Working Paper 2024.3.2.6

- Vol 3, No 2

TÁC ĐỘNG CỦA HIỆP ĐỊNH EVFTA ĐỐI VỚI HOẠT ĐỘNG NHẬP KHẨU DƯỢC PHẨM CỦA VIỆT NAM TỪ CÁC NƯỚC EU: PHƯƠNG PHÁP TIẾP CẬN BẰNG MÔ HÌNH TRỌNG LỰC

Vũ Lương Ngọc Anh[1], Phan Kim Anh, Nguyễn Minh Anh, Nguyễn Anh Thư, Nguyễn Trường Gia Huy

Sinh viên K61 CLC Kinh tế - Viện Kinh tế & Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Vũ Huyền Phương

Giảng viên Viện Kinh tế & Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Tóm tắt

Bài nghiên cứu đánh giá tác động của EVFTA đối với việc nhập khẩu sản phẩm dược phẩm của Việt Nam từ các quốc gia EU, sử dụng mô hình trọng lực và dữ liệu bảng từ 23 quốc gia EU trong giai đoạn 2011-2022. Sử dụng phương pháp Feasible Generalized Least Squares, phân tích cho thấy EVFTA có ảnh hưởng tích cực đáng kể đến việc tăng cường nhập khẩu dược phẩm từ EU. Các yếu tố kinh tế như GDP bình quân đầu người và quy mô dân số ở các quốc gia EU có ảnh hưởng tích cực đến việc nhập khẩu; trong khi tham nhũng, tỷ giá hối đoái và khoảng cách địa lý là những yếu tố hạn chế. Bài nghiên cứu gợi ý Việt Nam có thể tận dụng EVFTA để nâng cao nhập khẩu dược phẩm thông qua việc xây dựng khung pháp lý vững chắc, quản trị minh bạch và khuyến khích sự tham gia tích cực từ các doanh nghiệp. Đồng thời nhấn mạnh cơ hội nhập khẩu từ các nền kinh tế mạnh của EU có quản trị công tốt, và khuyến nghị đa dạng hóa nguồn nhập khẩu để giảm chi phí vận chuyển. Bài viết cũng nói về vai trò quan trọng của Ngân hàng Nhà nước Việt Nam trong việc ổn định tỷ giá. Bằng cách áp dụng những chiến lược này, Việt Nam có thể tối ưu hóa hoạt động thương mại và đảm bảo nguồn dược phẩm đáng tin cậy trong bối cảnh bất ổn địa chính trị.

Từ khoá: EVFTA, dược phẩm, nhập khẩu, Việt Nam, mô hình trọng lực.

[1] Tác giả liên hệ, Email: k61.2212150028@ftu.edu.vn

THE IMPACT OF EVFTA ON VIETNAM'S PHARMACEUTICALS IMPORT FROM EU COUNTRIES: GRAVITY MODEL APPROACH

Abstract

This paper investigates the impact of the EVFTA on Vietnam's pharmaceutical imports from the EU using the gravity model and panel data from 23 EU countries over 2011-2022. The analysis, employing the Feasible Generalized Least Squares method, reveals that the EVFTA significantly increases these imports. Economic factors such as GDP per capita and population size in EU countries positively affect imports, while corruption, exchange rates, and geographical distance act as constraints. This paper suggests how Vietnam can leverage the EVFTA to enhance pharmaceutical imports through robust regulatory frameworks, transparent governance, and proactive enterprise engagement. It highlights opportunities to import from strong EU economies with good governance and suggests diversifying imports to reduce logistical costs. The importance of the State Bank of Vietnam in stabilizing the exchange rate is also discussed. By adopting these strategies, Vietnam can optimize trade operations and secure reliable pharmaceutical sources amid geopolitical uncertainties.

Keywords: EVFTA, pharmaceutical, import, Vietnam, gravity model.

1. Introduction

1.1. The EU-Vietnam Free Trade Agreement (EVFTA)

1.1.1. Overview

After establishing diplomatic relations in 1990, Vietnam has become a major partner of the European Union (EU) in Southeast Asia (EEAS, 2023). Over the decades, the two entities have developed a multifaceted collaboration covering economic development, trade, sustainability, and peacekeeping. This partnership has been formalized through numerous bilateral agreements, reflecting the depth of their relationship.

On June 30, 2019, the EU and Vietnam signed the Free Trade Agreement (EVFTA) and the Investment Protection Agreement (EVIPA). The EVFTA took effect on August 1, 2020, aiming to significantly enhance trade between the EU and Vietnam. The EVFTA comprises 17 Chapters, 2 Protocols, and some understandings. The EVFTA is a groundbreaking agreement that aims to eliminate nearly 99% of customs duties between the EU and Vietnam. According to Vietnam's Ministry of Planning and Investment in 2020, this free trade agreement is anticipated to boost Vietnam's GDP by 4.6% and increase its exports to the EU by 42.7% by 2025. Meanwhile, the European Commission projects an increase of €15 billion in annual exports from Vietnam to the EU, as well as an increase of €8.3 billion in annual exports from the EU to Vietnam by 2035 as a result of this agreement (European Parliament, 2020).

1.1.2. Main commitments

- *Tariff commitments:*

The EU has committed to immediately remove tariffs on Vietnamese goods in 85.6% of tariff lines, which accounts for 70.3% of Vietnam's exports to the EU, as soon as the EVFTA takes effect. Within 7 years since EVFTA took effect, the EU committed to eliminate 99.2% of tariff lines, equivalent to 99.7% of Vietnamese export turnover to the EU. For the remaining 0.3% of export turnover, the EU will apply tariff rate quotas (TRQs) with an import tariff within

the quota set at 0%. So far, this is the highest level of commitment a partner gives us in the FTAs has been signed.

Vietnam, in turn, will eliminate tariffs on 48.5% of EU goods, which make up 64.5% of EU export turnover to Vietnam, as soon as the EVFTA is effective. Within 7 years since EVFTA takes effect, Vietnam commits to eliminate 91.8% of tariff lines, equivalent to 97.1% of EU export turnover to Vietnam. By the tenth year, Vietnam will eliminate tariffs on approximately 98.3% of tariff lines, accounting for 99.8% of EU export turnover to Vietnam.

- *Non-tariff measures:*

Non-Tariff Measures (NTMs) focus on reducing trade barriers beyond tariffs, and the EVFTA includes several commitments to address these issues, enhancing trade efficiency between Vietnam and the EU.

o Technical Barriers to Trade (TBT): Both parties will reinforce the WTO's TBT Agreement. Vietnam will integrate more international standards into its regulatory framework, recognize EU vehicle certifications, and accept the "Made in EU" label for most non-agricultural goods, while still allowing specific origin labels from individual EU countries.

o Sanitary and Phytosanitary Measures (SPS): Vietnam and the EU agreed on a set of principles to ease the trade of animal and plant products by ensuring that the management of standards and inspections is handled by the competent authorities of each EU member state.

o Other Non-Tariff Measures: The agreement also includes commitments to alleviate other non-tariff barriers, such as simplifying export/import licensing and customs procedures, to further facilitate trade activities between the two parties.

1.2. Pharmaceutical imports

1.2.1. Overview of Vietnam's pharmaceutical imports from the EU

Vietnam's pharmaceutical sector is among the fastest-growing in the region, driven by economic expansion, rising per capita income, and an aging population (Angelino et al., 2017). Over the period from 2012 to 2022, the value of pharmaceutical imports into Vietnam has shown a consistent upward trend. In 2021, Vietnam recorded its highest import value from the EU, exceeding USD 2,122 million. By 2022, the total value of pharmaceutical imports had reached USD 2,024 million, more than twice the USD 845.59 million recorded in 2012 (Fig. 1). The EU has consistently been Vietnam's largest source of pharmaceutical imports, with its share growing over time. Since 2016, EU imports have accounted for more than half of Vietnam's total pharmaceutical imports, underscoring the EU's significant role in Vietnam's pharmaceutical industry (Fig. 1).

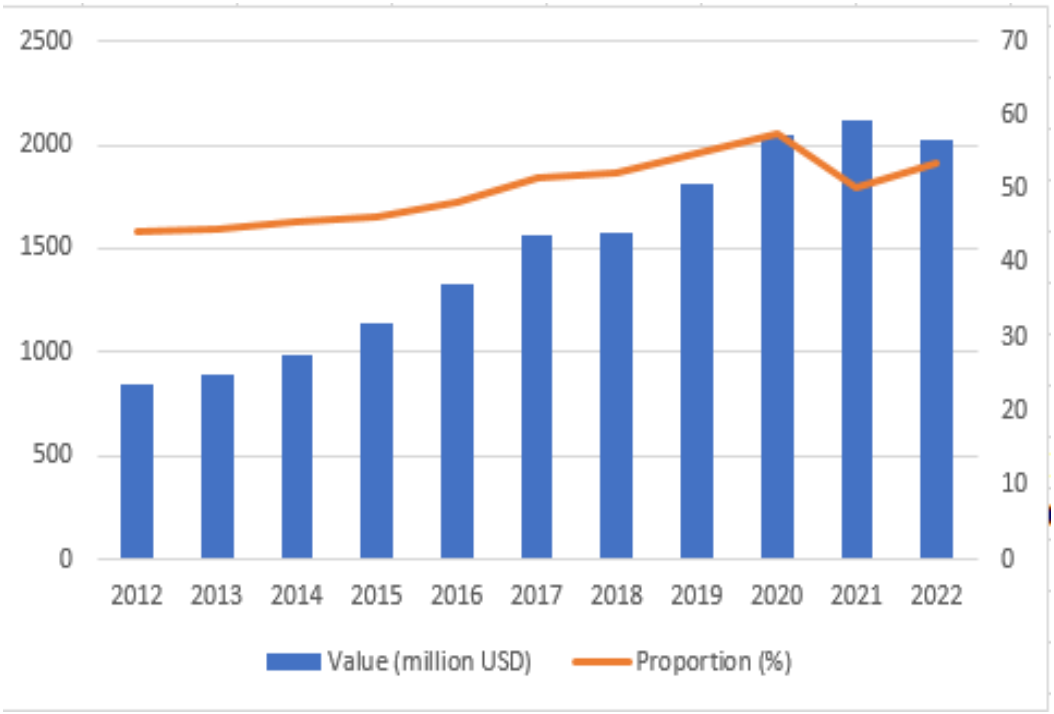

Figure 1. Value and proportion of Vietnam's pharmaceutical imports from the EU, 2012–2022

Source: Author's calculation from ITC (2024)

Figure 2 shows the distribution of Vietnam's pharmaceutical imports from various EU countries in 2022. Germany, Italy, Belgium, and Ireland were the leading sources, together accounting for 78% of the total pharmaceutical imports from the EU. Specifically, France was the largest contributor, providing 22% of the imports, followed by Germany with 18%. Belgium contributed 14%, Italy 9%, and Ireland 5%. Additionally, 32% of Vietnam's pharmaceutical imports came from other EU countries, highlighting the diversity of suppliers within the region.

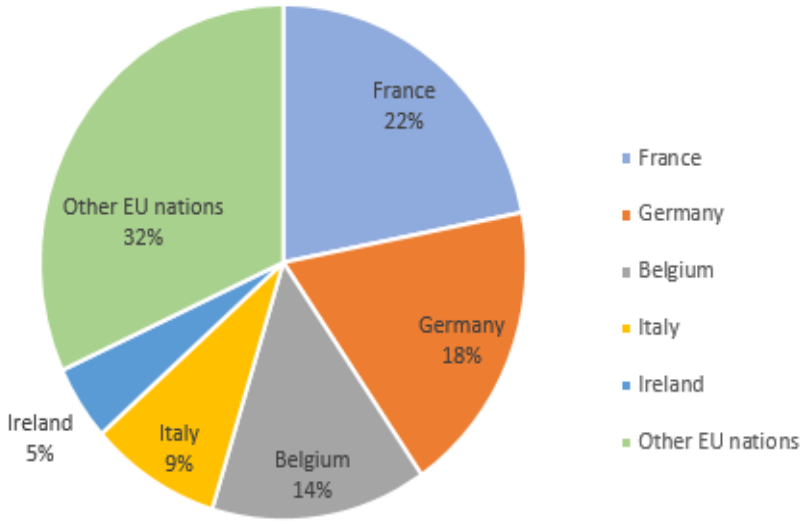

Figure 2. Proportion of Vietnam's pharmaceutical imports by the EU partner in 2022 (Unit: %)

Source: Author's calculation from ITC (2022)

Table 1. Vietnam's pharmaceutical imports from the EU by group of product, 2012-2022 (Unit: Million USD)

HS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
30010	0.034	0.08	0.056	0.186	7.246	4.833	4.008	2.631	3.817	5.910	6.356
3002	82.515	84.749	80.746	96.882	122.666	116.532	155.581	273.149	394.252	790.199	608.782
3003	23.249	28.414	26.248	41.286	64.122	62.616	24.257	41.226	42.530	43.087	37.147
3004	714.163	756.897	849.145	969.280	1097.786	1328.114	1346.332	1440.133	1556.309	1240.603	1331.752
3005	0. 862	1.766	2.047	1.416	1.758	2.762	3.068	3.409	2.653	5.481	3.402
3006	24.767	24.001	30.741	31.965	39.542	51.545	46.340	52.800	46.875	37.508	36.596
Total	844.728	895.907	988.983	1141.015	235.334	1566.402	1579.586	1813.348	2046.436	2122.788	5422.633

Source: Author's calculations from ITC (2022)

The dataset in Table 1, detailing pharmaceutical imports from the EU to Vietnam from 2012 to 2022, highlights Vietnam's substantial reliance on EU-sourced pharmaceuticals. The primary category, HS 3004—"medicaments (excluding those in headings 30.02, 30.05, or 30.06) for therapeutic or prophylactic use, in measured doses or retail packaging"—consistently accounted for over 80% of total imports each year.

HS 3002, covering "human and animal blood for therapeutic, prophylactic, or diagnostic uses; antisera, blood fractions, immunological products, vaccines, toxins, cultures of microorganisms (excluding yeasts), and cell cultures," was the second largest category. Its import value surged sevenfold to 608.782 million USD in 2022. In contrast, imports of HS 3005—"wadding, gauze, bandages, dressings, adhesive plasters, and poultices impregnated or covered with pharmaceutical substances for medical, surgical, dental, or veterinary use"—and HS 3001—"dried glands and organs (powdered or not), extracts for organo-therapeutic uses, heparin and its salts, and other substances prepared for therapeutic or prophylactic uses"—were relatively minor, with import values of approximately 3.402 million USD and 6.356 million USD, respectively, in 2022.

Despite an overall upward trend, some product groups displayed fluctuations. HS 3001, which includes "dried glands and organs, extracts for organo-therapeutic uses, heparin, and other substances prepared for therapeutic or prophylactic uses," peaked at 7.246 million USD in 2016 before declining. Similarly, HS 3006 for "pharmaceutical goods" reached a high of 52.800 million USD in 2019, then fell to 36.596 million USD by 2022.

1.2.2. Pharmaceutical imports under EVFTA

Table 2. Vietnam's tariff for the pharmaceutical products imported from the EU under EVFTA

HS	Base year 2012		2018		Tariff schedule under the EVFTA			
	Tariff lines	Simple average tariff rate (%)	Tariff lines	Simple average tariff rate (%)	Tariff lines in Category A (%)	Tariff lines in Category B5 (%)	Tariff lines in Category B7 (%)	Tariff lines in Category B10 (%)
3001	2	0.00	2	0.00	2.02	0.00	0.00	0.00
3002	9	0.00	12	0.00	9.09	0.00	0.00	0.00
3003	8	2.00	12	1.33	6.06	0.00	2.02	0.00
3004	60	2.22	64	2.22	34.34	1.01	25.25	0.00
3005	5	7.00	5	8.00	0.00	0.00	5.05	0.00
3006	15	2.67	15	2.67	11.11	0.00	2.02	2.02
Total	**99**	**2.26**	**111**	**2.14**	**62.63**	**1.01**	**34.34**	**2.02**

Source: Author's calculation based on the EVFTA text and the Vietnamese government's decree No.125/2017/ND-CP

On February 1, 2016, the text of the EVFTA was publicly released for informational purposes. According to Vietnam's tariff schedule, pharmaceutical products are divided into four categories: A, B5, B7, and B10, based on base tariff rates from 2012. These base customs duties align with Vietnam's Most-Favored-Nation (MFN) rates as of June 26, 2012. Under the EVFTA, about 62% of pharmaceutical product lines from the EU will immediately benefit from a 0% import tariff upon the Agreement's implementation (Table 3). Additionally, 1.01% of tariff lines are categorized under Schedule B5, with tariffs being phased out in six equal annual installments starting from the Agreement's effective date. A significant portion, 33.34%, falls under Schedule B7, with tariffs removed over eight equal annual stages, while the remaining 2.02% of tariff lines are in Schedule B10, with tariffs phased out over eleven annual stages.

Products classified under the 6-digit HS3001 and HS3002, as well as five out of six products in HS 3003, two out of eight in HS3004, and six out of nine in HS3006, were already subject to a 0% tariff rate. Consequently, the remaining tariff reduction burden for Vietnam will be concentrated on HS 3004, HS 3005, and certain products within HS30

Table 3. Vietnam's tariff reduction schedule for imported pharmaceutical products from the EU at 6-digit HS (%)

HS	Base Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
3001.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3001.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3002.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3002.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3002.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3002.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3003.10	5.33	4.67	4.00	3.33	2.67	2.00	1.33	0.67	0.00	0.00	0.00	0.00
3003.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3003.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3003.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3003.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3003.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3004.10	2.60	2.28	1.95	1.63	1.30	0.98	0.65	0.33	0.00	0.00	0.00	0.00
3004.20	2.50	2.19	1.88	1.56	1.25	0.94	0.63	0.31	0.00	0.00	0.00	0.00
3004.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3004.32	1.67	1.46	1.25	1.04	0.83	0.63	0.42	0.21	0.00	0.00	0.00	0.00

HS	Base Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
3004.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3004.40	1.88	1.64	1.41	1.17	0.94	0.70	0.47	0.23	0.00	0.00	0.00	0.00
3004.50	1.00	0.83	0.67	0.50	0.33	0.17	0.00	0.00	0.00	0.00	0.00	0.00
3004.90	2.59	2.26	1.94	1.62	1.29	0.97	0.65	0.32	0.00	0.00	0.00	0.00
3005.10	7.00	6.13	5.25	4.38	3.50	2.63	1.75	0.88	0.00	0.00	0.00	0.00
3005.90	7.00	6.13	5.25	4.38	3.50	2.63	1.75	0.88	0.00	0.00	0.00	0.00
3006.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.30	1.75	1.53	1.31	1.09	0.88	0.66	0.44	0.22	0.00	0.00	0.00	0.00
3006.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3006.91	5.00	4.38	3.75	3.13	2.50	1.88	1.25	0.63	0.00	0.00	0.00	0.00
3006.92	14.00	12.73	11.45	10.18	8.91	7.64	6.36	5.09	3.82	2.55	1.27	0.00

Source: Authors' calculation based on the EVFTA text (appendix 2-A-2

Literature Review

EVFTA offers several opportunities for Vietnam's economy, especially the medical sector that predominantly relies on imports. However, a comprehensive understanding of the agreement and its implications for pharmaceutical imports is essential to fully leverage these benefits.

1.2.3. Previous studies on Vietnam's import under EVFTA

There have been a number of studies on Vietnam's import under EVFTA. These existing studies, predominantly using the SMART model, have observed positive indications of growth following the agreement effects. In her article on Center for WTO and Vietnam Chamber of Commerce and Industry (VCCI), Tho (2022) found out that EVFTA has a significant positive impact on Vietnam's imports of goods from the EU and the total bilateral trade value between Vietnam and the EU, especially the value of imported goods. This finding is, in fact, aligned with other studies regarding meat, fruit and dairy - the main import products from the EU into Vietnam.

Furthermore, as a result of the EVFTA tariff reduction, Minh et al. (2021) concluded there had been a growth in Vietnam's import for butchery goods, especially from Bungari with 260% increment. The study also suggested that European countries would be mandatory foreign suppliers for Vietnam in the future. On the contrary, dairy imports might experience less growth due to the fact that the majority of these products in Vietnam traditionally come from European countries (Linh et al., 2021). Additionally, escalating results for fruit imports have been discovered by Trong et al., (2021), in which it was estimated to soar by 29.18%.

In summary, studies have found that tariff elimination under the EVFTA could significantly boost Vietnam's import value. However, for products that are already imported in large quantities from countries inside the EU, this increase would be relatively modest.

1.2.4. Previous studies on Vietnam's pharmaceutical import

Research into Vietnam's pharmaceutical imports reveals a heavy reliance on imports for both finished products and raw materials, with foreign companies playing a significant role in domestic production. Angelino et al. (2017) reported that in 2015, Vietnam imported approximately 60% of finished pharmaceutical products, 90% of active ingredients, and most raw materials. Foreign enterprises contributed around 20% of the total pharmaceutical output. Similarly, Simonet (2001) found that imported medicines constituted 60% to 80% of the industry's supply. However, these studies did not pinpoint the specific factors driving Vietnam's dependence on imported medicines.

Studies focusing on Vietnam's pharmaceutical imports under the EVFTA commonly use the gravity model and SMART model. Huong (2015) applied these models to analyze trade flows between Vietnam and the EU, finding that tariff reductions are a key factor driving pharmaceutical trade, especially reductions initiated by Vietnam. The SMART model predicts that tariff reductions under the EVFTA will boost Vietnam's pharmaceutical imports from the EU by 3.08%, equivalent to $34.1 million USD. Hoang and Van (2021) found that the EVFTA is projected to increase EU pharmaceutical exports to Vietnam by an average of 2.76%.

Existing studies indicate that the tariff policy under the EVFTA is expected to have a more substantial trade creation effect compared to the trade diversion effect. Hoang and Van (2021), using a mix of qualitative analysis and the SMART model, suggest that the trade creation effect will outweigh the trade diversion effect, thereby enhancing Vietnam's welfare. Huong (2016) also supports this view, noting that the EVFTA's trade creation effect will be greater than its trade diversion effect, benefiting Vietnam's pharmaceutical sector.

1.2.5. Research gap

The review of the past literature has identified some important research gaps.

Firstly, while existing research has thoroughly examined the development and current state of Vietnam's pharmaceutical industry and its reliance on foreign sources, there remains a notable gap in understanding the specific factors driving the country's pharmaceutical imports. ***Secondly,*** although previous studies have explored the EVFTA's overall impact on bilateral trade and specific import and export activities between the EU and Vietnam—particularly for commodities like dairy products, meat, and fruits—there is a lack of research focusing specifically on pharmaceutical imports despite Vietnam's significant dependence on imported medicines. ***Thirdly,*** while most evaluations of the EVFTA's impact predominantly use the SMART model to assess policy effects on imports, this model tends to overlook variations in tariffs from other FTAs and regional economic impacts, relying on assumptions from prior research (Trong et al., 2021). The gravity model, which offers a more detailed perspective, has generally been applied to broader trade assessments rather than specific sectors. ***Lastly,*** existing studies often focus on Vietnam's reliance on imported medicines in a specific year or use the SMART model to compare tariff effects in two years. There is a scarcity of comprehensive analyses of pharmaceutical imports over extended periods, such as from 2011 to 2022.

To address these gaps, this research will utilize the gravity model to conduct a thorough quantitative evaluation of the EVFTA's impact on Vietnam's pharmaceutical imports from the EU27 during the 2011-2022 period.

1.3. Research objectives

The primary goal of this research is to examine the impact of the EVFTA on Vietnam's pharmaceutical imports from the EU27 in the period 2011-2022 using a gravity model approach. Specifically:

- Assess how the implementation of the EVFTA has impacted pharmaceutical imports from EU countries into Vietnam
- Determine significant factors influencing these import patterns
- Provide policy recommendations that can enhance Vietnam's pharmaceutical import strategy

1.4. Research methodology

This paper employs an empirical study on the impact of EVFTA on Vietnam pharmaceutical imports from EU countries using the gravity model, with time period 2011 - 2022. The gravity model was first introduced into the field of international trade by Pöyhönen (1963) when he investigated the relationship between trade scale, GDP, and the distance between two countries. In this model, key variables are illustrated in Table 4. The gravity model equations are as follows:

$$lnImport_{ijt} = B_0 + B_1*lnGDPpc_{jt} + B_2*lnPop_{jt} + B_3*lnOpen_{jt} + B_4*lnDis_{ij} + B_5*lnExr_{ijt} + B_6*lnCPI_{jt} + B_7*EVFTA_{ijt} + u_{ijt}$$

Where:

- $Import_{ijt}$: pharmaceutical import value from an EU country j to Vietnam at year t
- $GDPpc_{jt}$: gross domestic product per capita of country j at year t
- Pop_{jt}: population of country j at year t
- $Open_{jt}$: trade openness of country j at year t
- Dis_{ij}: the distance from Vietnam to country j
- Exr_{ijt}: exchange rate between Euro and VND at last day of year t
- CPI_{jt}: corruption perception index of country j at year t
- $EVFTA_{ijt}$: dummy variable
- u_{ijt}: the standard error

Based on data availability, this paper examines panel data from 276 observations across 23 EU member countries (excluding Croatia, Estonia, Latvia, and Luxembourg) from 2011 to 2022. To analyze panel data, several methods can be employed, including Pooled OLS Regression (POLS), Fixed Effects Model (FEM), and Random Effects Model (REM). The authors evaluated and tested these methods to determine the most suitable approach. After estimating the model using all three methods, they performed the F-test and Hausman test to select the best model. Modified Wald test for groupwise heteroskedasticity and the Wooldridge test for autocorrelation in panel data were then used to validate the regression results. Finally, the Feasible Generalized Least Squares (FGLS) method was applied to address any remaining issues and improve the accuracy of the estimates.

Table 4. Description of variables

No	Variables	Description	Measurement	Data Sources	Expected Signs
		Dependent variable			
1	Import	Pharmaceutical import value of Vietnam from EU	million USD	Trademap	
		Independent variable			
1	GDPpc	Gross Domestic Product per capita	constant 2015 US$	World Bank	+
2	Pop	Population	million people	World Bank	+

No	Variables	Description	Measurement	Data Sources	Expected Signs
3	Open	Trade openness	% of GDP	World Bank	+
4	Dis	Geographic Distance	kilometers	DistanceFromTo	-
5	Exr	Exchange rate between Euro and VND	VND	exchange-rate.org	-
6	CPI	Corruption Perception Index	Score	World Bank	+
7	EVFTA	EVFTA come into effect	Dummy variable: 1 = Year 2020, 2021, and 2022 ; 0 = otherwise	Authors	+

Source: Authors compiled

2. Regression analysis and conclusion

2.1. Model testing

Modified Wald test for groupwise heteroskedasticity and Wooldridge test for autocorrelation in panel data, which revealed the presence of heteroskedasticity only.

Table 5. Test for estimation results

Test	Result	Interpretation
Variance Inflation Factor (VIF) multicollinearity test	Mean VIF = 2.10 < 10	No multicollinearity
F-test for POLS and FEM	Prob > F = 0.0000	FEM is more efficient than POLS
Hausman Test for FEM REM	chi2(6) = 19.87 Prob > chi2 = 0.0029	FEM is more efficient than REM
Modified Wald test for heteroskedasticity	chi2 (23) = 1.7e+05 Prob > chi2 = 0.0000	Heteroskedasticity exists
Wooldridge test for autocorrelation	F(1, 22) = 1.941 Prob > F = 0.1775	No first-order autocorrelation

2.2. Regression result

By employing the FGLS method to address model issues, we obtain the final regression result in Table 6.

Table 6. Estimation result

EVFTA	0.448***
	(5.25)
lnGDPpc	1.666***
	(10.89)
lnPop	0.988***
	(21.10)
lnOpen	0.160
	(1.14)
lnDis	-1.447**
	(-2.99)
lnExr	-1.478*
	(-2.20)
lnCPI	1.210***
	(3.39)
N	276
* p<0.1, ** p<0.05, *** p<0.01 t statistics in brackets	

Source: Authors compiled

EVFTA: The EVFTA variable has a positive and significant impact on Vietnam's pharmaceutical imports from the EU, showing an increase in imports when the agreement is active. This outcome reflects the effectiveness of EVFTA in tariff reduction between Vietnam and the EU, thus making EU pharmaceuticals more affordable and accessible in the Vietnamese market.

GDP per Capita (lnGDPpc) and Population (lnPOP): A 1% increase in GDP per capita in EU countries results in a 1.67% rise in Vietnam's pharmaceutical imports from those countries. Similarly, a 1% increase in an EU country's population leads to a nearly 0.99% increase in these imports. This suggests that wealthier EU nations with higher production capacities and

advanced technologies offer more attractive pharmaceuticals to Vietnam, and larger populations enhance export capabilities and meet international demand.

Trade Openness (lnOpen): Trade openness in EU countries does not significantly impact Vietnam's pharmaceutical imports. This suggests that specific bilateral agreements, such as the EVFTA, or targeted economic policies in both Vietnam and the EU, are more influential in determining pharmaceutical import volumes than general trade openness. Consequently, sector-specific regulations and agreements have a greater impact on pharmaceutical trade than broad trade policies.

Distance (lnDis): A 1% increase in the distance between Vietnam and EU countries leads to a 2.36% decrease in pharmaceutical imports. This result, consistent with Anderson and van Wincoop (2003), is likely due to higher transportation costs and logistical complexities. Pharmaceuticals require specific storage and transportation conditions, and greater distances exacerbate the challenges of maintaining product quality.

Exchange Rate (lnExr): A 1% depreciation of the Vietnamese dong results in a 1.48% decrease in pharmaceutical imports. A weaker dong makes EU pharmaceuticals more expensive for Vietnamese importers, leading to reduced import volumes due to the price sensitivity of the pharmaceutical sector. This highlights the importance of stable exchange rates for maintaining trade flows, especially in sectors where cost is a critical factor.

Corruption Perception Index (lnCPI): A 1% improvement in an EU country's CPI, indicating lower perceived corruption, is associated with a 1.21% increase in pharmaceutical imports from that country. For Vietnam, this increased trust means that pharmaceutical imports from these countries are seen as more reliable and of higher quality, leading to a greater willingness to import.

2.3. Conclusion

In summary, the model reveals that EVFTA and economic factors such as the GDP per capita and population of EU countries significantly boost Vietnam's pharmaceutical imports from the EU, while factors such as corruption in the EU, exchange rates, and geographical distance act as constraints. These results provide a comprehensive understanding of the dynamics influencing Vietnam's pharmaceutical trade with the EU.

3. Recommendations

3.1. Leverage the advantages of EVFTA

The regression analysis indicates that trade openness among EU countries does not have a statistically significant effect on Vietnam's pharmaceutical imports. Conversely, the EVFTA demonstrates its effectiveness in reducing trade barriers between Vietnam and the EU. This implies that bilateral agreements, like the EVFTA, and targeted economic policies in both Vietnam and the EU, may play a more critical role in influencing pharmaceutical import volumes than general trade openness. This emphasizes that the Vietnamese government should prioritize leveraging the EVFTA to boost its pharmaceutical imports.

To do this, Vietnam needs a robust law enforcement system and an efficient regulatory framework. The government should accelerate policy development related to pharmaceutical

standards and keep both domestic and foreign businesses informed about changes, as outlined in Article 5.7 on Transparency. Regarding the imitation, unauthorized use of the advancements in scientific knowledge, Vietnam should strengthen IP registration, enhance IP protection, and provide clear patent application guidelines in line with EU regulations. Besides, transparent governance in pharmaceutical practices requires clear policies and regulatory procedures to ensure compliance with EU standards and build trust with international partners. Increasing transparency by publicizing drug prices and official distributors is necessary to address the heightened competition in the pharmaceutical market from both international and domestic companies. Additionally, effective implementation of the EVFTA, with its broad scope and substantial commitments, necessitates a systematic approach to information dissemination and clarification of administrative procedures. To address the challenges of inadequate information and limited enterprise capacity, the government should organize regular meetings with businesses, conduct seminars and training workshops, and issue detailed guidelines. These measures will enhance understanding and facilitate better adoption of the agreement.

Given the significant impacts of EVFTA on Vietnam's pharmaceutical imports, Vietnamese enterprises themselves must independently address regulatory requirements and market demands to better employ the advantages of the EVFTA. *Firstly,* Vietnamese enterprises should focus on researching products of countries that are already well-known in the host country, such as France, Germany, Italy, and Belgium in regards to their production, development trends and market penetration strategies. Understanding competitors will enable Vietnamese firms to be more proactive and adaptable. *Secondly,* to capitalize on a rise in products under HS3004, HS3002, and HS3003, enterprises should invest in R&D to produce higher quality, specialized therapeutic drugs and leverage the EVFTA to partner with EU counterparts for access to advanced technologies and standards. *Thirdly,* in today's technology-driven era, the Internet serves as a powerful platform with diverse applications. To leverage this, businesses should harness technological advancements to gain a thorough understanding of the EVFTA and build their competitive edge using digital tools. Integrating artificial intelligence into their strategies can be particularly valuable for predicting trading trends, analyzing market preferences, and adapting to potential policy changes. *Fourthly,* companies must proactively understand and adapt to the regulations, policies, and information related to the EVFTA. This can be achieved through active participation in industry associations and collaboration with relevant authorities. By implementing these strategies, Vietnamese enterprises can effectively leverage the EVFTA to enhance their profitability and streamline international trade operations.

3.2. Expand import from EU countries with strong economic indicators and good governance

Based on model results, some well-known European exporters to Vietnam such as Belgium, Germany, France or Italy have already been with high GDP, large population and clean from bureaucracy. In fact, based on World Bank's country classifications by income in 2023, all the countries listed above fall into high income categories with corresponding 2023 GDP per capita of 49.54, 48.75, 40.8 and 35.35 in thousand euros (Statista, 2023). Consequently, they are attractive for high influx of immigrants, creating dense populations with overall growing patterns that are advantageous for international trade. Because of those promising traits, Vietnam should continue to maintain and develop its current bilateral relationship with those countries to further exploit them as stable suppliers of medical products.

However, provided the ranking of CPI published by Transparency International Organization, Germany, France, Italy and Belgium have widely dispersed figures: for Germany, its CPI in 2023 was tiered 8th on the world ranking, drastically higher as compared to that of Italy (42nd). Explained by diverse regulatory frameworks and governing procedures among members, this phenomenon could be a warning sign for Vietnamese enterprises to be aware of difficulties during trade flow with EU countries raised by bureaucracy and other problems related to administrative processes, especially at present when the EU must face with interior and exterior crisis. This raised another challenge for Vietnam to find other niche markets to be more prepared for such uncertain context ahead. Potentially, Slovenia, Ireland and Denmark could be future export partners of Vietnam as those nations had the highest extra EU pharmaceutical trade in 2023, regarding exportation (Eurostat, 2023). Adding on to that, their CPI mostly rests between moderate to very clean spectrum, with Denmark the world's least corrupted country (Transparency International, 2023).

3.3. Overcome distance and exchange rate challenges

To overcome the challenges posed by distance to the EU pharmaceutical market, Vietnamese companies should invest in improving transportation infrastructure, optimize their supply chains to align with EU standards, and explore strategic partnerships with European logistics providers or pharmaceutical companies. This includes ensuring timely and efficient delivery of products, maintaining quality throughout the supply chain, and reducing costs.

To reduce transportation costs, Vietnam should also consider diversifying its pharmaceutical imports from countries with closer geographical proximity. South Korea, located approximately 3,106 kilometers away, presents a favorable logistical advantage due to its relatively short distance compared to EU countries. This proximity can significantly reduce transportation time and associated costs, offering a potential source for Vietnam's pharmaceutical imports. In the face of a global economic downturn impacting South Korea, which is heavily reliant on exports, the Korean Government is enhancing diplomatic and economic ties with partners such as ASEAN, the EU, and others. In November 2022, Korea's President Yoo Seok Yeon led the "First National Export Strategy Conference," highlighting ASEAN, the United States, and China as key export markets. In 2022, pharmaceutical imports from South Korea to Vietnam reached $224.7 million, up 22.5% from the previous year, with an average tariff of 0.1% compared to 2.3% from the EU (ITC, 2024). Given these factors, especially the geographical advantage, South Korea may present a viable alternative source for Vietnam's pharmaceutical imports.

A weaker Vietnamese dong increases the cost of EU pharmaceuticals for Vietnamese importers, resulting in reduced import volumes due to the price sensitivity of the pharmaceutical sector. Therefore, it is crucial for The State Bank of Vietnam (SBV), as the country's central bank, to maintain a stable exchange rate and adjust import strategies accordingly.. Since 2022, the international market has seen unpredictable movements: the political tension between Russia and Ukraine has negatively affected the balance of supply and demand of foreign currencies, and the customers' psychology in the domestic market, putting pressure on the stability of the exchange rate and the forex market. In that context, the USD/VND exchange rate has reversed its downward trend in 2021, and has increased by about 2% since the beginning of 2022 as compared to that of the end of 2021. The SBV has conducted intervention measures to limit the fluctuations of the exchange rate such as selling foreign currencies using

appropriate means and maintaining an abundant liquidity of the VND. In the coming time, the SBV should continue to manage the exchange rate in an appropriate manner to support the stability of the exchange rate, the forex market and the common interest rates, as well as to support the implementation of the Socio-Economic Recovery and Development Program.

By implementing these strategies, Vietnam can effectively leverage the EVFTA to optimize international trade operations and maintain stable pharmaceutical sources in the face of geopolitical complexities.

REFERENCES

Abounaja Intellectual Property. (2014). "Role of IP in the pharmaceutical industry", Available at: https://abounaja.com/blogs/role-of-ip-in-pharmaceutical-industry (Accessed: 27 August 2024).

Anderson, J. E. & Van Wincoop, E. (2003). "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review*, Vol. 93 No. 1, pp. 170-192.

Angelino, A., Khanh, D., An Ha, N. & Pham, T. (2017). "Pharmaceutical Industry in Vietnam: Sluggish Sector in a Growing Market", *International Journal of Environmental Research and Public Health*, Vol. 14 No. 9, pp. 976.

Bui, D. L., Nguyen, L. Q. M. & Rizwan, A. (2021). "The potential impacts of the EVFTA on Vietnam's imports of dairy products from the EU: a SMART model analysis", *Journal of International Economics and Management*.

Center for WTO and International Trade (2022a). "Vietnam import and export report 2022", Available at: https://trungtamwto.vn/file/22356/bao-cao-xuat-nhap-khau-viet-nam-nam-2022.pdf (Accessed: 27 August 2024).

Center for WTO and International Trade (2022b) "Assessing the impact of the EU-Vietnam Free Trade Agreement on bilateral trade", Available at: https://trungtamwto.vn/chuyen-de/21742-danh-gia-tac-dong-cua-hiep-dinh-thuong-mai-tu-do-giua-viet-nam-va-lien-minh-chau-au-doi-voi-thuong-mai-song-phuong (Accessed: 27 August 2024).

Center for WTO and International Trade (n.d.), "What specific commitments does EVFTA have for pharmaceuticals and medical equipment?", Available at: https://trungtamwto.vn/thi-truong-duc/19414-evfta-co-cam-ket-rieng-gi-doi-voi-duoc-pham-va-trang-thiet-bi-y-te (Accessed: 27 August 2024).

Chambre de Commerce et d'Industrie France-Vietnam (CCIFV) (n.d.). "Intellectual property protection under the EVFTA", Available at: https://www.ccifv.org/en/vietnam/benefit-from-evfta/new-generation-bilateral-agreement/intellectual-property-protection.html (Accessed: 27 August 2024).

EEAS (2023). "The European Union and Vietnam", Available at: https://www.eeas.europa.eu/vietnam/the-eu-and-vietnam_en?s=184 (Accessed: 27 August 2024).

EuroCham Vietnam (2021). “Intellectual Property Rights Sub-Committee Whitebook 2021”, Available at: https://eurochamvn.org/wp-content/uploads/2022/12/iprsc_whitebook_2021.pdf (Accessed: 27 August 2024).

European Commission (n.d.). “EU-Vietnam Agreement: Texts of the agreements”, Available at: https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/vietnam/eu-vietnam-agreement/texts-agreements_en (Accessed: 27 August 2024).

European Parliament (2020). “EU-Vietnam trade deal: What are the benefits”, Available at: https://www.europarl.europa.eu/topics/en/article/20200131STO71518/eu-vietnam-trade-deal-what-are-the-benefits (Accessed: 27 August 2024).

Government of Viet Nam (2017) *Decree No. 125/2017/ND-CP on amendments 122/2016/ND-CP on export duty schedule, preferential import duty schedule and lists of commodities and their flat tax rates, compound tax rates and outside tariff quota rates*. [Accessed 27 August 2024].

Hoang, N. T. & Van, T. T. (2021). “Impact of EVFTA on pharmaceutical imports from EU market to Vietnam”, *Journal of Financial and Marketing Research*, Vol. 61, pp. 67-85.

ITC (2024). “Trade Map, International Trade Center”, Available at: http://www.trademap.org/Index.aspx (Accessed: 27 August 2024).

Ministry of Planning and Investment (2020). “EVFTA Agreement: Realizing Expected Benefits”, Available at: https://www.mpi.gov.vn/portal/Pages/2020/Hiep-dinh-EVFTA-Hien-thuc-hoa-cac-loi-ich-duoc-ky--854517.aspx (Accessed: 27 August 2024).

Minh, D. N., Nga, L. T. V., Huy, D. T. N. & Dat, P. M. (2021). “Vietnam’s Meat Import Market Under Impacts Of The European - Vietnam Free Trade Agreement And Quality Management Demand”, *Management*, Vol. 25 No. 1, pp. 99–117.

Pöyhönen, P. (1963). “A Tentative Model for the Volume of Trade between Countries”, *Weltwirtschaftliches Archiv*, Vol. 90, pp. 93–100.

Regulatory Policy Committee (2019). “Assessment of the EU-Vietnam Free Trade Agreement.”, Available at: https://assets.publishing.service.gov.uk/media/5ca3563d40f0b625e7f49698/RPC-4328-DIT_EU-Vietnam_FTA_opinion.pdf (Accessed: 27 August 2024).

Simonet, D. (2001, October 18). “Une analyse du marché pharmaceutique vietnamien”, *Santé Publique,* Available at: https://www.jle.com/en/revues/san/e-docs/une_analyse_du_marche_pharmaceutique_vietnamien_220164/article.phtml (Accessed: 27 August 2024).

The Russia Program (n.d.). “Vietnam-Russia relations”, Available at: https://therussiaprogram.org/vietnam_russia (Accessed: 27 August 2024).

Trong, D., Bui, V., Vu, N., Pham, S., Truong, H., Dang, T., Van, T., Pham, T. & Trinh, T. (2021). “Impact of EVFTA on Trade Flows of Fruits between Vietnam and the EU”, *Journal of Asian Finance*, Vol. 8 No. 5, pp. 607-616.

Vietnam Investment Review (2021). “More time and effort required for EVFTA-led pharma advances”, Available at: http://vir.com.vn/more-time-and-effort-required-for-evfta-led-pharma-advances-86784.html (Accessed: 27 August 2024).

Vu, H. T. (2016). “Assessing potential impacts of the EVFTA on Vietnam’s pharmaceutical imports from the EU: an application of SMART analysis”, *SpringerPlus*, Vol. 5 No. 1.

World Health Organization (WHO) (2020). “Pharmaceuticals and intellectual property: A review of the current evidence”, Available at: https://applications.emro.who.int/dsaf/dsa1005.pdf?ua=1 (Accessed: 27 August 2024).

World Bank. (n.d.). “The world by income and region”, Available at: https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html?_gl=1*1dqxwv7*_gcl_au*MzQ0NjAyNjcuMTcyNjYyMDExNQ.. (Accessed 7 September 2024).

Statista. (2023). “GDP per capita in EU member states 2022”, Available at: https://www.statista.com/statistics/1373462/gdp-per-capita-eu-member-states-2022/ (Accessed 7 September 2024).

Eurostat (2024). “EU population grows to over 450 million”, Available at: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240711-1#:~:text=After%20a%20decline%20in%202020,people%20on%201%20January%202024 (Accessed: 7 September 2024).

Eurostat (2023). “International trade in medicinal and pharmaceutical products”, Available at:https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=International_trade_in_medicinal_and_pharmaceutical_products&oldid=636772#:~:text=Table%201%20shows%20that%20in,their%20total%20extra%2DEU%20exports(Accessed: 7 September 2024).

Transparency International (2023). “Corruption Perceptions Index 2023”, Available at: https://www.transparency.org/en/cpi/2023 (Accessed: 7 September 2024).

State Bank of Vietnam (2024). “Latest developments in monetary policy”, Available at: https://www.sbv.gov.vn/webcenter/portal/en/home/sbv/news/Latestnews/Latestnews_chitiet?centerWidth=80%25&dDocName=SBV506014&leftWidth=20%25&rightWidth=0%25&showFooter=false&showHeader=false&_adf.ctrlstate=whzcq36ef_9&_afrLoop=2851515373794755#%40%3F_afrLoop%3D2851515373794755%26centerWidth%3D80%2525%26dDocName%3DSBV506014%26leftWidth%3D20%2525%26rightWidth%3D0%2525%26showFooter%3Dfalse%26showHeader%3Dfalse%26_adf.ctrl-state%3D1yzjzc8rv_4 (Accessed: 7 September 2024).