exports (Nguyen & Nguyen, 2015). Understanding the unique challenges and opportunities faced by the chemicals industry under the EVFTA can provide valuable insights for policymakers and industry stakeholders.

Additionally, research often overlooks the long-term implications of tariff reductions. Most studies focus on the immediate effects of tariff changes on trade volumes and prices, but there is a need to explore the potential shifts in production and trade patterns over time. Long-term analyses can reveal how tariff reductions influence structural changes in the economy, including shifts in comparative advantage and changes in the competitive landscape. Addressing these gaps will provide a more nuanced understanding of the EVFTA's impact on Vietnam's chemicals and related products exports.

Furthermore, there is a need for more comprehensive studies that integrate multiple methodologies to provide a holistic analysis of tariff impacts. Combining the insights from gravity models, CGE models, and partial equilibrium models can offer a more robust understanding of the complex interactions between trade policies and economic outcomes. Future research should aim to bridge these gaps and provide a more comprehensive and detailed assessment of the EVFTA's impact on Vietnam's chemicals and related products exports.

3. Research methodology

3.1. Empirical model

3.1.1. WITS-SMART model

The WITS-SMART model is a partial equilibrium model designed to estimate trade effects, creation, diversion, and welfare effects of tariff changes for a product,

based on economic theories and Viner's theory (1950). This model and the simulation tools are part of the World Integrated Trade Solution (WITS) database and software suite provided jointly by the World Bank and United Nations Conference on Trade and Development (UNCTAD) (Amjadi et al., 2011).

The WITS-SMART model is selected for this study due to its granular, sector-specific analysis, ability to quantify trade effects, and computational efficiency. SMART enables detailed HS-code analysis, making it ideal for assessing Vietnam's chemical exports across subcategories, ensuring precise estimation of EVFTA's tariff reduction benefits (UNCTAD, 2018). The model also quantifies trade creation and trade diversion, essential for evaluating Vietnam's market positioning in the EU, where tariff reductions may shift demand from non-EVFTA suppliers like China, South Korea, and India (Viner, 1950). Moreover, SMART ensures computational efficiency and transparency, utilizing publicly available data from UN COMTRADE, UNCTAD TRAINS, and WTO IDB, guaranteeing robust, replicable, and internationally aligned trade assessments (World Bank, 2020).

3.1.2. Model assumptions

The WITS-SMART model provides a transparent assessment of EVFTA's tariff obligations on Vietnam's chemical exports. These assumptions help isolate the direct effects on trade flows, ensuring that the findings remain objective and relevant (Laird & Yeats, 1986; World Bank, 2020).

A fundamental assumption of the SMART model is perfect competition, this ensures that trade flow changes result solely from tariff reductions without distortions from monopolistic behavior (UNCTAD, 2018). It follows a static, short-term framework, capturing immediate trade responses to EVFTA tariff eliminations while excluding long-term investment or structural adjustments (World Bank, 2020).

The Armington assumption and UN COMTRADE and WITS models ensure ethical trade diversion assessment and prevent overstatements of Vietnam's competitive advantage over non-EVFTA suppliers such as China, South Korea, and India (Viner, 1950). Additionally, fixed import demand, export supply, and substitution elasticities from UN COMTRADE and WITS ensure standardized and replicable estimations, supporting confidentiality and transparency in trade analysis (World Bank, 2020).

Lastly, the model assumes full tariff pass-through, meaning that tariff reductions directly lower import prices of Vietnamese chemical products in the EU. While real-world factors may influence price transmission, this assumption enables a clear evaluation of tariff elimination effects.

3.2. Input data

Based on the SMART simulation tool provided by the WITS database of the World Bank and UNCTAD, this study applies a research model that incorporates six key inputs and three output indicators, as illustrated in Figure 2. The trade creation and trade diversion equations used in the model are derived from Laird & Yeats (1986), ensuring methodological consistency with established trade policy simulations.

The export value of chemical products represents the total value of Vietnam's chemical exports to the EU in the base year of 2018, which serves as the reference period for this study. From the perspective of the EU as the importer, this value corresponds to the total import volume of Vietnamese chemical goods under pre-EVFTA tariff conditions, measured at the applied Most-Favored-Nation (MFN) tariff rates. These data points are extracted from UN COMTRADE and Trade Map, which provide comprehensive trade statistics at the HS-2, HS-4, and HS-6 product classification levels.

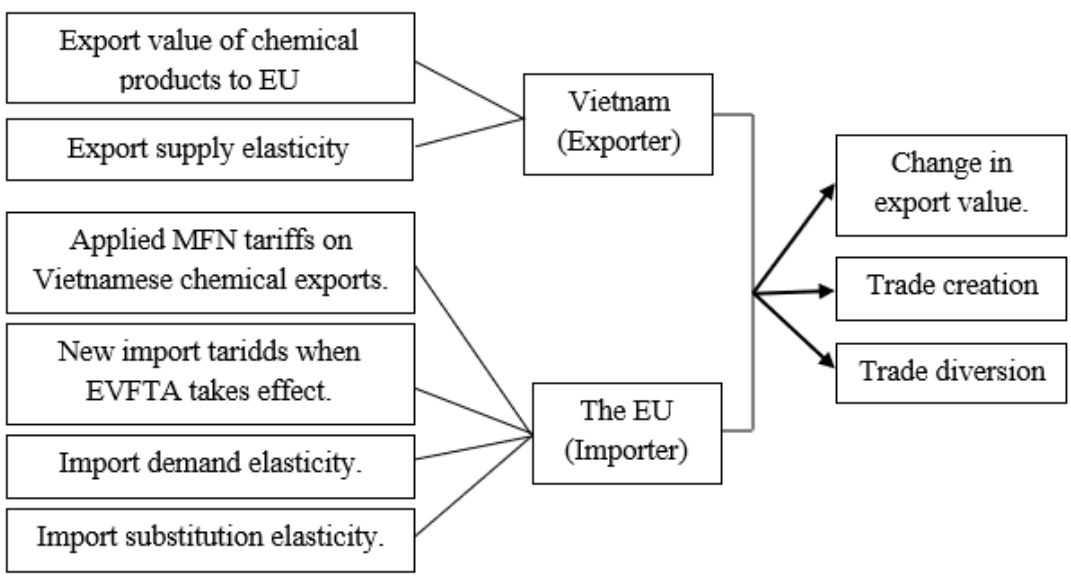

Figure 1. Research model

Source: Authors' compilation

MFN tariff rates are imposed by the EU on Vietnamese chemical exports prior to EVFTA implementation, sourced from UNCTAD TRAINS and WTO's IDB (Integrated Database). The discrepancy between MFN rates and EVFTA's tariff schedule enables the model to estimate how tariff elimination affects trade flows, trade creation, and trade diversion between Vietnam and the EU. New import tariffs under EVFTA are incorporated into the model, reflecting the post-agreement tariff structure for Vietnamese chemical goods in the EU market.

Additionally, the study integrates three key elasticity parameters to calibrate the model: import demand elasticity (Em), export supply elasticity (Ex), and substitution elasticity (Es). These values, extracted from the WITS database, reflect consumer and exporter behaviors in response to price changes following tariff adjustments. The default export supply elasticity (Ex) is set to 99, assuming that Vietnamese chemical exporters can expand production in response to increased demand without constraints (Guei et al., 2017).

In addition to quantitative data, this study incorporates qualitative secondary data to provide further context on Vietnam's chemical export performance, market structure, and competitive positioning in the EU. Data sources include reports from Vietnam's General Department of Customs, EU-MUTRAP, WTO-VCCI Center, and industry-specific market assessments. These supplementary datasets support the quantitative findings by identifying potential non-tariff barriers, compliance costs, and regulatory considerations that may influence trade flows beyond tariff eliminations.

4. Results and Discussion

4.1. SMART simulation results

4.1.1. Change in export

The reduction of tariffs to 0% has led to a marginal increase in the overall export value of Inorganic Chemicals; Organic and Inorganic Compounds of Precious Metals, of Rare-Earth Metals, of Radioactive Elements, or of Isotopes (HS Code 28) from Vietnam. The total export value of HS Code 28 products increased marginally, from 96,571.936 thousand USD to 96,694.489 thousand USD, reflecting a net increase of only 0.1269%. A more detailed examination of specific

subcategories within HS Code 28 indicates that only a few products exhibited export growth, while the majority remained unchanged (Table 1).

Table 1. Change in export for HS code 28 products

Product Code	Export Before (thousand USD) – 2019	Export After (thousand USD)	Export Change (thousand USD)	% Change in Export
28	96,571.936	96,694.489	122.553	0.1269
284920	1,591.389	1,666.437	75.047	4.7158
284990	4,915.567	4,962.076	46.508	0.946
283529	25.67	26.621	0.952	3.7086
283531	0.201	0.229	0.028	13.93
282300	0.403	0.422	0.018	4.4665

Source: Compiled and calculated by the authors from SMART's results

The most significant export increase is observed in HS Code 284920 (Carbides, whether or not chemically defined - of silicon), which rose by 4.7158%. Carbides are widely used in the metallurgical industry, particularly in steelmaking, cutting tools, and refractory applications. The growth in exports may be attributed to rising industrial demand in major steel-producing countries.

Additionally, HS Code 282300 (Titanium oxides) recorded a 4.4665% growth, and HS Code 283529 (Phosphates of other metals) increased by 3.7086%. These chemicals are essential in plastics, and industrial coatings, industries that have seen moderate expansion in developing markets. HS Code 283531 (Sodium triphosphate), often used in detergents and water treatment, showed the highest relative growth rate at 13.93%, despite the absolute value remain small whereas HS Code 284990 experienced only 0.946% growth. While these subcategories experienced export increases, their absolute growth remains relatively small compared to the overall sector.

This indicates that while tariff eliminations reduce costs, they do not automatically lead to significant export expansion. Factors such as:

- Production capacity constraints: Vietnam's domestic production of certain inorganic chemicals may be limited in scale, preventing a rapid response to new trade opportunities.
- Established supply contracts: Many industrial buyers operate on long-term procurement agreements, meaning that even with tariff eliminations, exporters may not see immediate increases in orders.
- Regulatory barriers in importing markets: Some chemicals face strict regulations, which could limit Vietnam's ability to expand exports to regions like the EU or North America.

On the other hand, a significant number of HS 28 subcategories showed no export change at all. Products such as HS Code 280200 (Sulfur, sublimed or precipitated), HS Code 280461 (Silicon), HS Code 280470 (Phosphorus), HS Code 281122 (Silicon dioxide), and HS Code 284180 (Uranium and its compounds) all retained unchanged values.

4.1.2. Trade creation effect

The trade creation effect for HS Chapter 28 results in an additional 48.491 thousand USD in exports, driven mainly by a few specific product lines. As shown in Table 2, the two most significant contributors are HS 284920 and HS 284990, which together account for 99.45% of the total trade creation effect. Specifically, HS 284920 leads with a gain of 28.866 thousand USD (59.52%), while HS 284990 follows with 19.363 thousand USD (39.93%).

Table 2. Trade Creation Effect for Product Categories in HS code 28

Product Code	Export Before (thousand USD) - 2019	Trade Creation Effect (thousand USD)	% of Total Trade Creation Effect
28	96,571.936	48.491	100
284920	1,591.389	28.866	59.52

Product Code	Export Before (thousand USD) - 2019	Trade Creation Effect (thousand USD)	% of Total Trade Creation Effect
284990	4,915.567	19.363	39.93
283529	25.67	0.233	0.49
283531	0.201	0.022	0.05
282300	0.403	0.007	0.01

Source: Compiled and calculated by the authors from SMART's results

The total trade creation effect for HS Chapter 28 – Inorganic Chemicals amounts to 48.491 thousand USD, with most of the increase driven by HS 284920 (28.866 thousand USD, 59.52%) and HS 284990 (19.363 thousand USD, 39.93%). These two product lines dominate the trade expansion, while the majority of other products show no noticeable increase. Notably, these two product lines also exhibit the highest absolute change in export, reinforcing the idea that the removal of tariffs under the agreement has significantly enhanced Vietnam's export performance in these categories.

The concentration of trade gains in HS 284920 and HS 284990 indicates that Vietnam's inorganic chemical sector is structured around a few high-performing product lines, with limited diversification across the chapter. This pattern suggests that either Vietnam had already established a solid export base in these products before tariff removal, or that market-specific demand conditions played a crucial role in determining the extent of trade creation. The absence of trade creation in many other HS 28 product lines implies that tariff barriers may not have been the primary limiting factor for those products, with other trade restrictions such as non-tariff barriers (NTBs) or quality control standards.

Interestingly, several products with substantial export values in 2019, such as HS 280470 (51,834.234 thousand USD) and HS 282590 (15,097.718 thousand USD), exhibit no measurable trade creation effect. This suggests that their export volumes may have already reached an equilibrium before the trade agreement took

effect or due to external factors such as production capacity constraints, demand saturation, or import regulations.

Overall, while the tariff reductions under the trade agreement have facilitated export expansion for select inorganic chemicals, the benefits remain highly concentrated. Future opportunities for trade diversification in this sector may require addressing structural barriers or enhancing production capabilities.

4.1.3. Trade diversion effect

The impact of EVFTA on Vietnam's exports in HS Code 28 is particularly significant due to the trade diversion effect, which accounts for the majority of the total trade effect. As shown in Table 3, the total trade diversion effect for HS Code 28 amounts to 74.06 million USD, representing 60.45% of the total trade effect. This suggests that a substantial portion of the increase in Vietnam's exports to the EU under EVFTA comes at the expense of non-EVFTA suppliers.

Table 3. Trade Diversion Effect for Product Categories in HS code 28

Product Code	Total Trade Effect (thousand USD)	Trade Creation Effect (thousand USD)	Trade Diversion Effect (thousand USD)	% of Total Trade Diversion Effect
28	122.553	48.491	74.062	100
284920	75.047	28.866	46.182	62.35
284990	75.508	19.363	27.145	36.65
283529	0.952	0.233	0.718	0.97
282300	0.018	0.007	0.012	0.02
283531	0.028	0.022	0.006	0.01

Source: Compiled and calculated by the authors from SMART's results

A closer examination of HS-6 level product codes within HS Code 28 reveals that only a few specific products experience noticeable trade diversion effects. HS

284920 and HS 284990, which include compounds such as phosphides and carbides, contribute the most to the trade diversion effect, accounting for 62.35% and 36.65%, respectively. These two product categories alone explain nearly all of the trade diversion impact within this sector. In contrast, the remaining product categories within HS Code 28 exhibit minimal or no trade diversion, indicating that Vietnam is not yet competitive enough to replace non-EVFTA suppliers of inorganic chemicals.

From a broader perspective, the large trade diversion effect observed in Vietnam's HS Code 28 exports to the EU highlights the importance of preferential tariff treatment under EVFTA. Prior to the agreement, Vietnam faced higher tariff barriers when exporting to the EU, which placed its chemical products at a cost disadvantage compared to major non-EVFTA suppliers such as China, Norway, and South Africa. The removal of these tariffs significantly enhances the competitiveness of Vietnamese chemical exports, leading EU importers to substitute existing suppliers with Vietnamese alternatives. This shift underscores the critical role of trade policy in shaping global supply chains.

Table 4. Top 10 Non-EVFTA Countries with the Largest Trade Diversion in HS Code 28 Exports

Reporter Name	Partner Name	Exports Before (thousand USD)	Exports After (thousand USD)	Export Change in Revenue (thousand USD)
EU	China	1,546,315.251	1,546,295.762	-19.49
EU	Norway	827,432.067	827,418.561	-13.507
EU	South Africa	190,846.434	190,839.822	-6.611
EU	United States	1,558,937.676	1,558,931.299	-6.376
EU	Russian Federation	2,252,536.164	2,252,530.352	-5.811
EU	Korea, Rep.	160,454.341	160,450.635	-3.706

Reporter Name	Partner Name	Exports Before (thousand USD)	Exports After (thousand USD)	Export Change in Revenue (thousand USD)
EU	Venezuela	13,783.777	13,780.345	-3.433
EU	Brazil	486,802.977	486,799.591	-3.386
EU	Japan	448,692.639	448,689.637	-3.003
EU	Ukraine	250,815.45	250,812.55	-2.901

Source: Compiled and calculated by the authors from SMART's results

To gain deeper insights into how trade diversion is reshaping EU import dynamics, Table 4 presents the top 10 non-EVFTA countries experiencing the largest reductions in their HS Code 28 exports to the EU. China, as the dominant exporter of inorganic chemicals to the EU, suffers the most substantial loss, with its exports declining by 19,490 USD. This reflects the fact that Vietnam's products are increasingly substituting Chinese exports in specific chemical categories. Norway follows with an export revenue loss of 13,507 USD, likely due to the displacement by Vietnamese alternatives.

The United States and Russia, traditionally strong exporters of high-value inorganic compounds, also experience moderate trade losses of 6,376 USD and 5,811 USD, respectively. The decline in their exports suggests that Vietnam's improved market access is gradually eroding the competitive position of these established suppliers in certain chemical segments. Other non-EVFTA countries, including Brazil, Japan, and Ukraine, also register trade losses, albeit at a smaller scale. These reductions highlight the broader trend of shifting trade flows in the EU chemical market, where Vietnam is emerging as an increasingly important supplier.

Overall, the results confirm that EVFTA is a game-changer for Vietnam's chemical industry, particularly in HS Code 28. The agreement not only enables Vietnam to expand its exports to the EU but also allows it to compete directly with established global suppliers, many of whom are now experiencing a decline in their market share. The strong trade diversion effect observed in this sector underscores the strategic importance of preferential trade agreements in

reshaping international trade patterns and strengthening Vietnam's position in high-value-added industrial supply chains.

4.2. Discussion

4.2.1. Opportunities

Increased export potential

The EVFTA has led to marginal increases in the overall export value of certain inorganic chemicals. For instance, exports of HS Code 284920 (Carbides, whether or not chemically defined - of silicon) grew by 4.7158%, and HS Code 282300 (Titanium oxides) increased by 4.4665%. These growth rates, though modest, signal new opportunities for Vietnamese exporters to enhance their market presence in the EU.

Furthermore, HS Code 283529 (Phosphates of other metals) and HS Code 283531 (Sodium triphosphate) also showed notable growth rates of 3.7086% and 13.93%, respectively. This indicates a favorable environment for expanding exports of specific inorganic chemical products. The trade creation effect for HS Chapter 28 amounts to an additional 48.491 thousand USD in exports, driven mainly by HS 284920 and HS 284990 (Phosphides and carbides), which together account for 99.45% of the total trade creation effect.

Supply chain diversification

Global buyers are diversifying their supply chains due to disruptions in Chinese supply chains and changes in global trade policies. This has created opportunities for Vietnamese exporters to position themselves as reliable alternative suppliers for industrial chemicals. The increased demand for industrial chemicals, such as carbides and titanium oxides, further supports the diversification of supply chains.

Competitive advantage

The removal of tariffs has enhanced Vietnam's competitive position in the EU market. The large trade diversion effect observed in Vietnam's HS Code 28 exports to the EU highlights the importance of preferential tariff treatment under EVFTA. This shift underscores the critical role of trade policy in shaping global supply chains.

4.2.2. Challenges

Limited export expansion

Despite tariff cuts, overall export growth for HS 28 remains low (+0.13%). Some subcategories, such as sulfur and phosphorus, saw no changes, indicating tariffs are not the sole determinant of trade performance.

Production capacity constraints

Vietnam's domestic production capacity for certain inorganic chemicals may be limited, preventing full capitalization on new trade opportunities. Expanding production capabilities is essential to meet growing demand and maximize export potential.

Established supply contracts

Long-term procurement agreements in the industrial sector may delay the impact of tariff eliminations on export orders. Buyers often operate on long-term contracts, meaning that the benefits of tariff reductions may take time to materialize.

Regulatory barriers

Strict environmental and safety regulations in importing markets, such as the EU and North America, may limit Vietnam's ability to expand exports without significant investments in compliance and quality certification. Exporters must navigate complex regulatory landscapes to access these markets.

Non-tariff barriers

Other trade restrictions, such as non-tariff barriers and quality control standards, may influence trade flows and limit export potential. Addressing these barriers is crucial to unlocking new market opportunities.

4.2.3. Recommendations

a) Recommendations for Governments

Firstly, enhancing production capabilities should be a priority. Governments can provide financial incentives, such as tax breaks or subsidies, to encourage businesses to expand their production capabilities. Additionally, supporting research and development initiatives can foster innovation in the chemical sector and improve production processes.

Next, compliance and certification are crucial. Governments can establish programs to assist businesses in obtaining necessary certifications and meeting regulatory requirements. Providing training and resources will help businesses

navigate complex regulatory landscapes and ensure their products meet international standards.

Moreover, market diversification is essential for growth. Facilitating trade missions and organizing trade fairs can help businesses identify and penetrate new markets. Providing market intelligence and trade agreements with emerging markets can expand export opportunities for Vietnamese businesses.

Addressing structural barriers is another key area. Investing in infrastructure projects to improve supply chain efficiency, reduce logistical bottlenecks, and enhance transportation networks is vital. Implementing policies to streamline customs procedures and reduce non-tariff barriers will make it easier for businesses to export their products.

Strengthening trade relations is also important. Fostering stronger trade relations through active engagement and collaboration with trade partners can yield significant benefits. Negotiating bilateral and multilateral trade agreements can maximize the benefits of tariff eliminations under the EVFTA.

Lastly, deepening insights on trade diversion can provide valuable information. Governments can provide businesses with access to trade data and analysis to help them understand market dynamics and make informed decisions. Supporting research initiatives to explore the impact of trade agreements on various sectors can identify areas for improvement.

b) Recommendations for Businesses

Businesses should start by enhancing their production capabilities. Investing in expanding domestic production capacity for inorganic chemicals to meet increasing demand and capitalize on new trade opportunities is essential. Upgrading manufacturing facilities, improving production processes, and investing in research and development can produce high-quality, competitive products.

Compliance and certification should be a focus for businesses as well. Meeting environmental and safety regulations in importing markets through investments in compliance and quality certification is important. Obtaining internationally recognized certifications, such as ISO standards, ensures that products meet the stringent regulatory requirements of target markets.

Market diversification is also crucial for businesses. Exploring new markets and diversifying export destinations can reduce dependency on a few high -

performing product lines. Identifying emerging markets with growing demand for industrial chemicals and developing tailored market entry strategies can capture these opportunities.

Addressing structural barriers is another area where businesses can collaborate with government and industry associations. Identifying and addressing structural barriers that limit export potential can lead to significant improvements. Advocating for improvements in supply chain infrastructure and logistical networks can facilitate efficient trade.

Strengthening trade relations is important for businesses too. Engaging in active collaboration with trade partners in the EU and other potential markets can yield benefits. Participating in trade fairs and building strong relationships with buyers and distributors can maximize market reach.

Lastly, businesses should deepen their insights on trade diversion. Conducting thorough analyses to understand how trade diversion is reshaping EU import dynamics, monitoring the performance of key competitors and adjusting strategies to capitalize on shifting trade flows can enhance business performance.

By addressing these challenges and leveraging the opportunities presented by the EVFTA, both the government and businesses in Vietnam can enhance export performance and achieve sustainable growth in the chemicals sector.

5. Conclusion

In conclusion, the study on the impacts of Vietnam's tax obligations under the EVFTA on its exports of chemicals and related products (HS code 28) to the EU, reveals a positive but modest effect on Vietnam's chemical exports, with trade diversion playing a more significant role than trade creation, indicating that Vietnam is increasingly replacing non-EVFTA suppliers in the EU market. This highlights the strategic importance of preferential trade agreements in enhancing export competitiveness.

Despite the limitations in the analysis, overall, the study reveals that the EVFTA presents both opportunities and challenges for Vietnam's chemical industry. Vietnam can enhance its export performance and achieve sustainable growth in the chemicals and related products sector by addressing the identified limitations and implementing the recommended strategies. By understanding the

dynamics of trade creation and diversion, Vietnamese firms and policymakers can make informed decisions to capitalize on the EVFTA and promote the long-term development of the chemical industry.

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