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The Impact of Free Trade Agreements on Terms of Trade: A Case Study in Vietnam

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ABSTRACT: This study examines the impact of Free Trade Agreements on Vietnam's terms of trade, a key indicator of trade quality and national welfare. While FTAs have expanded Vietnam's trade volume, their effect on terms of trade remains unclear, especially given the country's reliance on low-value-added exports and imported inputs. Using provincial-level data, the research highlights regional disparities and provides insights to support more effective trade and development policies. This study uses a panel dataset of 63 Vietnamese provinces from 2019 to 2023 (315 observations) to analyze the impact of FTAs on terms of trade, in which the study proposed economical control variables as GRDP, inflation and labor productivity. The study finds that FTAs significantly improve Vietnam's terms of trade, but their effectiveness depends on strong domestic foundations. Key internal factors such as regional economic development, inflation control, and labor productivity also play critical roles. These results highlight that trade outcomes are shaped by both external liberalization and internal economic capacity. These findings practically call for a comprehensive policy approach such as enhancing infrastructure, maintaining macroeconomic stability, improving labor productivity, streamlining trade procedures, diversifying export markets, promoting sustainable trade, and strengthening institutional coordination.

KEYWORDS: Exports, free trade agreements, FTA index, imports, terms of trade.

I. INTRODUCTION

In recent decades, the proliferation of Free Trade Agreements (FTAs) has become a defining feature of global trade governance, especially for emerging economies seeking deeper integration into the world economy (Urata, 2002; Urata & Kiyota, 2003). Vietnam, as one of the fastest-growing economies in Southeast Asia, has actively pursued trade liberalization through a network of bilateral and multilateral FTAs since its accession to the Association of Southeast Asian Nations (ASEAN) in 1995. By 2022, Vietnam had signed 15 FTAs with a wide range of partners, including key economies such as China, South Korea, Japan, India, Australia, and the European Union (EU) (Pham et al., 2024). These agreements have been expected to enhance Vietnam's export performance, attract foreign investment, and foster economic growth (Le, 2019). Among these, the EU–Vietnam Free Trade Agreement (EVFTA), signed in 2019 and enforced in 2020, has been regarded as a landmark trade pact, eliminating up to 99% of tariffs and covering broader aspects such as investment protection, intellectual property rights, and sustainable development (Grumiller et al., 2018; Nguyen, 2023). While the benefits of such agreements in promoting trade volumes and economic activity are widely acknowledged, their impact on terms of trade (TOT)—defined as the ratio of export prices to import prices—remains less explored, particularly in the context of developing and transition economies like Vietnam (Krugman et al., 2017). Terms of trade represent a fundamental indicator of a country's trading position in the global economy and have important implications for national income, resource allocation, and welfare. A favorable movement in terms of trade implies that a country can obtain more imports for a given volume of exports, thus improving its purchasing power and economic welfare. Conversely, a deterioration in TOT may suggest a decline in the relative value of exports, potentially undermining the gains from trade liberalization. Despite this significance, existing empirical literature tends to emphasize trade creation and diversion effects, GDP growth, or sectoral competitiveness, while offering limited insights into the structural effects of FTAs on TOT in specific country contexts (Urata & Kiyota, 2003; Jang, 2011). Vietnam presents a compelling case for in-depth analysis regarding the impact of free trade agreements (FTAs) on terms of trade. As an export-driven economy with a significant share of low to medium technology processing and assembly industries, Vietnam is likely to experience uneven effects from trade liberalization. While expanded market access through FTAs can boost export volumes, the country's heavy reliance on processing trade, limited domestic value addition, and high dependence on imported inputs may undermine the positive effects on terms of trade. This concern becomes particularly salient as Vietnam engages in high-standard FTAs such as the European Union–Vietnam Free Trade Agreement (EVFTA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), both of which introduce complex regulatory and competitiveness standards (Nguyen, 2023; Grumiller et al., 2018). These agreements have catalyzed significant shifts in the country's trade structure, raising the critical question of whether they truly enhance Vietnam's relative trade position or simply increase trade volumes without commensurate improvements in export prices or purchasing power. Although numerous studies have examined the effects of FTAs on export growth, investment, or gross domestic product in developing economies (Pham et al., 2024; Le, 2019), the specific impact of such agreements on terms of trade remains underexplored, especially in transitional economies like Vietnam. Moreover, existing literature predominantly relies on national-level data, overlooking substantial heterogeneity across subnational regions in terms of economic structure, production capacity, and integration benefits. This highlights a pressing need to extend the scope of analysis to the provincial level, which can offer more granular and empirically grounded insights into the relationship between trade liberalization and trade terms. The study aims to assess the effects of FTAs on Vietnam's terms of trade using a novel dataset at the level of 63 provinces and municipalities. This micro-level approach not only evaluates the overall impact of FTAs but also explores regional disparities in trade responses and benefits. In doing so, the research intends to provide valuable empirical evidence for policymakers in designing more effective trade and regional development strategies in the context of deepening economic integration.

The remainder of this paper is structured as follows: Section 2 provides a comprehensive review of the literature on FTAs and terms of trade; Section 3 outlines the data sources and methodology employed; Section 4 presents the empirical findings and discussion; and Section 5 concludes with policy implications and recommendations for future research.

II. CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Free Trade Agreements

Free Trade Agreements (FTAs) refer to contractual arrangements between governments aimed at removing tariffs, quotas, and other trade barriers on a wide range of goods exchanged between the participating countries (Kepaptsoglou et al., 2010). Various motivations drive countries to enter into such agreements. According to De Long et al. (1996), key reasons for establishing FTAs include fostering economic growth, leveraging comparative advantages and economies of scale, minimizing uncertainty regarding market access, deterring potential protectionist measures, enhancing recognition and credibility, ensuring policy continuity, and addressing trade imbalances. Free Trade Agreements play a crucial role in facilitating and enhancing Vietnam's export activities by providing favorable terms that reduce costs and barriers for businesses. Through FTAs, Vietnam has negotiated the reduction or elimination of tariffs on qualified goods, which significantly improves the competitiveness of Vietnamese products in partner markets. For example, a country that normally imposes a 12% tariff on imported products will waive this fee for goods that meet the origin criteria specified in the agreement, thereby lowering the cost of entry and boosting market competitiveness. Beyond tariff reductions, FTAs also offer strong intellectual property protection, ensuring that Vietnamese innovations and creative works are safeguarded in partner countries. Moreover, these agreements enable exporters to actively participate in developing and harmonizing product standards, which simplifies compliance and facilitates smoother access to foreign markets. FTAs also open opportunities for service providers from Vietnam to supply their services more freely in partner countries, broadening business prospects beyond goods trade. (Viet Nam National Trade Repository, 2025). As of 2025, Vietnam has signed 16 FTAs and is actively negotiating two additional agreements. Notably, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), effective from January 14, 2019; the European Union-Vietnam Free Trade Agreement (EVFTA), effective August 1, 2020; and the United Kingdom-Vietnam Free Trade Agreement (UKVFTA), effective January 1, 2021, have opened access to markets representing a significant portion of Vietnam's total trade value, substantially boosting export opportunities and foreign investment inflows (Viet Nam National Trade Repository, 2025).

Terms of Trade

Terms of trade (TOT) represent the ratio between a country's export prices and its import prices. TOT indexes are defined as the value of a country's total exports minus total imports. The ratio is calculated by dividing the price of the exports by the price of the imports and multiplying the result by 100. When more capital is leaving the country than is entering the country, then the TOT will be less than 100%. When the TOT is greater than 100%, the country is accumulating more capital from exports than it is spending on imports. In the United States, the ebb and flow of value of trade activity is tracked by the Import/Export Price Index (MXP). The TOT is used as an indicator of a country's economic health, but it can lead analysts to draw the wrong conclusions. Changes in import prices and export prices impact the TOT, and it's important to understand the specific causes underlying price increases or decreases. TOT measurements are often recorded in an index for economic monitoring purposes. An improvement or increase in a country's TOT generally indicates that export prices have gone up as import prices have either maintained or dropped. Conversely, export prices might have dropped but not as significantly as import prices. Export prices might remain steady while import prices have decreased or they might have simply increased at a faster pace than import prices. All these scenarios can result in an improved TOT.

Free Trade Agreements Participation and Terms of Trade Landscape in Vietnam

From 2010 to the present, Vietnam's participation in new-generation Free Trade Agreements (FTAs) such as the CPTPP, EVFTA, and UKVFTA has significantly boosted its trade performance, contributing tens of billions of USD annually through increased exports. In addition to these key agreements, Vietnam has recently signed an FTA with Israel, the first such agreement with a West Asian country, which is expected to eliminate up to 92% of tariff lines for Vietnamese goods entering that market. According to a report from the Ministry of Industry and Trade, FTAs have had a markedly positive impact on Vietnam's trade and investment activities. In 2022, trade turnover with CPTPP member countries grew by over 14% compared to the previous year, reaching USD 104.5 billion. Exports to specific partners saw impressive growth rates, including over 20% to Canada and a remarkable 163% to Brunei.

Table 1. Vietnam's participation in Free Trade Agreements (FTAs) from 2010 to the present

No	**FTA**	**Status**	**Parties**
FTAs in effect			
1	AFTA	Effective since 1993	ASEAN
2	ACFTA	Effective since 2003	ASEAN, China
3	AKFTA	Effective since 2007	ASEAN, South Korea
4	AJCEP	Effective since 2008	ASEAN, Japan
5	VJEPA	Effective since 2009	Vietnam, Japan
6	AIFTA	Effective since 2010	ASEAN, India
7	AANZFTA	Effective since 2010	ASEAN, Australia , New Zealand
8	VCFTA	Effective since 2014	Vietnam, Chile
9	VKFTA	Effective since 2015	Vietnam, South Korea
10	VN – EAEU FTA	Effective since 2016	Vietnam, Russia, Belarus, Amenia, Kazakhstan, Kyrgyzstan
11	CPTPP (previously known as TPP)	Effective since 30/12/2018, came into effect in Vietnam since 14/01/2019	Vietnam, Canada, Mexico, Peru, Chile, New Zealand, Australia, Japan, Singapore, Brunei, Malaysia, The UK (signed the Accession Protocol on July 16, 2023)
12	AHKFTA	Effective in Hong Kong (China), Laos, Myanmar, Thailands, Singapore and Vietnam since 11/06/2019	ASEAN, Hongkong (China)
13	EVFTA	Effective since August 01, 2020	Vietnam, EU (27 members)

14	UKVFTA	Effective since May 01, 2021	Vietnam, The UK
15	RCEP	Effective since January 01, 2022	ASEAN, China, Korea, Japan, Australia, New Zealand
16	VIFTA	Negotiations commenced in December 2015, completed in April 2023. Officially signed on 25/07/2023	Vietnam, Israel
17	Vietnam – UAE FTA	Signed on 28/10/2024	Vietnam, United Arab Emirates (UAE)
FTAs under negotiation			
18	Vietnam - EFTA FTA	Negotiations commenced in May 2012	Vietnam, EFTA (Switzerland, Norway, Iceland, Liechtenstein)
19	ASEAN – Canada FTA	Negotiations commenced in November 2021	ASEAN, Canada

Source: *Center for WTO and International Trade, 2024*

Similarly, the implementation of the EVFTA resulted in bilateral trade between Vietnam and the European Union exceeding USD 62.2 billion in 2022, a 9% year-over-year increase. Notably, Vietnamese exports to the EU rose by nearly 17%, totaling close to USD 47 billion. With the UK, Vietnam recorded a trade surplus of over USD 5.3 billion in 2022 following the enactment of the UKVFTA. Despite these successes, challenges remain in realizing the full benefits of FTAs. The Ministry highlights that the rate at which Vietnamese enterprises utilize FTA preferential treatment is still relatively low. For instance, the utilization rates stand at approximately 5% for the CPTPP, 26% for the EVFTA, and 24% for the UKVFTA. Moreover, foreign-invested enterprises (FIEs) continue to dominate export activities involving high-value goods, while domestic firms largely engage in processing or exporting raw and semi-finished materials. Several structural limitations hinder Vietnamese businesses, including restricted capabilities in quality assurance, food safety, and compliance with technical export standards, especially in the face of rising non-tariff and technical barriers. Furthermore, only a small proportion of firms are actively building export brands targeted at FTA markets. Weak linkages among businesses and the prevalence of unfair competition such as undercutting prices further exacerbate these challenges. To enhance the effectiveness of FTAs, the Ministry of Industry and Trade recommends establishing dedicated funding to support enterprises in leveraging trade agreements. In collaboration with the State Bank and commercial banks, ministries are encouraged to develop tailored credit programs with preferential interest rates to help firms upgrade production capacity. Businesses are also urged to improve their access to green finance in order to align with the increasingly stringent environmental and sustainability standards of global markets. Moreover, the Ministry is piloting the development of FTA-specific industry ecosystems at the provincial level, starting with one or two key sectors per locality, to better harness FTA benefits. It also proposes comprehensive policies to facilitate enterprises' access to intra-bloc raw materials that meet the origin criteria stipulated in various trade agreements. (Vietnam National Trade Repository, 2023).

According to the 2024 FTA Index published by the Ministry of Industry and Trade in collaboration with the Government Office, the implementation capacity of Free Trade Agreements (FTAs) across Vietnam's 63 provinces and cities reveals significant disparities in local-level international integration efforts.

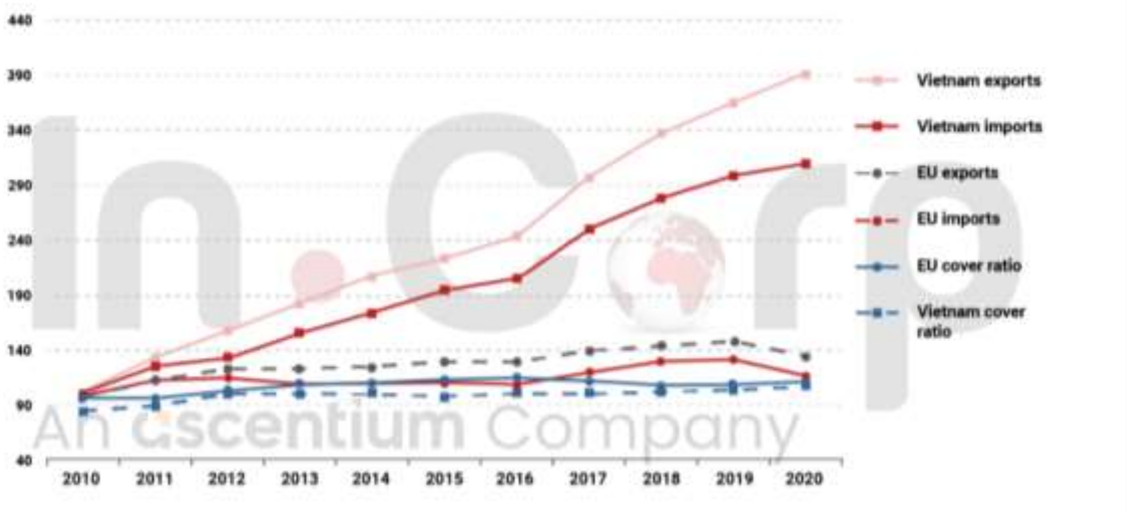

Figure 1. Trade in goods of the EU and Vietnam, 2010 – 2020

Source: *Eurostat and UNCTAD, 2020*

The FTA Index evaluates four key pillars: (i) dissemination and communication of FTA commitments; (ii) compliance with FTA-related legal frameworks; (iii) support policies to enhance competitiveness; and (iv) implementation of sustainable development commitments. With a maximum total score of 40, the national average stands at only 26.20, indicating substantial institutional and capacity gaps across provinces in translating national FTA commitments into effective local policy and business support. A small group of provinces such as Ca Mau (34.90), Thanh Hoa (34.13), Bình Dương (34.02), and Khánh Hòa (32.92) are leading in FTA performance, reflecting a proactive and structured approach to localizing trade commitments and supporting firms to leverage FTA benefits. In contrast, provinces like Quang Tri (14.49), Lao Cai (17.31), and Ninh Thuan (17.96) rank among the lowest, signaling considerable limitations in their institutional readiness, awareness, and implementation capacity. This uneven landscape not only highlights regional inequality in trade governance but also poses a challenge to ensuring equitable and comprehensive benefits from international trade agreements.

In the context of this study on terms of trade, such disparities are particularly consequential. Provinces with higher FTA Index scores are more likely to take advantage of market access opportunities, increase export efficiency, and reduce reliance on high-cost imports—thereby improving their terms of trade. Conversely, less capable provinces risk missing out on preferential treatment, remaining import-dependent, and widening trade deficits. Therefore, enhancing local institutional capacity, policy alignment, and enterprise support mechanisms is essential to fully capitalize on FTAs and to ensure that improvements in terms of trade are inclusive and sustainable across the country.

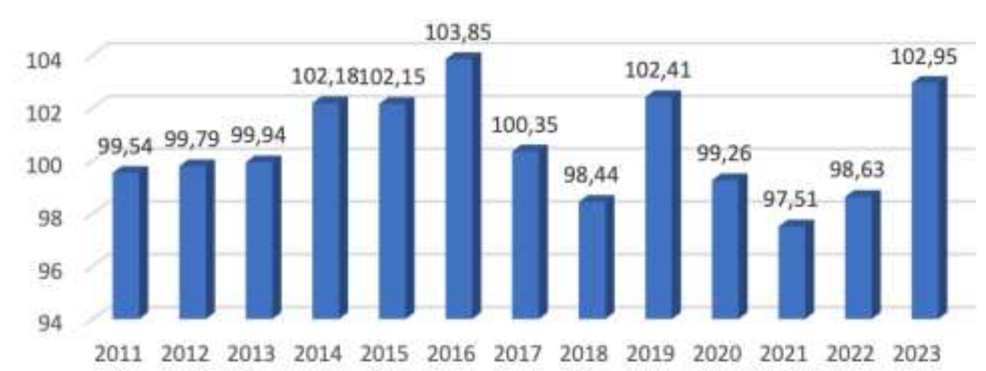

Figure 2. Terms of Trade for Goods in Vietnam

Source: *GSO Vietnam, 2024*

The terms of trade of goods in Vietnam between 2011 and 2023 exhibit a fluctuating trend, reflecting both external shocks and the evolving impacts of free trade agreements (FTAs) that Vietnam has participated in over the past decade. From 2011 to 2013, Vietnam's TOT remained below 100, with values ranging between 99.54 and 99.94, indicating that import prices were rising faster than export prices. This trend implies a deterioration in the country's trade terms, possibly due to its reliance on imported intermediate goods and limited value-added in exports during this period. A turning point appears in 2014 and 2015, where TOT rose above 102, followed by a peak in 2016 at 103.85. This improvement may correlate with the effects of Vietnam's deeper integration into regional and global markets, including commitments in the ASEAN Economic Community and early outcomes from FTAs such as the Vietnam–Korea FTA (VKFTA, signed in 2015). However, this upward trend did not sustain. Between 2017 and 2022, TOT fluctuated with a noticeable decline in 2018 (98.44) and a low of 97.51 in 2021 — a year heavily affected by the COVID-19 pandemic. These years may reflect external vulnerabilities, such as rising global commodity prices and supply chain disruptions, which Vietnam, as a trade-dependent economy, is especially exposed to. In 2023, TOT rebounded to 102.95, indicating improved export competitiveness or favorable price movements. This could partially result from Vietnam's strategic participation in newer-generation FTAs such as the CPTPP (entered into force in 2019) and the EVFTA (entered into force in 2020), which have likely helped diversify export markets and improve trade conditions. Overall, the data suggest that while FTAs have opened new market opportunities and helped improve TOT in certain periods, Vietnam's terms of trade remain vulnerable to global economic shifts and the structural composition of its trade. Sustained improvement will likely require not only market access but also domestic industrial upgrading and value-added enhancement in export sectors.

Hypothesis Development

Free Trade Agreements and Terms of Trade

In today's globalized economy, free trade agreements are considered important tools that help countries expand export markets, enhance competitiveness, and improve their trade position on the international stage. Essentially, terms of trade represent the ratio between export prices and import prices of a country, reflecting its bargaining power and economic efficiency in international trade activities (Hoang & Van, 2021). Free trade agreements, with commitments to reduce tariffs, eliminate non-tariff barriers, and establish clear trade rules, not only facilitate the flow of goods but also encourage domestic enterprises to improve product quality and diversify supply sources. International trade theories explain why and how countries trade with each other, focusing on the patterns of trade, their origins, and the impact on economic welfare. These theories range from classical models like comparative advantage to modern theories that consider factors like economies of scale and monopolistic competition. They provide a theoretical foundation to understand how trade liberalization, such as through free trade agreements, can influence economic outcomes including terms of trade. In Vietnam, participation in free trade agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the European Union–Vietnam Free Trade Agreement (EVFTA), and the Regional Comprehensive Economic Partnership (RCEP) has contributed to changing trade structures and impacting the prices of exported and imported goods (Petri et al., 2012). These agreements help reduce the costs of importing raw materials and machinery while expanding markets for Vietnamese products, thereby enabling enterprises to enhance production capacity and innovate technology. As a result, Vietnam's terms of trade may improve when export prices rise faster or remain more stable relative to import prices, thus promoting economic growth and increasing national income (Communist Review, 2022). Moreover, empirical studies by Anderson and Yotov (2016) and Ludema and Mayda (2013) provide strong evidence that free trade agreements can generate significant improvements in terms of trade by enhancing global efficiency and strengthening a country's bargaining power in international markets. These findings reinforce the importance of trade liberalization in shaping favorable trade dynamics, particularly for developing and emerging economies such as Vietnam. Therefore, studying the specific impact of free trade agreements on Vietnam's terms of trade is essential to provide a scientific basis for integration policies and economic development. Therefore, the authors proposed the following hypothesis:

H1: Free trade agreements have a significant impact on terms of trade in Vietnam.

Economic Factors and Terms of Trade

Gross Regional Domestic Product serves as a key indicator reflecting the economic scale and development level of different regions within Vietnam. Regions with higher Gross Regional Domestic Product typically have more advanced industrial bases, better infrastructure, and greater capacity to engage in both production and trade activities (General Statistics Office of Vietnam, 2023). These factors directly influence the nature and volume of goods produced for export as well as the demand for imported inputs and capital goods (Herr & Truong, 2016). An increase in Gross Regional Domestic Product often signals stronger economic activity and higher production capacity, which can enhance export competitiveness through improved product quality and diversification. At the same time, growing regional economies tend to require more imported machinery, raw materials, and technology to support their development. This dual effect, boosting export potential while increasing import demand, affects the relative prices of exports and imports, thereby altering the terms of trade (Inoue & Macdonald, 2020). With Vietnam's deeper integration into the global economy through free trade agreements, understanding how regional economic performance impacts the terms of trade is crucial. Changes in Gross Regional Domestic Product may mediate or amplify the effects of these agreements by shaping regional supply chains and trade patterns. Hence, exploring the relationship between Gross Regional Domestic Product and terms of trade helps to provide a more nuanced understanding of the factors driving Vietnam's trade outcomes and supports more effective policy formulation (Bajaj & Bhooshetty, 2024). Based on these findings, the authors proposed the following hypothesis:

H2: Gross regional domestic product has a significant impact on terms of trade in Vietnam.

Inflation rate is a critical macroeconomic indicator that reflects the overall price level changes in an economy over time. Variations in inflation directly influence the purchasing power of consumers and businesses, as well as the relative prices of goods and services domestically and internationally (Bhattacharya, 2014). In the context of terms of trade, which measure the ratio of export prices to import prices, inflation can affect both sides of this equation by altering costs, competitiveness, and trade balances. A higher inflation rate typically increases the cost of production and export prices, potentially reducing the international competitiveness of a country's goods. Conversely, if inflation is higher domestically than in trading partner countries, import prices may rise more slowly relative to export prices, leading to a deterioration in terms of trade (Viotti, 1980). Additionally, inflation can impact exchange rates and trade policies, which in turn influence trade flows and price structures (Ijaz et al., 2014). Given Vietnam's ongoing integration into global markets through free trade agreements, understanding how inflation interacts with terms of trade is essential. Inflation dynamics may either amplify or mitigate the benefits of trade liberalization by influencing export and import price trends (Desormeaux et al., 2009). Empirical evidence from previous studies also highlights the important link between inflation and trade outcomes. For example, Desormeaux et al. (2009) found that shifts in commodity prices and terms of trade played a key role in shaping inflation dynamics in Chile. Similarly, Ijaz et al. (2014) demonstrated that terms-of-trade volatility significantly influenced inflation in Pakistan, pointing to the interconnected nature of trade conditions and domestic price stability. Drawing from these findings, this study proposes the following hypothesis:

H3: Inflation rate has a significant impact on terms of trade in Vietnam.

Labour productivity is widely recognized as a key driver of economic growth and international competitiveness. It reflects how efficiently labor inputs are transformed into goods and services, directly affecting production costs, product quality, and innovation capacity. An increase in labour productivity allows firms to produce more output with the same or fewer resources, which can reduce unit costs and enable businesses to offer products at more competitive prices on the global market. In the context of international trade, higher labour productivity can improve the terms of trade by raising export prices relative to import prices. When domestic producers are more productive, they can supply higher-value or higher-quality goods that command better prices abroad, while potentially reducing reliance on expensive imports through more efficient production processes. This dynamic is particularly important for countries like Vietnam, which are increasingly integrating into the global economy through numerous free trade agreements. Empirical studies have shown that foreign direct investment and trade openness significantly contribute to labour productivity growth in Vietnam's export-oriented sectors (Asada, 2020). Improved labour productivity helps Vietnamese firms not only to withstand external competitive pressures but also to capitalize on new market opportunities created by trade liberalization. Moreover, labour productivity gains often lead to structural shifts in the economy, enabling sectors with comparative advantages to expand and attract investment. These changes can further enhance export performance and positively influence the terms of trade by altering the composition and value of traded goods. Productivity differentials have also been shown to shape international trade patterns and terms of trade across countries, reinforcing the competitiveness of more productive economies (Corsetti, Martin, & Pesenti, 2007). Moreover, labour productivity gains often lead to structural shifts in the economy, enabling sectors with comparative advantages to expand and attract investment. These changes can further enhance export performance and positively influence the terms of trade by altering the composition and value of traded goods. Evidence from prior research underscores the relationship between productivity and trade performance. Specifically, İşcan (2000) found that productivity growth can influence the current account and terms of trade through its impact on output composition and international competitiveness. Similarly, Diewert and Lawrence (2006), in their analysis of Australia's economic welfare, showed that improvements in productivity were closely associated with favorable movements in the terms of trade, thereby contributing significantly to national economic well-being. Based on these findings, the authors proposed the following hypothesis:

H4: Labor productivity has a significant impact on terms of trade in Vietnam.

III. METHODOLOGY

Model Equation and Data Analysis

To investigate the impact of free trade agreements (FTAs) on terms of trade (TOT) in Vietnam, the following regression model was formulated:

$TOT = \beta_0 + \beta_1 * FTA + \beta_2 * GRDP + \beta_3 * INF + \beta_4 * LPR + e$

In this model, FTA represents the free trade agreements index by 63 regions of Vietnam, GRDP is the gross regional domestic product, INF denotes the inflation rate, and LPR stands for the labor productivity. After the relevant data were collected from official government sources as General Statistics Office and Ministry of Industry and Trade in the period of 2019-2023, the authors performed data cleaning and analysis using SPSS version 27. The analytical techniques included Pearson correlation and multiple linear regression to determine the strength and direction of relationships between variables. Furthermore, diagnostic tests were conducted to check for violations of multicollinearity and autocorrelation, ensuring the robustness of the regression estimates.

Measures

To examine the impact of free trade agreements on the terms of trade in Vietnam, this study employs a panel dataset covering 63 provinces and cities. The key independent variable is the level of FTA implementation, measured using the FTA Index. This index was developed for the first time by the Vietnam Chamber of Commerce and Industry and the Ministry of Industry and Trade. It reflects how effectively FTAs have been implemented and utilized at the provincial level. The dependent variable, terms of trade, is calculated based on the ratio of export prices to import prices, using the latest available data from the General Statistics Office. To control for economic development, the model includes gross regional domestic product at constant 2010 prices, also obtained from the General Statistics Office. Inflation is captured by the average consumer price index at the provincial level, sourced from the most recent Provincial Statistical Yearbooks. Labor productivity, another control variable, is measured as output per worker and collected from the General Statistics Office. This variable helps account for differences in economic efficiency across provinces. By combining these indicators into a comprehensive dataset, the study provides a nuanced analysis of how trade liberalization under free trade agreements affects the terms of trade across different regions of Vietnam.

Sample and Data Collection

This study is based on a panel dataset comprising 315 observations collected from 63 provinces in Vietnam over the five-year period from 2019 to 2023. The data include key macroeconomic and trade-related indicators that are crucial to understanding variations in Vietnam's terms of trade at the subnational level. The dependent variable in this study is Terms of Trade (TOT), which reflects the ratio between export prices and import prices and serves as a measure of each province's trade position and competitiveness. In addition to TOT, the dataset incorporates several independent variables. The first is Free Trade Agreement (FTA) participation, which captures the degree to which provinces engage in trade liberalization and benefit from preferential trade policies over time. The second variable is Gross Regional Domestic Product (GRDP), representing the economic scale and output capacity of each province, measured at constant prices to ensure comparability across time. Another variable is Inflation, proxied by the Consumer Price Index (CPI), which reflects changes in price levels within each province and serves as an indicator of macroeconomic stability. Finally, the Labour Productivity Rate (LPR) is included to assess the efficiency with which labor inputs are transformed into economic output at the provincial level. This diversity is particularly evident in economic size, trade openness, productivity levels, and inflation dynamics, which vary both regionally and temporally. Such variation provides an important foundation for the empirical analysis, as it allows for testing the extent to which differences in internal economic conditions and external trade integration influence provincial terms of trade. The descriptive characteristics of the sample confirm the necessity of a regionally disaggregated analysis and support the relevance of examining economic and policy-driven factors affecting trade performance across Vietnam's diverse provincial landscape.

IV. RESULTS AND DISCUSSION

Descriptive Statistic Results

The descriptive statistics provide an overview of the distribution of key variables in the dataset, which consists of 315 secondary data points collected from 63 provinces in Vietnam over the 2019–2023 period. The results are summarized in Table 2. The TOT variable has a mean value of 100.15 and a standard deviation of 2.15, indicating that while most provinces maintain a relatively balanced ratio between export and import prices, there is still some variation in trade performance across the dataset. The FTA index shows a mean of 23.88 with a standard deviation of 7.38, suggesting moderate variation in trade integration levels. Some provinces demonstrate a higher degree of engagement in FTAs, whereas others lag behind in international trade participation.

Table 2. Descriptive Statistics Results for Variables

Variables	Mean	Std. Deviation	Min	Max
TOT	100.1520	2.14909	97.51	102.95
FTA	23.8837	7.37565	10.0	34.90
GRDP	106.1907	5.41735	85.27	142.00
INF	.7240	1.04157	0.02	2.79
LPR	133.0606	86.48674	41.90	675.50

For GRDP, the mean is 106.19, and the standard deviation is 5.42, reflecting slight disparities in regional economic output. This shows that although most provinces are clustered around the national average, differences in economic scale and development still persist. The INF has a mean of 0.724 and a standard deviation of 1.04, indicating relatively low but non-negligible variation in price levels among provinces and over time. This is consistent with the macroeconomic environment in Vietnam, which has remained largely stable in terms of inflation during the observed period. Finally, LPR exhibits the most substantial variability, with a mean of 133.06 and a standard deviation of 86.49. This suggests large disparities in labor efficiency across provinces, likely influenced by differences in industrial structure, capital investment, and workforce quality. In sum, the descriptive statistics highlight a degree of heterogeneity across provinces in terms of trade openness, economic performance, inflation control, and labor productivity. These differences justify the need for further econometric analysis to investigate the impact of these factors on the terms of trade at the regional level in Vietnam.

Regression Analysis and Hypothesis Conclusion

The Pearson correlation analysis results show that Free Trade Agreement has a strong positive correlation with Terms of Trade ($r = 0.627$, sig. < 0.01), suggesting that greater trade liberalization significantly enhances regional trade outcomes. GRDP is also positively associated with Terms of Trade ($r = 0.475$, sig. < 0.01), indicating that provinces with higher economic output tend to achieve more favorable trade conditions. In addition, inflation rate exhibits a moderate positive correlation with Terms of Trade ($r = 0.550$, sig. < 0.01), implying that price level dynamics may influence the relative prices of exports and imports. Similarly, labour productivity shows a moderately strong correlation with Terms of Trade ($r = 0.543$, sig. < 0.01), highlighting the role of internal production efficiency in improving trade performance.

After that, the authors conducted a multiple linear regression analysis to examine the influence of selected macroeconomic and trade-related factors on the Terms of Trade across provinces in Vietnam. The regression model demonstrates a good fit, with an Adjusted R Square of 0.506, indicating that approximately 50.6% of the variation in TOT can be explained by the four independent variables FTA, GRDP, INF and LPR. The Durbin-Watson statistic of 1.918 suggests that there is no significant autocorrelation in the residuals, confirming the model's reliability.

The standardized beta coefficients show that Inflation ($\beta = 0.565$, $p < 0.001$) exerts the strongest influence on TOT, followed by FTA participation ($\beta = 0.352$, $p = 0.002$), GRDP ($\beta = 0.274$, $p = 0.001$), and Labour Productivity ($\beta = 0.115$, $p = 0.019$). All predictors are statistically significant at the 0.05 level or better, suggesting that each factor plays a meaningful role in determining trade performance. Furthermore, the VIF values for all variables range from 1.043 to 1.078, well below the threshold of 10, indicating no evidence of multicollinearity among the predictors. These findings confirm that provinces with greater trade openness, stronger economic output, stable inflation conditions, and higher labor productivity are more likely to achieve favorable terms of trade. Overall, the regression analysis supports the research hypotheses (H1–H4), reinforcing the importance of both macroeconomic performance and international trade integration in shaping Vietnam's regional trade outcomes.

Table 3. Summary Results of Regression Analysis and Hypothesis Conclusion

Independent Variables	Adjusted R Square	Durbin-Watson	Standardized Coefficients Beta	Sig.	VIF	Hypothesis	Decision
FTA	0.506	1.918	.352	.002	1.059	H1	Accepted
GRDP			.274	.001	1.047	H2	Accepted
INF(CPI)			.565	.000	1.043	H3	Accepted
LPR			.115	.019	1.078	H4	Accepted
Dependent Variable: TOT							

The findings of this study reveal key insights into the determinants of Vietnam's terms of trade, emphasizing the intertwined effects of trade policy, macroeconomic conditions, and productivity. Notably, the analysis shows that free trade agreements play a significant role in shaping trade outcomes. This supports H1, which proposed that FTAs positively influence terms of trade. The result aligns with Anderson & Yotov (2016) and Ludema & Mayda (2013), who highlighted that trade agreements can improve national trade efficiency and bargaining power by reducing barriers and enhancing market access. In the context of Vietnam's expanding global integration, such agreements have likely contributed to improved trade performance by diversifying export markets and lowering import costs.

Equally important is the impact of GRDP, which reflects the economic scale and development level across regions. The positive association between GRDP and terms of trade confirms H2, suggesting that regional economic development enhances trade conditions by boosting productive capacity, infrastructure quality, and industrial output. This finding is supported by Bajaj & Bhooshetty (2024), who argue that stronger economic foundations at the regional level enable more competitive exports and better positioning in international markets.

The results also highlight the prominent role of inflation in trade performance. The analysis confirms H3, showing that inflation significantly affects the relative prices of exports and imports, and thus the terms of trade. This aligns with the works of Desormeaux et al. (2009) and Ijaz et al. (2014), who noted that high or unstable inflation could erode competitiveness, disrupt pricing structures, and increase vulnerability to external shocks. In Vietnam, where price stability is essential to sustaining trade advantages, this finding emphasizes the need for careful inflation management within trade policy planning.

Lastly, the relationship between labor productivity and terms of trade, though more modest in magnitude, is statistically significant and consistent with theoretical expectations. This validates H4, confirming that productivity improvements positively influence trade outcomes. The result reflects findings from İşcan (2000) and Lawrence (2006), who emphasized that rising labor efficiency leads to cost reductions and higher-quality output, enabling exporters to command better prices in international markets.

V. CONCLUSIONS

Theoretical Implications

The findings of this study offer valuable theoretical implications by emphasizing the interplay between external trade liberalization and internal macroeconomic conditions in determining a country's terms of trade. While free trade agreements are often seen as powerful tools to promote export growth and market access, the results suggest that their effectiveness depends significantly on the domestic economic environment. Specifically, improvements in regional economic output, stable inflation, and rising labor productivity all contribute to strengthening a country's trade position. This indicates that terms of trade are shaped not only by external commitments to liberalization but also by the internal capacity to respond competitively and efficiently to global opportunities. From a theoretical standpoint, this reinforces the idea that trade outcomes are multidimensional and cannot be fully explained by tariff reductions or market access alone. Instead, they result from the combined effects of external openness and domestic economic strength. Therefore, future theoretical approaches to trade performance, especially in developing economies, should integrate both international and internal drivers to more accurately capture the dynamics of trade and development.

Practical Implications

The findings of this study provide practical implications for policymakers and economic managers in Vietnam, highlighting the need for a comprehensive approach to enhancing the country's trade performance. Improving Vietnam's trade performance requires a balanced approach that combines international integration with strong domestic reforms. Aligning trade policies with macroeconomic management, productivity growth, and sustainability will support long-term economic success. Firstly, Vietnam must strengthen its domestic economic foundations to maximize the benefits of free trade agreements. Investments in infrastructure, especially in less-developed regions, can improve production capacity and regional competitiveness. Industrial upgrading and support for value-added sectors will help increase export quality and global market reach. Secondly, maintaining macroeconomic stability is key to improving trade performance. Controlling inflation preserves cost competitiveness, while a stable and flexible exchange rate can protect against external shocks. Coordinated fiscal and monetary policies are crucial in this effort. Thirdly, labor productivity must be enhanced through education and technology. Reforms in vocational training and closer industry-academic cooperation will prepare a skilled workforce. Supporting businesses in adopting digital and smart technologies will also boost productivity and export value. Fourthly, trade facilitation should be improved by simplifying procedures and aligning with global standards. Digitized customs processes and reduced bureaucracy can lower trade costs, while international certification of goods enhances access to high-value markets like the EU and Japan. Fifthly, Vietnam should diversify both its export sectors and markets. Prioritizing strategic industries such as green agriculture, high-tech manufacturing, and digital services will build long-term competitiveness. Exploring new markets outside traditional partners will also reduce economic vulnerability. Sixthly, sustainable trade must be a priority. Promoting green production, reducing emissions, and preparing for regulations like the EU's Carbon Border Adjustment Mechanism (CBAM) will help Vietnamese exports meet international environmental standards. Finally, stronger institutions and public-private coordination are essential. Enhancing the capacity of trade-related agencies and encouraging collaboration with the business sector will ensure effective and responsive policy implementation.

Limitation and Future Research Directions

Although this study contributes meaningful findings regarding the impact of free trade agreements (FTAs) on Vietnam's terms of trade, it still presents certain limitations that open avenues for future exploration. First, the analysis is based entirely on secondary data collected from 63 provinces during the 2019–2023 period. While this provides a broad national picture, it may not fully reflect long-term structural changes or capture delayed effects that FTAs often generate. Additionally, the study period overlaps with external shocks such as the COVID-19 pandemic and global supply chain disruptions, which could distort trade patterns and economic indicators, thereby affecting the results. Second, while key macroeconomic variables such as GRDP, inflation, and labor productivity are included, the research does not account for other potentially influential factors like exchange rate volatility, tariff reduction schedules, institutional governance, or sector-specific dynamics. These elements may play a significant role in shaping the terms of trade, especially in the context of Vietnam's participation in multiple FTAs with differing commitments and timelines. Moreover, the study does not differentiate between specific FTAs—such as the CPTPP, EVFTA, and RCEP—which may have distinct economic implications depending on partner countries, trade structures, and enforcement mechanisms. Future studies should therefore consider evaluating the separate effects of individual agreements and their varying impacts across different sectors or regions within Vietnam. Additionally, future research could benefit from incorporating qualitative insights from policymakers, trade experts, or businesses to better understand how FTAs are implemented in practice and how firms adapt to the new trade environments. Extending the research timeframe or applying mixed-method approaches could also help uncover more robust and policy-relevant conclusions. These improvements would contribute to a more comprehensive and multidimensional understanding of how trade liberalization through FTAs influences Vietnam's trade performance and global competitiveness.

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