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Evaluating Vietnam-Germany trade in the context of the EVFTA: A trade indicator approach

Nguyen Minh Trang[1]
Nguyen Thi Thu Ha[2]

[1,2]*Diplomatic Academy of Vietnam.*
[1]*Email: trangdav@gmail.com*
[2]*Email: thuhanguyenthi.work@gmail.com*

(Corresponding Author)

Abstract

This study evaluates the impact of the EU-Vietnam Free Trade Agreement (EVFTA) on bilateral trade between Vietnam and Germany, addressing a gap in empirical research despite Germany's role as Vietnam's largest EU trading partner. The research adopts a trade indicator approach, applying the Bilateral Revealed Comparative Advantage (BRCA), Trade Intensity Index (TII), and Trade Complementarity Index (TCI) to analyze structural changes in trade between 2015 and 2023. The findings show that Vietnamese export sectors with established competitiveness, including footwear, leather, and wood products, have achieved notable gains under the EVFTA framework. However, sectors such as processed foods and high-tech machinery demonstrate limited improvement due to production constraints, compliance challenges, and value chain integration issues. Moreover, the results highlight a declining trend in both trade complementarity and intensity, indicating that the positive effects of the EVFTA have not been sustained in the long term. These findings underscore the need for Vietnam to enhance domestic production capacity, improve regulatory alignment with EU standards, and adopt a more proactive export strategy to fully capitalize on the agreement. Strengthening these dimensions will not only sustain existing advantages but also foster diversification and resilience in Vietnam-Germany trade relations under the evolving EVFTA landscape.

Keywords: Bilateral trade, BRCA, EVFTA, Germany, TCI, TII, Vietnam.

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Contribution of this paper to the literature
This study contributes to the existing literature by being the first to apply comprehensive trade indicators (BRCA, TII, TCI) to analyze Vietnam-Germany bilateral trade under the EVFTA. The paper's primary contribution is documenting macro-level structural shifts beyond sectoral studies, offering a fuller understanding of this strategic partnership.

1. Introduction

The EU-Vietnam Free Trade Agreement (EVFTA) represents a significant step in Vietnam's international economic integration strategy, aiming to broaden market access and promote institutional reforms in accordance with the European Union's (EU) rigorous standards (WTO Center, 2023). Within this framework, Germany—Europe's largest economy and a pivotal member of the EU occupies a central role in Vietnam's trade landscape. It functions as both a major bilateral trading partner and a vital entry point for Vietnamese exports into the wider European market (WTO Center VCCI, 2022).

Despite Germany's strategic importance, bilateral trade between Vietnam and Germany has received limited attention in academic research, particularly with regard to empirical and quantitative analysis. Furthermore, qualitative evaluations of the EVFTA's impact on Vietnam-Germany trade remain scarce, even though the agreement has been in force since August 2020. This study aims to bridge this gap by assessing changes in trade structure, trade balance, and two-way trade flows between the two countries. To support the qualitative findings, key trade indicators, including the Bilateral Revealed Comparative Advantage (BRCA), Trade Intensity Index (TII), and Trade Complementarity Index (TCI), are employed. The results reveal significant sectoral disparities in the ability to benefit from the EVFTA, with certain industries showing strong performance while others remain underdeveloped due to structural and regulatory constraints.

The EVFTA, signed in June 2019 and ratified in August 2020, is considered one of Vietnam's most comprehensive trade agreements, alongside the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). In contrast to the former Generalized System of Preferences (GSP), the EVFTA offers broader and more sustainable trade advantages. Under the agreement, Germany committed to eliminating 99.2% of tariffs on Vietnamese goods within seven years, while Vietnam pledged to remove 98.3% of tariffs on German goods over ten years. Additionally, the EVFTA strengthens cooperation in customs procedures, e-commerce, public procurement, and protection of geographical indications, contributing to greater transparency and efficiency (WTO Center, 2023).

Initial outcomes from the EVFTA are promising. Vietnam's key export sectors, such as footwear, textiles, seafood, plastics, and fruits, have experienced considerable growth in the German market. Conversely, German exports of automobiles, machinery, and industrial inputs have gained broader access to Vietnam (Finance Magazine, 2023). Between 2012 and 2022, Vietnam's exports to the EU increased by an average of 10.5% annually, and imports rose by 6.4%. The agreement is estimated to have raised Vietnam's GDP by 2-2.5% and boosted exports to the EU by 75%, while also stimulating institutional reform and enhancing the country's investment environment (WTO Center, 2023).

Vietnam and Germany established diplomatic relations in 1975, later upgrading to a strategic partnership in 2011. Today, Germany stands as Vietnam's largest EU trading partner, accounting for nearly 20% of Vietnam's total exports to the EU. It is also a leading provider of official development assistance (ODA), with over USD 2 billion committed since 1990 through agencies such as KfW and GIZ (WTO Center, 2023). From 2001 to 2018, bilateral trade grew at an average annual rate of 14%, with a notable acceleration in trade volumes following the EVFTA's entry into force. Against this backdrop, the present study offers a comprehensive assessment of Vietnam-Germany trade under the EVFTA and presents targeted policy recommendations aimed at strengthening economic cooperation between the two countries in the medium and long term.

2. Literature Review

The EU-Vietnam Free Trade Agreement (EVFTA) has been the subject of growing academic interest, particularly regarding its macroeconomic implications and sectoral impacts on Vietnam's trade relations with the European Union (EU). However, most studies have centered on Vietnam-EU trade as a whole or focused on specific sectors such as textiles, seafood, or agriculture. In contrast, Vietnam-Germany trade relations under the EVFTA, especially through the lens of trade indicators, remain significantly underexplored. Grumiller, Raza, Staritz, Grohs, and Plank (2020) using the ÖFSE Global Trade Model, assess the broader economic and social effects of the EVFTA on Vietnam. Their findings highlight both export expansion potential and structural weaknesses, calling for institutional reforms to maximize the agreement's benefits. Similarly, Khoat and Cismas (2019) focus on the policy dimension, analyzing the EVFTA's negotiation process and anticipated socio-economic impacts. Both studies underline the importance of regulatory alignment, supply chain readiness, and policy coordination in realizing long-term trade benefits.

Quantitative studies have employed trade models to evaluate the EVFTA's impact. Hoan (2021) uses trade indicators to show Vietnam's revealed comparative advantage in several export sectors to the EU, although bilateral trade volume with individual EU members like Germany remains modest in scale. Huong and Phuong (2016) utilize sectoral trade indicators to reveal intra-industry trade characteristics, especially in machinery and electronics, emphasizing the need for deeper integration into EU supply chains. Gravity model-based studies offer mixed results. Ha (2024) finds limited short-term effects of the EVFTA on Vietnam's exports, while Diep, Thao, and Thu (2018) identify significant export drivers, including GDP, population, and institutional quality, alongside negative impacts from geographical distance and technological gaps. These studies, while valuable, treat the EU as a homogenous block and overlook bilateral variations, particularly with high-potential partners like Germany.

Sector-specific literature offers further nuance. For instance, Chung et al. (2024) and Hoang and Tan (2020) assess the EVFTA's impact on seafood exports to the EU, revealing that while market access has improved, technical and quality-related barriers remain significant. Although informative, such studies focus narrowly on industry-specific outcomes and do not account for broader bilateral trade dynamics. Studies directly examining Vietnam-Germany trade are comparatively limited. Tinh (2017) provides a general overview of bilateral economic relations and highlights the need for policy support to leverage German market opportunities. Thong et al. (2020) analyze price transmission in the pangasius value chain between Vietnam and Germany, uncovering inefficiencies and asymmetries in value distribution. Kiem, Nguyen, Le, and Tran (2025) apply the SMART model to Vietnam's garment exports to Germany, showing competitive gains under the EVFTA but emphasizing the importance of rules of origin and certification compliance.

However, a critical gap persists in the existing literature: there is a lack of comprehensive, indicator-based studies that assess the structure, intensity, and complementarity of Vietnam-Germany trade within the EVFTA framework. While Germany is Vietnam's largest trading partner in the EU, accounting for nearly 20% of its exports to the bloc (WTO Center, 2023), most empirical research either generalizes EU-wide impacts or isolates sectoral case studies. Little attention has been given to how Vietnam's trade with Germany has evolved in terms of competitiveness, structural change, and long-term sustainability since the EVFTA's entry into force. This study seeks to address that gap by employing a trade indicator approach focusing on the Bilateral Revealed Comparative Advantage (BRCA), Trade Intensity Index (TII), and Trade Complementarity Index (TCI) to evaluate Vietnam-Germany trade between 2015 and 2023. By doing so, it contributes both a methodological and empirical advancement to the literature, providing a nuanced understanding of bilateral trade dynamics in the context of a new-generation free trade agreement.

3. Methodology

This study adopts a mixed-method approach, primarily based on the collection and synthesis of secondary data from official reports, legal documents, statistical sources, and academic literature both domestic and international. The research integrates qualitative analysis with a review of existing studies to ensure a comprehensive and objective assessment of the EVFTA's impact on Vietnam-Germany trade relations, while also formulating appropriate policy recommendations. To support the qualitative analysis, a set of international trade indicators is employed to assess the current status, intensity, potential, and complementarity of bilateral trade between Vietnam and the Federal Republic of Germany during the 2015–2023 period (or the most recent year with complete data). The key trade indicators used include:

Bilateral Revealed Comparative Advantage (BRCA): The BRCA index measures Vietnam's revealed comparative advantage in specific product categories within the bilateral trade framework with Germany. It reflects Vietnam's relative export competitiveness in a given commodity group.

$$\text{BRCA} = \frac{\text{Xij(k)/Xij}}{\text{Xwj(k)/Xwj}}$$

- X(ij,k): Export value of product *k* from country *i* (Vietnam) to country *j* (Germany).
- X(ij): Total exports from country *i* (Vietnam) to country *j* (Germany).
- X(wj,k): World export value of product *k* to country *j* (Germany).
- X(wj): Total world exports to country *j* (Germany).

If BRCA > 1, Vietnam has a comparative advantage in exporting that product to Germany.

Trade Intensity Index (TII): The TII measures the degree of trade concentration between Vietnam and Germany, indicating whether Germany is a relatively more important trading partner for Vietnam (and vice versa) compared to the global average. Formula:

$$\text{TII} = \frac{\text{Tij/Tiw}}{\text{Twj/Tw}}$$

- X(ij): Exports from country *i* (Vietnam) to country *j* (Germany).
- X(iw): Total exports from Vietnam to the world.
- X(wj): World exports to country *j* (Germany).
- X(w): Total world exports.

A TII > 1 indicates a relatively strong bilateral trade intensity.

Trade Complementarity Index (TCI): The TCI evaluates the degree of alignment between Vietnam's export structure and Germany's import structure, serving as a proxy for the potential to develop mutually beneficial trade based on product complementarity. Formula:

$$\text{TCI (ij)} = 100 - (1/2) \times \Sigma|\text{X(ik)} - \text{M(jk)}|$$

- X(ik): Share of product *k* in Vietnam's total exports.
- M(jk): Share of product *k* in Germany's total imports.

A TCI value closer to 100 indicates a higher degree of trade complementarity between the two countries.

Data Sources: The data used in this study are drawn from the General Department of Vietnam Customs; UN COMTRADE; International Trade Centre (ITC); Eurostat…

Table 1 presents the Harmonized Commodity Description and Coding System (HS), as issued by the World Customs Organization, to classify traded goods. The 99 chapters in the HS system are restructured into 19 broader commodity categories, based on the naming conventions and detailed descriptions of each chapter and group. This classification process aligns with the research objectives and follows the categorization methodologies of the General Department of Vietnam Customs and the European Commission.

Table 1. Classification of commodity groups.

Group No.	HS code range	Commodity group description
Group 1	HS01 - HS05	Live animals and animal products
Group 2	HS06 - HS14	Vegetable products
Group 3	HS15 - HS24	Processed food, beverages, and tobacco
Group 4	HS25 - HS27	Mineral products and petroleum
Group 5	HS28 - HS38	Chemical products
Group 6	HS39 - HS40	Plastic and rubber products
Group 7	HS41 - HS43	Leather products
Group 8	HS44 - HS46	Wood and wood products
Group 9	HS47 - HS49	Paper and pulp products
Group 10	HS50 - HS56	Textile raw materials
Group 11	HS57 - HS63	Textile and garment products
Group 12	HS64 - HS67	Footwear, headgear, and related accessories
Group 13	HS68 - HS70	Articles of stone, plaster, cement, ceramics, and glass
Group 14	HS71	Pearls and precious metals
Group 15	HS72 - HS83	Basic metal products
Group 16	HS84 - HS85	Machinery, mechanical and electronic equipment
Group 17	HS86 - HS89	Vehicles and transport equipment
Group 18	HS90 - HS92	Optical instruments, clocks, musical and medical equipment
Group 19	HS93 - HS99	Miscellaneous goods

4. Results and Discussion

4.1. Overview of Vietnam-Germany Trade Relations

Between 2015 and 2023, merchandise trade between Vietnam and Germany exhibited a generally upward trend, despite fluctuations driven by global economic disruptions. Bilateral trade began at USD 8.91 billion in 2015 and increased steadily to USD 10.69 billion by 2018, reflecting an average annual growth rate of approximately 6.26%. The year 2018 marked a particularly strong expansion, with trade volume rising by over USD 1 billion compared to the previous year. Figure 1 illustrates the total bilateral trade between Vietnam and Germany from 2015 to 2023.

The figure illustrates both the overall trade value and the annual growth rate, providing an overview of trade dynamics and fluctuations during the observed period.

Figure 1. Vietnam-Germany merchandise trade value and growth rates, 2015-2024.
Source: Author's calculations based on ITC Trade Map data.

However, this momentum was temporarily interrupted during 2019–2020. Trade volume fell by USD 426 million in 2019 and continued to decline to USD 9.99 billion in 2020, a cumulative drop of nearly USD 690 million from the 2018 peak. This contraction was likely driven by global supply chain disruptions and demand shocks associated with the COVID-19 pandemic. A robust recovery followed in 2021 and 2022. Trade rebounded to USD 11.22 billion in 2021, an increase of 12.3% year-on-year, and further climbed to USD 12.58 billion in 2022, marking the highest level during the period. However, 2023 saw another decline, with bilateral trade falling to USD 11.08 billion, a decrease of 11.9% from the previous year. This downturn may be attributed to inflationary pressures, increased logistics costs, and weakening demand across the European market.

Over the full 2015-2023 period, total bilateral trade grew by 24.4%, from USD 8.91 billion to USD 11.08 billion. While periods of stagnation and decline occurred, particularly in 2018-2020 and again in 2023, the overall trend remains positive. Notably, the entry into force of the EVFTA in 2020 played a crucial role in accelerating trade, particularly between 2020 and 2022. The most significant annual growth spikes occurred in 2017-2018 (+11.8%), 2020-2021 (+12.3%), and 2021-2022 (+12.1%), while contractions were observed in 2018-2019 (-4.0%), 2019-2020

(-2.6%), and 2022-2023 (-11.9%). These shifts underscore the cyclical and externally sensitive nature of bilateral trade dynamics.

In terms of trade composition, Vietnam's exports to Germany primarily consist of machinery, transport equipment, steel, and seafood, all of which have shown solid growth. On the import side, Vietnamese firms benefit from increased access to German high-tech equipment, industrial inputs, and consumer products facilitated by tariff reductions under the EVFTA. The trade relationship is characterized by high structural complementarity: Vietnam holds comparative advantages in agricultural products, light industry, and consumer goods, while Germany specializes in capital goods, heavy industries, chemicals, and pharmaceuticals. This complementarity has laid the foundation for sustained trade growth and deeper integration. Furthermore, German FDI in Vietnam has expanded significantly, with over 530 active projects and a total registered capital of USD 3.6 billion as of 2024. Prominent German firms such as Ziehl-Abegg, Kärcher, and Pearl Polyurethane Systems have increased their investment in Vietnam, underscoring strong investor confidence in the country's economic potential and its emerging role in global supply chains (VietnamPlus, 2024).

4.2. Assessment of Vietnam-Germany Bilateral Trade Using the Bilateral Revealed Comparative Advantage (BRCA) Index

Using the Bilateral Revealed Comparative Advantage (BRCA) index as the primary analytical tool, this section evaluates the performance of Vietnam's major export sectors to Germany during the 2015–2023 period, thereby offering insights into the dynamics of trade competitiveness in the context of the European Union-Vietnam Free Trade Agreement (EVFTA).

Table 2 presents the BRCA index by product group for Vietnam's exports to Germany during the period 2015-2023. The table reorganizes the 99 HS chapters into 19 broader commodity categories, allowing the identification of sectors where Vietnam shows comparative advantages.

Table 2. BRCA index by product group for Vietnam's exports to Germany.

Product Group (HS Code & Description)	2015	2016	2017	2018	2019	2020	2021	2022	2023
HS01-HS05 (Live animals and animal products)	1.01	0.81	0.76	0.83	0.95	0.82	0.13	0.99	0.79
HS06-HS14 (Vegetable products)	2.78	2.93	3.13	3.00	2.77	2.29	2.77	2.38	2.27
HS15-HS24 (Processed food, beverages, and tobacco)	0.58	0.60	0.71	0.77	0.35	0.65	0.63	0.47	0.58
HS25-HS27 (Mineral products and petroleum)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
HS28-HS38 (Chemical products)	0.13	0.13	0.11	0.10	0.06	0.05	0.05	0.04	0.04
HS39-HS40 (Plastic and rubber products)	5.71	0.73	0.81	0.76	0.83	0.84	0.95	0.83	0.87
HS41-HS43 (Leather products)	5.10	4.47	5.20	5.35	6.34	6.29	5.35	5.84	6.61
HS44-HS46 (Wood and wood products)	1.18	1.05	0.99	1.00	1.17	1.23	1.06	0.95	0.96
HS47-HS49 (Paper and pulp products)	0.02	0.02	0.04	0.05	0.05	0.05	0.04	0.00	0.05
HS50-HS56 (Textile raw materials)	0.19	0.13	0.13	0.22	0.29	0.49	0.75	0.57	0.81
HS57-HS63 (Textile and garment products)	3.37	2.45	3.22	2.26	3.54	2.36	2.96	3.43	3.68
HS64-HS67 (Footwear, headgear, and related accessories)	11.33	1.25	14.17	12.64	13.20	11.60	11.60	13.40	13.20
HS68-HS70 (Stone, cement, ceramic, and glass products)	0.39	0.32	0.20	0.17	0.21	0.53	0.52	0.46	0.42
HS71 (Pearls and precious metals)	0.09	0.12	0.12	0.09	0.10	0.07	0.06	0.12	0.14
HS72-HS83 (Basic metal products)	0.31	0.28	0.26	0.30	0.34	0.16	0.36	0.41	0.49
HS84-HS85 (Machinery and electronic equipment)	1.73	1.37	1.56	1.70	1.55	1.51	1.39	1.46	1.39
HS86-HS89 (Vehicles and transport equipment)	0.14	0.12	0.11	0.12	0.16	0.17	0.17	0.17	0.17
HS90-HS92 (Optical instruments, clocks, musical & medical equipment)	0.26	0.26	0.26	0.24	0.27	0.45	0.45	0.45	0.49
HS93-HS99 (Miscellaneous goods)	0.94	0.82	0.72	0.88	0.98	1.12	1.48	1.21	1.21

Source: Author's calculations based on ITC Trade Map and UN TRADECOM data.

The product group classified under HS64-HS67 (Footwear, Headgear, and Related Accessories) exhibited the highest and most consistent BRCA values throughout the analysis period. Starting at 11.34 in 2015 and reaching a peak of 14.17 in 2017, the sector experienced a temporary decline to 1.25 in 2016. This deviation may be attributed to external disruptions, including Brexit-induced uncertainty, temporary shifts in procurement, and subdued investment flows. Notwithstanding this anomaly, the sector demonstrated rapid recovery, subsequently maintaining BRCA levels well above the threshold of 1.0, underscoring Vietnam's enduring comparative advantage and structural competitiveness in this product group within the German market.

Similarly, the HS41-HS43 (Leather and Leather Products) group consistently recorded BRCA values exceeding 4, culminating at 6.61 in 2023. This performance indicates stable competitiveness and suggests long-term export potential, particularly in light of EU demand for high-quality leather goods. The persistence of this comparative advantage highlights the strategic relevance of continued investment in quality control, branding, and market diversification.

HS44-HS46 (Wood and Wood Products) has shown a notable upward trend in comparative advantage, with BRCA values rising from 0.99 in 2017 to 1.30 in 2023. The consistent progression above the threshold of 1.0 from 2019 onward suggests that Vietnam is gaining market share in Germany's wood product segment. This improvement is likely the result of increased processing capacity, compliance with EU sustainability standards, and effective implementation of national forestry certification policies.

A similar trajectory is observed in HS93-HS99 (Miscellaneous Manufactured Articles). Initially characterized by sub-threshold BRCA values (e.g., 0.95 in 2015 and 0.82 in 2016), the group witnessed a marked increase, achieving a BRCA of 1.22 in 2020 and peaking at 1.48 in 2022. Although this category encompasses a broad range of items, its improved competitiveness may be attributed to niche exports such as sports equipment, non-lethal defense items, and handicrafts sectors that benefit from cultural appeal and artisanal value. These findings suggest considerable room for export diversification and targeted industrial support.

The HS57-HS63 (Textiles and Garments) category, traditionally a core export strength for Vietnam, revealed a consistent decline in BRCA values over the period. From a high of 3.37 in 2015, the index fell to 2.45 in 2016 and further declined to 1.81 by 2023. Although still indicative of a comparative advantage, the downward trend reflects intensifying competition from regional exporters such as Bangladesh and Cambodia, as well as increasing sustainability and traceability requirements in the EU apparel market.

Similarly, HS06-HS14 (Vegetable Products) declined from a BRCA of 2.93 in 2016 to 2.27 in 2023. This weakening may be linked to structural barriers, including limited value addition, seasonal supply volatility, and the tightening of EU sanitary and phytosanitary (SPS) regulations. Despite retaining competitiveness, the trend indicates a need for strategic intervention to sustain market access and enhance product quality.

Figure 2 illustrates the BRCA index of Vietnamese export product groups to Germany during 2015-2023, highlighting only those groups with a comparative advantage (BRCA > 1).

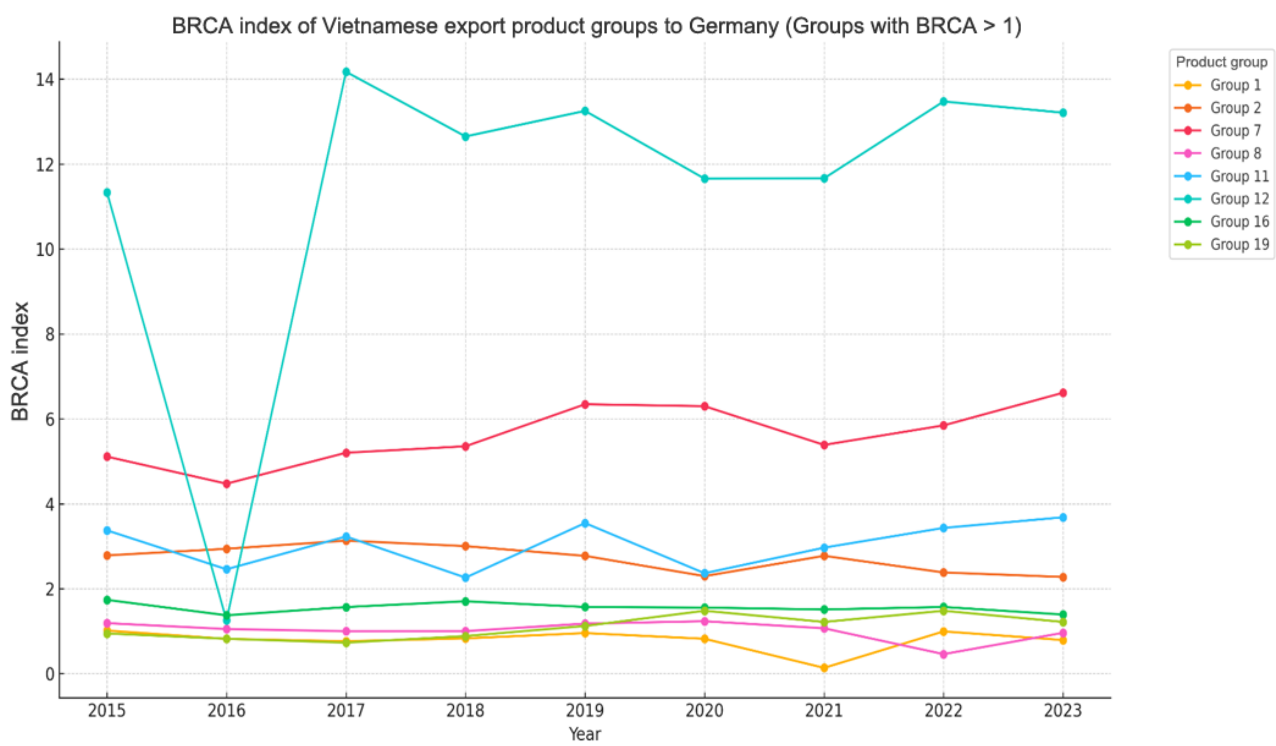

Figure 2. BRCA Index of Vietnamese export product groups with BRCA > 1 (2015-2023).

Source: Author's calculations based on ITC Trade Map and UN TRADECOM data

Several product groups consistently recorded BRCA values below 1, suggesting a lack of comparative advantage and limited export potential in the short to medium term.

- HS25-HS27 (Mineral Products and Petroleum) demonstrated minimal contribution to bilateral trade, with BRCA scores close to zero. Germany's transition away from fossil fuels and its strict environmental standards likely constrain Vietnam's competitiveness in this domain.
- HS28-HS38 (Chemical Products) similarly exhibited low BRCA values, reflecting Vietnam's limited capacity in producing and exporting high-value-added or refined chemical goods.
- HS50-HS56 (Raw Textile Materials) remained below the threshold, underscoring Vietnam's position primarily as a garment assembler rather than a producer of upstream textile inputs. This reflects continued dependence on imported fabrics and materials, particularly from China and South Korea.
- HS84-HS85 (Machinery and Electrical Equipment) displayed volatility in BRCA values, with no sustained competitive edge. While Vietnam is increasingly engaged in electronics assembly, the lack of technological depth and insufficient integration into advanced segments of global value chains remain critical impediments.

Table 3 presents the trade intensity index (TII) between Vietnam and Germany from 2015 to 2023, highlighting the relative importance of each country as a trading partner compared to their global trade.

Table 3. Trade intensity between Vietnam and Germany.

Year	Vietnam's exports to Germany	Germany's exports to Vietnam
2015	3.56	0.24
2016	3.04	0.19
2017	2.41	0.18
2018	2.23	0.20
2019	1.75	0.18
2020	1.46	0.16
2021	1.43	0.16
2022	1.61	0.15
2023	1.40	0.16

Source: Author's calculations based on ITC Trade Map and UN TRADECOM data.

4.3. Assessment of Vietnam-Germany Bilateral Trade Using the Trade Intensity Index

The trade intensity data between Vietnam and Germany from 2015 to 2023 reveal a volatile yet strategically significant picture of bilateral commerce. Vietnam's export intensity to Germany experienced a notable decline from 3.57 in 2015 to 1.40 in 2023. Notably, the sharpest decrease occurred during 2015-2019 (from 3.57 to 1.76), potentially reflecting Vietnam's diversification of export destinations and a reduced reliance on the German market, as other major economies such as the United States, China, and Japan became increasingly attractive. Additionally, intense competition in Vietnam's key export sectors (e.g., textiles and footwear) from other ASEAN countries, along with the EU's stringent technical standards, contributed to this declining trade intensity. Nevertheless, a slight rebound in 2022 when the index rose to 1.61 may indicate an initial positive response to the EU-Vietnam Free Trade Agreement (EVFTA), which came into force in 2020. Conversely, Germany's export intensity to Vietnam remained consistently low throughout the period, fluctuating narrowly between 0.15 and 0.24. This suggests that, despite the high quality of German goods, they accounted for only a small share of Vietnam's total imports. The dominance of alternative suppliers such as China, South Korea, and Japan with their geographic proximity and competitive pricing likely contributed to this trend.

Overall, the bilateral trade intensity index reflects Vietnam's persistent trade surplus with Germany, with export intensity values often 7 to 20 times higher than those for imports. Germany continues to be a high-potential market for Vietnamese products, especially in sectors such as footwear, textiles, furniture, and electronic components. However, the low import intensity from Germany signals an underexploited dimension of the partnership, underscoring the strategic need to rebalance trade or deepen supply chain linkages with high-tech partners like Germany.

Table 4 presents the trade complementarity index (TCI) between Vietnam and Germany from 2015 to 2023, reflecting the degree of compatibility between Vietnam's export structure and Germany's import demand.

Table 4. Trade complementarity index (TCI) between Vietnam and Germany (2015-2023).

Year	TCI (%)
2015	46.32
2016	45.34
2017	45.83
2018	46.62
2019	46.30
2020	44.42
2021	44.56
2022	44.11
2023	43.92

Source: Author's calculations based on ITC Trade Map and UN TRADECOM data.

4.3.1. Assessment of Vietnam-Germany Bilateral Trade Using the Trade Complementarity Index (TCI)

The Trade Complementarity Index (TCI) between Vietnam and Germany during the period 2015-2023 fluctuated within the range of 44-47, indicating a moderate level of complementarity in the trade structures of the two countries. The years 2018 and 2019 recorded the highest TCI values, at 46.62 and 46.30 respectively, suggesting a strong alignment between Vietnamese export profiles and German import demand. This period reflects an optimal match in trade composition, implying that Vietnam effectively supplied product categories corresponding to Germany's import needs particularly in sectors such as textiles, electronic components, and mechanical equipment.

However, since 2020, the TCI has exhibited a slight downward trend, declining from 45.45 to 43.92 in 2023, the lowest level in nearly a decade. This pattern implies a weakening alignment between Vietnam's export structure and Germany's evolving import demand. Possible explanations include post-COVID-19 global supply chain realignments, Germany's shifting sourcing strategies toward more competitive markets, or structural changes in Vietnam's major export sectors. The declining TCI trend signals a potential loss of trade synergy, which, if sustained, could undermine Vietnam's ability to fully leverage trade advantages and optimize bilateral trade relations with Germany.

4.4. Qualitative Impacts of the EVFTA

First, under the influence of the EVFTA, many of Vietnam's traditional export sectors have not only sustained but also strengthened their comparative advantages in the German market, suggesting that the agreement has had a positive effect on bilateral trade. Sectors with pre-existing advantages, such as *leather products* (HS41-HS43), maintained a high RCA above 5, largely due to preferential tariff treatment. Similarly, *footwear and headgear* (HS64-HS67) experienced a notable increase in RCA, from 11.65 in 2020 to 13.21 in 2023, reinforcing their competitive position. The *textile and garment sector* (HS57-HS63) also witnessed a strong recovery after a period of decline, attributed to the favorable conditions created by the EVFTA. Meanwhile, the *wood and wood products* group (HS44-HS46), which previously had an RCA below 1, recorded an increase above 1, indicating a positive structural shift. These findings confirm that the EVFTA has played a significant role in enhancing the competitiveness of Vietnamese exports in the German market particularly in traditional sectors such as textiles, leather, footwear, and wood products thereby laying a stronger foundation for Vietnam to expand and exploit the European market more effectively.

In addition to these clearly benefiting sectors, a number of product groups have not shown any noticeable improvement in comparative advantage, highlighting the selective nature of the agreement's impact. Several industries maintained RCA values below 1 both before and after the EVFTA took effect, indicating that the agreement's support was not sufficient to trigger structural change. Notably, sectors such as *processed food, beverages, and tobacco* (HS15-HS24), and *high-tech machinery, transport equipment, and optical instruments* (HS84-HS92), have yet to capitalize on the opportunities offered by the EVFTA, primarily due to technological limitations and low added value. The *mineral and petroleum* group (HS25-HS27), in particular, consistently lacked comparative advantage throughout 2015-2023—largely due to limited preferential treatment under the agreement and Vietnam's weak export capacity in this domain. This reality suggests that the EVFTA has primarily accelerated growth in sectors with an existing foundation and the capacity to meet EU standards, while its effects remain muted in structurally weaker industries. To more effectively leverage the EVFTA, Vietnam must invest in strengthening its production capacity, improving compliance with technical standards, and developing targeted industrial strategies aligned with long-term trade goals.

Third, while the EVFTA was initially anticipated to deliver a substantial boost to Vietnam-Germany trade relations, its actual impact appears to be transient and lacking in long-term sustainability. The early momentum in export growth quickly plateaued due to a confluence of external pressures, including intensified regional competition, the COVID-19 pandemic, and geopolitical disruptions across Europe. Trade indices such as the Trade Complementarity Index (TCI) and Trade Intensity Index (TII) have either declined or fluctuated, suggesting that the EVFTA has not yet induced a structural transformation in bilateral trade patterns. This limited impact can largely be attributed to Vietnam's internal constraints particularly weak production capacity, underdeveloped logistics infrastructure, and insufficient alignment with the EU's stringent technical, environmental, and regulatory standards.

In this context, the EVFTA has primarily served as a legal and institutional framework to facilitate trade rather than acting as a transformative catalyst for Vietnam-Germany trade relations. To fully harness the benefits of the agreement, Vietnam must focus on improving its competitive capacity, enhancing supply chain resilience, and increasing market accessibility by complying more comprehensively with EU norms. Developing a long-term export strategy tailored to the evolving global trade landscape is also imperative. Several structural factors contribute to the muted impact of the EVFTA on bilateral trade. Germany's import demand has increasingly shifted toward high-tech, green, and sustainable product sectors in which Vietnam still faces significant gaps. Moreover, the country's export structure remains concentrated in traditional, labor-intensive goods with limited innovation. The growing competition from both intra-EU and Asian suppliers further erodes Vietnam's market share in Germany. Without timely structural adjustments, quality upgrading, and responsiveness to sustainable consumption trends, Vietnam risks underutilizing the strategic advantages offered by the EVFTA. Therefore, the long-term success of the agreement requires more proactive engagement from both enterprises and policymakers in Vietnam.

5. Policy Implications

Before presenting policy recommendations and strategic solutions, this study provides a synthesized SWOT analysis, highlighting Vietnam's strengths, weaknesses, opportunities, and threats in order to establish a solid foundation for more appropriate and effective directions in the trade relationship with Germany.

Strengths: Vietnam demonstrates several strengths in its trade engagement with Germany. The country possesses key export sectors that align well with German consumer preferences, such as wood products, textiles and garments, footwear, coffee, and tropical fruits. The quality of Vietnamese goods has significantly improved over the years, gradually gaining acceptance in demanding markets like the EU, particularly Germany. Many Vietnamese enterprises have also made long-term, methodical investments to develop high-standard products that meet strict quality and design requirements. Additionally, Vietnam is actively promoting investment in high-tech industries, especially in underdeveloped areas such as fruit and seafood processing, with the aim of enhancing both product quality and export value.

Weaknesses: Despite its export potential, Vietnam faces several weaknesses that hinder its trade performance with Germany. Product quality and technical standards remain inconsistent, making it challenging to meet the stringent requirements of the German and broader EU markets. Outdated processing technologies persist, resulting in exports that are often raw or semi-processed, thus limiting value addition. Moreover, significant limitations exist in traceability and international certification, particularly among small and medium-sized enterprises (SMEs). High logistics costs and inadequate infrastructure further reduce Vietnam's price competitiveness and delivery efficiency. Finally, weaknesses in branding and market access, along with a lack of effective marketing strategies and limited understanding of German consumer preferences, continue to constrain Vietnam's ability to expand its market presence.

Opportunities: The implementation of the EVFTA has opened up a range of promising opportunities for Vietnam–Germany trade relations. Since the entry into force of the EVFTA, there has been a noticeable increase in German investment flows to Vietnam, with growing interest in sectors such as manufacturing, technical services, ICT, banking, and insurance. The expanding Vietnamese and broader Asian communities in Germany also provide a stable consumer base that favors culturally distinctive products such as food, household goods, and apparel (WTO Center). Moreover, as the largest economy in the EU and a major logistics hub, Germany serves as a strategic gateway for Vietnamese goods to penetrate deeper into the European market, expand their scale, and diversify distribution channels (WTO Center, 2023).

Threats: Vietnam-Germany trade faces several significant threats that could hinder further development. Vietnamese export products such as wood, textiles, and footwear are required to meet strict standards regarding chemical safety, CE certification, labor regulations, environmental protection, and corporate social responsibility. Many Vietnamese companies still face difficulties in complying with these demanding criteria. Moreover, to receive tariff preferences under the EVFTA, products must satisfy the EU's rules of origin. This requires transparent supply chains and a high percentage of locally sourced content, which remains a major challenge for numerous industries (Finance Magazine, 2023). In addition, the long geographical distance between Vietnam and Germany results in high transportation, storage, and logistics costs, limiting Vietnam's ability to compete with countries located closer to the European market, such as those in Latin America or North Africa. Furthermore, external factors such as geopolitical tensions, energy instability, disruptions in maritime transport, and changes in EU trade policies may also negatively influence the dynamics of trade between the two countries.

5.1. Policy Recommendations for the Government and Relevant Ministries

The Government and relevant ministries should formulate a comprehensive international trade and investment development strategy with clearly defined general and specific objectives. Particular emphasis should be placed on attracting technological investment from Germany and promoting the production and export of goods in which Vietnam has a comparative advantage in the German market. *Second*, the Ministry of Industry and Trade should play a central coordinating role in intensifying the dissemination and communication of the EVFTA's content to the business community, thereby enabling firms to better understand and effectively leverage the benefits provided by the agreement. Additionally, it is crucial to boost trade promotion activities, business matchmaking, and economic cooperation initiatives between the two countries. *Furthermore*, the Government should implement practical support mechanisms to assist enterprises in accessing market information, understanding legal frameworks, identifying reliable partners, and adapting to the business culture of Germany. These measures would enhance firms' capacity to meet import market standards and improve their overall competitiveness. *Finally*, strengthening diplomatic and economic cooperation will help position Vietnam as a strategic gateway linking Germany with ASEAN, while also enabling Germany to serve as a central node connecting Vietnam to the broader European market. In particular, bilateral dialogues should be promoted on a sectoral basis, focusing on innovation and high-tech transfer two critical pillars for fostering sustainable export expansion to Germany in the coming years.

5.2. Recommendations and Solutions for the Business Sector

Small and medium-sized enterprises (SMEs) need to enhance their competitiveness as a key component in the strategy to expand into the German market. Enterprises must invest systematically in production technology, quality management, and improve their capacity to meet the technical standards and strict rules of origin required by the European market (Vu, 2024). Second, improving logistics systems, reforming customs procedures, and reducing transportation costs will help enhance supply chain efficiency, ensuring that goods arrive in Germany on time and with assured quality. Third, strengthening public-private coordination mechanisms, especially in market linkage and investment promotion activities, will create favorable conditions for businesses to effectively utilize government support. Fourth, enterprises should actively participate in trade fairs and international investment promotion conferences to meet partners, expand networks, and seek export opportunities. Fifth, thoroughly researching German legal systems, culture, and consumer habits will help businesses develop appropriate strategies and avoid non-tariff barriers. Finally, companies should maintain regular contact with the Vietnam Trade Office and Embassy in Germany for timely consultation, support, and updates on useful information to facilitate transactions and commercial cooperation with German partners.

To enhance the effectiveness of Vietnam-Germany cooperation at the regional level, particularly in the context of the ASEAN-EU comprehensive strategic partnership, several specific policy orientations should be implemented. Vietnam can leverage its role as a bridge between ASEAN and the EU, with Germany as a key partner, to promote interregional initiatives on digital transformation, green development, and sustainable trade. This not only strengthens Vietnam's position in ASEAN but also increases Germany's influence in the Asia-Pacific region. Trilateral cooperation programs among Vietnam, Germany, and another ASEAN or EU country should be encouraged, especially in areas such as vocational training, technology transfer, and sustainable agriculture. This cooperation model will provide a foundation to expand bilateral influence to the regional level. Vietnam and Germany should collaborate to promote the harmonization of technical and trade standards between ASEAN and the EU, supporting businesses in both regions to access partner markets more effectively through the standardization of export procedures, quality standards, and traceability systems. Both countries should actively participate in regional initiatives such as the Global Gateway or the EU's Indo-Pacific Strategy to attract investment, technology, and financial resources for sustainable infrastructure development, thereby contributing to deeper regional integration between ASEAN and the EU.

6. Conclusion

This study has evaluated the impact of the EVFTA on bilateral trade relations between Vietnam and Germany through a qualitative lens, supplemented by key trade indicators such as BRCA, TII, and TCI. The findings reveal that the agreement has generated positive shifts in several of Vietnam's core export sectors, including footwear, leather goods, wood products, and textiles by enhancing their comparative advantage and expanding market share in the German market. Nonetheless, the effects of the EVFTA remain selective and insufficiently sustainable, as numerous industries have yet to effectively capitalize on the preferential benefits due to constraints in technology, compliance with technical standards, and production capacity. The recent downward trends in trade complementarity and trade intensity indices suggest that the bilateral trade structure has not undergone a substantial transformation, contrary to initial expectations. By integrating qualitative assessments with trade metrics, this study contributes an additional perspective to the relatively underexplored field of Vietnam-Germany trade relations. However, the research is limited by its reliance on secondary data and the absence of robust quantitative tools such as gravity models or firm-level surveys. Future research should address these limitations by adopting mixed-method approaches, combining econometric modeling with empirical case studies or enterprise-level data. Such enhancements will not only deepen academic understanding but also offer practical insights for policymakers in optimizing the strategic implementation of trade agreements between Vietnam and Germany.

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