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Article

Does Bilateral Trade Agreement Promote Extensive and Intensive Margins of Exports? The case of Indonesia

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Abstract

This study investigates the association of bilateral trade agreements (BTAs) with Indonesia's export performance, focusing on the extensive margin (diversification of exported products) and the intensive margin (increased trade volumes of existing products). Using gravity model data from 2004 to 2022 across 57 countries, the findings shows that BTAs have a significantly positive relationship with real exports, extensive margins, and intensive margins, especially in manufactured goods. Other positive factors include plurilateral trade agreements (PTAs), economic size, historical ties, and common language, while geographic distance remains a trade barrier.

Keywords: bilateral trade agreement, extensive margin, intensive margin, gravitymodel, Indonesia, export diversification

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I. Introduction

International trade plays an important role in driving economic growth, particularly for developing economies like Indonesia, where exports contribute significantly to national income, job creation, and industrial development. In an increasingly interconnected global economy, the ability of a country to access and penetrate foreign markets is often a determining factor in its overall economic performance. Indonesia as the largest economy in Southeast Asia with a lot of natural resources, competitive labor costs, and a growing manufacturing base, has adopted export-oriented strategies to diversifying the economy and reducing dependency on domestic consumption.

As global trade dynamics evolve, international trade agreements have grown as a key instrument for enhancing trade relations between countries. These agreements aim to reduce or eliminate trade barriers, such as tariffs, quotas, and technical regulations, while also improving market access and encouraging foreign direct investment. Trade agreements become not only as legal frameworks for cooperation but also as policy tools to accelerate structural transformation and economic integration. From a policy perspective, the strategic use of trade agreements can help developing countries like Indonesia to position themselves more favorably in global value chains.

Trade agreements can generally be classified based on their scope and members involved. At the broadest level are multilateral trade agreements (MTAs), which involve all World Trade Organization (WTO) members and are binding on a global scale. These agreements offer a standardized and inclusive approach to trade liberalization, promoting predictability and stability in global markets. However, the consensus-based nature of the WTO often slows down the negotiation process, leading to gridlocks in achieving substantive reforms. As a result, countries increasingly turn to alternative forms of trade cooperation, such as bilateral trade agreements (BTAs) and plurilateral trade agreements (PTAs) (Baldwin, 2016; Yao et al., 2021).

BTAs are agreements between two countries and are often tailored to specific economic interests and strategic partnerships. PTAs, on the other hand, involve more than two countries but are not binding on all WTO members (World Trade Organization, 2025). These regional or selective arrangements offer greater flexibility and allow participating countries to pursue deeper commitments in areas such as investment protection, labor standards, and environmental cooperation.

Indonesia has increasingly embraced BTAs as part of its trade policy strategy. The stagnation of multilateral negotiations under the WTO has led Indonesia to pursue a more proactive and pragmatic approach by negotiating BTAs with key economic partners. As of February 2025, according to the Ministry of Trade, Indonesia is currently engaged in 7 ongoing bilateral trade negotiations, involving strategic partners such as the Türkiye, Peru, Pakistan, and Bangladesh. These negotiations reflect Indonesia's intent to diversify its export markets and secure preferential access in regions with significant economic potential.

In addition to the ongoing negotiations, 12 more potential bilateral trade agreements are in the exploratory stage, including those with countries such as the Algeria, Ecuador, Colombia, Egypt, and Kenya. These exploratory talks often involve initial scoping studies, joint feasibility studies, or diplomatic exchanges, and signal Indonesia's long-term interest in expanding its trade network across multiple continents (Ministry of Trade, 2025).

Furthermore, five bilateral trade agreements have been officially notified to the WTO and have entered into force, including agreements with Australia, Chile, Japan, Mozambique, and Pakistan. These agreements cover a wide range of goods, services, and investment provisions, and have already begun to shape Indonesia's trade structure and performance, Table 1 presents the list of International Trade Agreements of Indonesia use in this study (WTO, 2025). In addition to these, at least five other BTAs are in the final stages of implementation, signing, or ratification, reflecting the continuous momentum of Indonesia's bilateral trade diplomacy.

Table 1. List of International Trade Agreeements of Indonesia

Bilateral Trade Agreements	Entry into Force	Plurilateral Trade Agreements	Entry into Force
Indonesia-Australia CEPA	05-Jul-2020	ASEAN Free Trade Area Continued CEPT AFTA	28-Jan-1992
Indonesia-Chile CEPA	10-Aug-2019	ASEAN-Australia-New Zealand FTA	10-Jan-2012
Indonesia-Japan EPA	01-Jul-2008	ASEAN-China FTA	01-Jan-2005
Indonesia-Mozambique PTA	06-Jun-2022	ASEAN-Hongkong, China FTA	04-Jul-2020
Indonesia-Pakistan PTA	01-Sep-2013	ASEAN-India FTA	01-Oct-2010
		ASEAN-Japan FTA	01-Dec-2008
		ASEAN-Korea FTA	01-Jan-2010
		Indonesia-EFTA CEPA	01-Nov-2021

Source: WTO RTA Database

These developments indicate a strategic shift in Indonesia's trade policy architecture from multilateralism to bilateralism. The emphasis on BTAs offers Indonesia greater flexibility in tailoring commitments to national interests and allows for more rapid implementation compared to the often prolonged WTO-based negotiations (Chandra, 2005). However, these agreements also demand a careful evaluation of how they shape trade patterns, particularly whether they lead to diversification of export products (extensive margins) or merely scale up existing trade flows (intensive margins). This distinction is essential for formulating trade policies that not only increase export volume but also enhance structural competitiveness and economic resilience.

Despite the growing number of BTAs, the empirical evidence regarding their effectiveness remains mixed. While Baier and Bergstrand (2007) argue that free trade agreements (FTAs) can double bilateral trade over a 10-year period, it is unclear whether these gains are achieved through extensive margins by expanding the range of exported

products or intensive margins by increasing the volume of existing exports. For developing countries like Indonesia, this distinction is crucial. An expansion in the extensive margin suggests product diversification and industrial upgrading, while an increase in the intensive margin may indicate competitiveness gains in existing sectors. The lack of empirical studies examining these aspects within the Indonesian context presents a gap in the current studies.

Furthermore, Indonesia's pursuit of BTAs must also be assessed in light of global economic uncertainty, shifting geopolitical alliances, and evolving consumer preferences in international markets. The COVID-19 pandemic, for example, disrupted global supply chains and highlighted the importance of resilient and diversified trade relationships (UNCTAD, 2020). In this context, understanding the nuanced relationship of BTAs with export margins can inform better policy decisions, not only to boost trade volumes but also to ensure sustainable and inclusive economic growth.

Given this background, this study aims to analyze the association of BTAs with Indonesia's extensive and intensive margins of exports. By examining disaggregated trade flow data before and after the implementation of BTAs, this study seeks to evaluate whether such agreements have facilitated product diversification, improved market penetration, or intensified existing trade patterns. The findings will provide valuable insights for policymakers, trade negotiators, and industry stakeholders regarding the real benefits of BTAs and the sectors most likely to gain from future agreements.

This study finds that BTAs significantly enhance Indonesia's export performance, particularly through extensive and intensive margin. The results show that BTAs are associated with a 47.6% increase in real exports, a 10.1% increase in in the extensive margin, and a 37.5% increase in in intensive margin. Furthermore, the positive and significant relationships of PTAs also highlight the additional benefits of trade agreements involving more than two countries, although they are not binding on all WTO members. The implication suggest that trade policy should prioritize not just export growth in value, but also the diversification and expansion of export volumes of existing products.

Ultimately, this study contributes to the ongoing debate on the role of trade agreements in promoting export-led growth. By focusing on the Indonesian case, it highlights the specific challenges and opportunities faced by emerging economies in leveraging international trade as a driver of development. The results of this research are expected to inform future trade policy formulation and contribute to the broader discourse on how developing countries can optimize their integration into the global trading system.

II. Literature Review

2.1. International Trade Agreement

International trade agreements are critical instruments for regulating international trade and facilitating economic integration among nations. Their evolution has been shaped by historical experiences, particularly the economic downturn during the Great Depression, which exposed the dangers of protectionist trade policies. The 1930 Smoot-Hawley Tariff Act, for instance, significantly raised U.S. tariffs, contributing to a collapse in international trade and worsening the global crisis. In response, the United States shifted toward bilateral negotiations that linked tariff reductions with reciprocal benefits for exporters, paving the way for future multilateral cooperation (Krugman et al., 2018).

The limitations of bilateralism soon led to the establishment of multilateral negotiations. In 1947, 23 countries initiated the General Agreement on Tariffs and Trade (GATT), laying the groundwork for a rules-based international trading system. Although the proposed International Trade Organization was never realized, the GATT governed global trade for nearly five decades. It was eventually succeeded by the WTO in 1995, which formalized the institutional structure and expanded the scope of trade governance to include services and intellectual property through agreements like GATS and TRIPS (Krugman et al., 2018).

The GATT-WTO framework operates on two central mechanisms: tariff binding and progressive liberalization. Binding ensures that countries commit to maximum tariff levels, limiting the possibility of protectionist reversals. Liberalization occurs through scheduled multilateral trade rounds, with the Uruguay Round being the most comprehensive to date. This round not only reduced tariffs but also addressed longstanding distortions in agriculture and textiles. Moreover, it introduced rules to liberalize government procurement markets and established a dispute settlement system to enforce compliance among members.

While multilateral agreements focus on non-discriminatory liberalization, preferential trade agreements such as NAFTA and Mercosur aim to deepen integration among specific partners. These agreements can lead to either trade creation where more efficient suppliers are accessed or trade diversion, which replaces lower-cost imports from non-members with higher-cost goods from member countries. The overall welfare effect depends on the balance between these two outcomes. In some cases, such as Mercosur, studies suggest that trade diversion may outweigh trade benefits due to inefficiencies and protected domestic industries (Krugman et al., 2018).

Despite the successes of past rounds, recent efforts like the Doha Round and the Trans-Pacific Partnership (TPP) have struggled to achieve consensus. One reason is the diminished marginal benefit of further liberalization, tariff levels are already low in many sectors, while politically sensitive areas like agriculture remain difficult to reform. Moreover, modern trade deals increasingly address complex issues such as investor protections and regulatory standards.

Due to these limitations in multilateral negotiations, recent decades have seen a surge in the number of regional and preferential trade agreements, particularly in the form of BTAs and PTAs (Baldwin, 2016; Yao et al. , 2021). These arrangements have become prominent alternatives, offering flexibility for countries to pursue liberalization at their own pace and with selected partners. While BTAs involve only two countries, PTAs include multiple members and often promote deeper and more harmonized integration across regions (Chafer et al., 2022).

Yao et al. (2021) found that the existence of preferential trade agreements (BTAs and PTA) significantly boosts bilateral trade volumes, particularly when the agreements involve a broader coverage of liberalized products. Using a structural gravity model, the study reveals that the trade-promoting effect of preferential trade agreements is especially pronounced among low and middle-income countries, where market access barriers remain high. Furthermore, preferential trade agreements with wider product coverage positively influence trade in intermediate goods, final goods, and services, thereby reinforcing integration into global production networks. These findings underscore the strategic importance of preferential trade agreements in expanding market access, diversifying exports, and strengthening a country's position within global value chains.

The proliferation of Preferential Trade Agreements (BTAs and PTAs) over the past decades reflects their growing importance as instruments to promote international trade. Foster, Poeschl, and Stehrer (2011) study shows that Preferential Trade Agreements formation significantly increases bilateral exports, with the majority of trade creation occurring through the extensive margin. Their findings highlight that Preferential Trade Agreements not only facilitate greater trade volumes but also enable access to a broader range of products, which contributes to export diversification and productivity gains. Moreover, the effect is especially pronounced for larger exporters and larger trading pairs, suggesting that the economic size of partners can amplify the benefits of Preferential Trade Agreements membership. These results underscore the strategic relevance of Preferential Trade Agreements in enhancing trade capacity and supporting long-term economic integration.

While some existing studies emphasize the role of international trade agreements in increasing bilateral trade volumes, their effects may also operate through broader economic mechanisms. In particular, international trade arrangements can promote export performance by reshaping export composition along the production value chain and by facilitating investment-driven expansion of productive capacity (Laksana, 2022). This perspective highlights the importance of examining the impact of bilateral trade agreements beyond aggregate trade values. However, the present study deliberately focuses on the observable effects of bilateral trade agreements on export performance, in line with its empirical scope and research objectives.

2.2. Extensive and Intensive Margin of Export

In the field of international trade, export growth can be decomposed into two principal dimensions known as export margins: the extensive margin and the intensive margin. These two margins are fundamental in analyzing how trade agreements or policy changes affect the structure and dynamics of international exports. The extensive margin refers to the increase in the number of products exported or the number of export destinations, while the intensive margin captures the increase in the average value of exports per product or per trading partner. Mathematically, the total value of exports is expressed as the product of the extensive margin and the intensive margin. These concepts allow this study to assess not only how much trade growth, but also whether the expansion is due to diversification (extensive margin) or deepening (intensive margin) of trade relations.

Chaney (2008) introduces a theoretical model of trade with heterogeneous firms, highlighting that both fixed and variable trade costs affect trade flows through different channels. His findings show that a reduction in variable trade barriers increases trade primarily through the intensive margin, while a reduction in fixed costs facilitates entry into export markets, thereby expanding the extensive margin. Importantly, Chaney demonstrates that the elasticity of substitution plays an opposite role on both margins. A higher elasticity of substitution magnifies the effect of trade barriers on the intensive margin, but dampens it on the extensive margin. His model predicts that the extensive margin dominates in aggregate trade elasticity when firm productivity follows a Pareto distribution.

In a separate study, Dutt et al. (2013) investigated the impact of WTO membership on trade margins using highly disaggregated bilateral trade data. Their empirical analysis reveals that WTO membership increases the extensive margin of exports significantly, indicating greater product diversification in export baskets. However, it has a negative effect on the intensive margin, likely due to competition from new, less productive exporters entering the market. These findings support the interpretation that WTO membership

mainly reduces fixed trade costs, facilitating entry into new product markets rather than intensifying existing trade flows.

Baier, Bergstrand, and Feng (2014) analyzed the effect of Economic Integration Agreements (EIA) on trade margins using gravity equations and panel data from 1962 to 2000. Their findings highlight that EIA significantly influence both the intensive and extensive margins of trade. The intensive margin responds more quickly after the formation of a trade agreement, while the extensive margin adjusts more slowly, due to the time needed for new products or exporters to enter the market. This aligns with trade theories, such as Melitz (2003), which suggest that variable trade costs primarily affect the intensive margin, while fixed costs influence the extensive margin by enabling or hindering market entry.

The distinction between the extensive and intensive margins is crucial for an understanding of the mechanisms through which trade agreements affect international trade. Decomposing trade growth in this way helps researchers and policymakers to evaluate the effectiveness of trade liberalization in both short and long-term dimensions, assess whether countries are diversifying their exports or simply exporting more of the same products, and estimate welfare gains from trade more accurately in accordance with theoretical models. Modern trade models such as those developed by Chaney (2008) and Melitz (2003) provide a theoretical basis for analyzing how trade costs influence these two margins. These models highlight different elasticities of trade with respect to fixed and variable costs, underscoring the importance of identifying which margin is driving trade expansion.

III. The Case of Indonesia

Over the past decade, Indonesia's export performance has shown a generally upward trend despite fluctuations. Total exports increased from US$175.98 billion in 2014 to US$264.70 billion in 2024. The highest value was recorded in 2022, reaching US$291.90 billion (Ministry of Trade, 2025). Non-oil and gas exports consistently constituted the largest share of total exports, while oil and gas exports remained relatively stagnant or declined, indicating a structural shift in Indonesia's economy toward industrial and manufactured goods.

One of Indonesia's strategies to enhance its export performance has been active engagement in international trade agreements. In the past two decades, stagnation in multilateral trade negotiations under the WTO has led many countries, including Indonesia, to increasingly rely on bilateral and regional trade agreements. These agreements have emerged as strategic tools to enhance market access, attract investment, and reinforce economic positioning at the global level (Winanti, 2022). Compared to other founding Association of Southeast Asian Nations (ASEAN) members such as Singapore, Thailand, Malaysia, and the Philippines, Indonesia was relatively slow in adopting BTAs with non-ASEAN countries. However, as BTAs became an increasingly integral part of other ASEAN countries' foreign economic policies, Indonesia eventually found it necessary to pursue similar agreements with key Northeast Asian partners (Chandra, 2005).

Indonesia has demonstrated a strong commitment to participating in various international trade agreements, including Free Trade Agreements (FTA), Preferential Trade Agreements, and Comprehensive Economic Partnership Agreements (CEPA). As of 2020, Indonesia had signed multiple key agreements such as the ASEAN Free Trade Area (AFTA), ASEAN-China Free Trade Area (ACFTA), ASEAN-Korea Free Trade Area (AKFTA), ASEAN-India Free Trade Area (AIFTA), ASEAN-Australia-New Zealand Free Trade Area

(AANZFTA), and the Indonesia-Japan Economic Partnership Agreement (IJEPA) (Rasbin, 2020). Despite these engagements, trade performance has shown mixed results. Although overall trade volumes have increased, Indonesia's trade balance with several key partners has often remained in deficit. This is due in part to limited utilization of FTA, the persistence of non-tariff measures (NTM), and weak competitiveness of domestic products (Rasbin, 2020).

Empirical studies reinforce the significant role of FTA in shaping trade outcomes. Anggraini, Muchtar, and Sihombing (2023) found that Indonesia's exports to FTA partner countries were 324.58% higher than to non-partner countries. Imports from FTA partners also increased by 301.53%, but the net benefit still favored exports, suggesting that FTA can positively affect Indonesia's trade performance if leveraged properly. Based on the study conducted by Septika Tri Ardiyanti (2015) using a counterfactual approach through the ARIMA method and paired t-test on monthly data from July 2008 to June 2014, the implementation of the Indonesia-Japan Economic Partnership Agreement (IJEPA) has had a significantly positive impact on increasing Indonesia's non-oil exports to Japan. However, the agreement did not show any statistically significant difference in the value of Indonesia's non-oil imports from Japan before and after the implementation of IJEPA. The study conducted by Nurul Budi Utomo (2023) shows that the implementation of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) has shown a significant impact on Indonesia's trade with Australia. The results of the paired t-test indicate an increase in both Indonesia's imports from and exports to Australia following the enactment of IA-CEPA. However, the rise in import value from Australia was substantially greater than the increase in Indonesia's export value to Australia. As a result, Indonesia's trade balance deficit with Australia widened after the implementation of IA-CEPA.

Nevertheless, domestic readiness remains a crucial challenge. According to Winanti (2022), many Indonesian businesses have not prioritized utilizing international market access provided by these agreements. This reluctance is largely due to the untapped potential of Indonesia's domestic market and the complex non-tariff barriers imposed by partner countries, such as stringent technical standards and health regulations. To address these challenges, the Indonesian government must adopt a balanced approach combining offensive and defensive strategies. The offensive strategy includes enhancing the capacity of domestic enterprises to expand into international markets, while the defensive strategy focuses on safeguarding domestic industries by improving competitiveness, reforming regulations, and upgrading product standards to meet international benchmarks (Winanti, 2022; Rasbin, 2020).

Given Indonesia's unequal trade outcomes and difficulties in maximizing the benefits of existing trade agreements, more comprehensive analysis is required to determine the pattern of export growth. Specifically, determining whether BTAs contribute more to the diversification of exported items (extensive margin) or the expansion of trade volumes within established product lines (intensive margin) can provide useful information. This approach enables policymakers to examine the fundamental depth of Indonesia's export performance and develop more specific strategies for negotiating and implementing trade agreements.

IV. Research Method

4.1. Data

This study utilizes various data sources to analyze Indonesia's trade relations, with a particular focus on the extensive and intensive margins of exports in relation to BTAs. The

data used in this research is sourced from databases that provide comprehensive trade statistics, economic indicators, and other relevant factors that may influence trade flows.

For trade data, this research relies on export statistics from Indonesia to its partner countries, sourced from the TradeMap database (International Trade Centre (ITC), 2025). The database provides detailed annual trade statistics, including the volume and value of Indonesia's exports, as well as product categories divided into 20 sectors according to the Harmonized System (HS) classification Nomenclature 2022 edition. It covers data from 2004 to 2022, representing 57 countries that account for more than 90% of Indonesia's total exports, Table 2 presents the list of sample countries. This dataset is essential for illustrating Indonesia's trade patterns with its partner countries over the study period and plays a central role in analyzing the association of bilateral trade agreements with export margins.

Table 2. Sample Countries

No	Country Code	Country Name	Freq.	Percent	Cum.
1	ARE	United Arab Emirates	364	1.83	1.83
2	ARG	Argentina	344	1.73	3.55
3	AUS	Australia	370	1.86	5.41
4	BEL	Belgium	364	1.83	7.24
5	BEN	Benin	269	1.35	8.59
6	BGD	Bangladesh	343	1.72	10.31
7	BGR	Bulgaria	338	1.7	12.01
8	BRA	Brazil	361	1.81	13.82
9	BRN	Brunei Darussalam	357	1.79	15.62
10	CAN	Canada	362	1.82	17.43
11	CHE	Switzerland	353	1.77	19.21
12	CHL	Chile	350	1.76	20.96
13	CHN	China	367	1.84	22.81
14	DEU	Germany	368	1.85	24.65
15	DZA	Algeria	306	1.54	26.19
16	EGY	Egypt	347	1.74	27.93
17	ESP	Spain	366	1.84	29.77
18	EST	Estonia	306	1.54	31.31
19	FRA	France	373	1.87	33.18
20	GBR	United Kingdom	363	1.82	35
21	GRC	Greece	358	1.8	36.8
22	HKG	Hong Kong	365	1.83	38.63
23	IND	India	364	1.83	40.46
24	ITA	Italy	367	1.84	42.3
25	JOR	Jordan	327	1.64	43.94

26	JPN	Japan	366	1.84	45.78
27	KEN	Kenya	342	1.72	47.5
28	KHM	Cambodia	340	1.71	49.21
29	KOR	Korea, Republic of	367	1.84	51.05
30	KWT	Kuwait	343	1.72	52.77
31	LKA	Sri Lanka	350	1.76	54.53
32	MEX	Mexico	359	1.8	56.33
33	MMR	Myanmar	325	1.63	57.96
34	MYS	Malaysia	370	1.86	59.82
35	NGA	Nigeria	341	1.71	61.53
36	NLD	Netherlands	361	1.81	63.35
37	NOR	Norway	342	1.72	65.06
38	NZL	New Zealand	370	1.86	66.92
39	OMN	Oman	323	1.62	68.54
40	PAK	Pakistan	343	1.72	70.27
41	PER	Peru	341	1.71	71.98
42	PHL	Philippines	364	1.83	73.8
43	PNG	Papua New Guinea	346	1.74	75.54
44	POL	Poland	353	1.77	77.31
45	QAT	Qatar	344	1.73	79.04
46	RUS	Russian Federation	359	1.8	80.84
47	SAU	Saudi Arabia	359	1.8	82.65
48	SEN	Senegal	301	1.51	84.16
49	SGP	Singapore	376	1.89	86.05
50	SWE	Sweden	355	1.78	87.83
51	TGO	Togo	264	1.33	89.15
52	THA	Thailand	372	1.87	91.02
53	TUR	Turkiye	363	1.82	92.84
54	TZA	Tanzania, United Republic of	320	1.61	94.45
55	USA	United States	377	1.89	96.34
56	VNM	Viet Nam	362	1.82	98.16
57	ZAF	South Africa	366	1.84	100
		Total	**19,916**	**100**	

The sector data classification used in this analysis is based on the HS, issued by the World Customs Organization (WCO) (Table 3 for the list of HS sectors). This system is used globally to classify goods in international trade. The HS Nomenclature provides a framework

for categorizing products under consistent codes, which are internationally recognized and play a critical role in trade policy and tariff analysis. It helps identify and classify products traded between countries, enabling standardized customs procedures and international trade analysis. For manufactured products, this classification refers to HS chapters 25-97, which cover various industrial goods. This classification is also used in the context of the Generalized System of Preferences (GSP) from many countries, one example is Japan, which covers industrial products under HS chapters 25-97. While, HS chapters 1-24 are used to classify agricultural and fishery products. These chapters cover a broad range of items, including live animals, plant-based products, and fish, which are subject to different trade and tariff policies. (MOFA, 2023).

Table 3. Sample Sectors

Section	HS	Sector Name	Freq.	Percent	Cum.
I	S01_05	Live Animals; Animal Products	1,029	5.17	5.17
II	S06_14	Vegetable Products	1,048	5.26	10.43
III	S15	Animal, Vegetable Or Microbial Fats And Oils And Their Cleavage Products; Prepared Edible Fats; Animal Or Vegetable Waxes	1,058	5.31	15.74
IV	S16_24	Prepared Foodstuffs; Beverages, Spirits And Vinegar; Tobacco And Manufactured Tobacco Substitutes; Products, Whether Or Not Containing Nicotine, Intended For Inhalation Without Combustion; Other Nicotine Containing Products Intended For The Intake Of Nicotine Into The Human Body	1,082	5.43	21.17
V	S25_27	Mineral Products	906	4.55	25.72
VI	S28_38	Products Of The Chemical Or Allied Industries	1,082	5.43	31.16
VII	S39_40	Plastics And Articles Thereof; Rubber And Articles Thereof	1,083	5.44	36.59
VIII	S41_43	Raw Hides And Skins, Leather, Furskins And Articles Thereof; Saddlery And Harness; Travel Goods, Handbags And Similar Containers; Articles Of Animal Gut (Other Than Silk-Worm Gut)	979	4.92	41.51
IX	S44_46	Wood And Articles Of Wood; Wood Charcoal; Cork And Articles Of Cork; Manufactures Of Straw, Of Esparto Or Of Other Plaiting Materials; Basketware And Wickerwork	1,055	5.3	46.81

X	S47_49	Pulp Of Wood Or Of Other Fibrous Cellulosic Material; Recovered (Waste And Scrap) Paper Or Paperboard; Paper And Paperboard And Articles Thereof	1,079	5.42	52.22
XI	S50_63	Textiles And Textile Articles	1,082	5.43	57.66
XII	S64_67	Footwear, Headgear, Umbrellas, Sun Umbrellas, Walking-Sticks, Seat-Sticks, Whips, Riding-Crops And Parts Thereof; Prepared Feathers And Articles Made Therewith; Artificial Flowers; Articles Of Human Hair	1,038	5.21	62.87
XIII	S68_70	Articles Of Stone, Plaster, Cement, Asbestos, Mica Or Similar Materials; Ceramic Products; Glass And Glassware	1,074	5.39	68.26
XIV	S71	Natural Or Cultured Pearls, Precious Or Semi-Precious Stones, Precious Metals, Metals Clad With Precious Metal And Articles Thereof; Imitation Jewellery; Coin	777	3.9	72.16
XV	S72_83	Base Metals And Articles Of Base Metal	1,076	5.4	77.57
XVI	S84_85	Machinery And Mechanical Appliances; Electrical Equipment; Parts Thereof; Sound Recorders And Reproducers, Television Image And Sound Recorders And Reproducers, And Parts And Accessories Of Such Articles	1,083	5.44	83
XVII	S86_89	Vehicles, Aircraft, Vessels And Associated Transport Equipment	1,068	5.36	88.37
XVIII	S90_92	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical Or Surgical Instruments And Apparatus; Clocks And Watches; Musical Instruments;	1,043	5.24	93.6
XIX	S93	Arms And Ammunition; Parts And Accessories Thereof	193	0.97	94.57
XX-XXI	S94_99	Miscellaneous Manufactured Articles, Works Of Art, Collectors' Pieces, And Antiques; And Commodities Not Elsewhere Specified	1,081	5.43	100
	Total		19,916	100	

To measure the extensive and intensive margins of Indonesian exports, this study follows a standard decomposition approach. The extensive margin is defined as the number of distinct products (based on HS codes) exported by Indonesia to each partner country in a given year and sector. Meanwhile, the intensive margin is calculated as the average export value per product within a given country-sector-year combination. These indicators are based directly from the TradeMap export dataset. The extensive margin captures product diversification, indicating whether trade agreements lead to the introduction of new export goods. Meanwhile, the intensive margin reflects the deepening of trade relationships, indicating whether existing products are exported at higher volumes or values. This decomposition allows for a more detailed analysis of trade performance, identifying whether trade growth results from new products (extensive) or increases in the quantity of existing products (intensive).

In this study, manufactured products are drawn from the general classification of industrial products, specifically from HS chapters 25-97, which includes items such as chemicals, metals, machinery, vehicles, and electrical equipment. This classification is relevant for analyzing Indonesia's exports in the context of bilateral and plurilateral trade agreements, which include products impacted by tariff policies and international trade preferences.

The data on trade agreements, including bilateral and plurilateral trade agreements involving Indonesia, was obtained from the World Trade Organization (WTO, 2025). The study utilizes this data to identify Indonesia's participation in various trade agreements, such as BTAs and PTAs, which are essential for analyzing the influence of these agreements on the extensive and intensive margins of Indonesia's exports.

As of the study period, Indonesia is involved in several bilateral trade agreements with countries including Australia, Chile, Japan, Korea, Mozambique, and Pakistan. The bilateral agreements include Indonesia-Australia CEPA, Indonesia-Chile CEPA, Indonesia-Japan EPA, Indonesia-Korea CEPA, Indonesia-Mozambique PTA, and Indonesia-Pakistan PTA. These agreements facilitate trade in a range of sectors between Indonesia and its partner countries.

In addition, Indonesia is part of multiple plurilateral trade agreements, including those under the ASEAN framework (e.g., ASEAN, ASEAN-Australia-New Zealand FTA, ASEAN-China FTA, ASEAN-Hongkong, China FTA), as well as agreements like the ASEAN-India FTA, ASEAN-Japan FTA, ASEAN-Korea FTA, and Indonesia-EFTA CEPA. These plurilateral agreements encompass a broader set of countries and regions, allowing Indonesia to strengthen its trade position in global markets and benefit from more integrated regional cooperation.

This information is crucial for understanding the trade dynamics and economic relationships between Indonesia and its trading partners, and it plays a central role in assessing how these agreements impact Indonesia's export margins over time. Additionally, economic indicators such as Gross Domestic Product (GDP) and GDP per capita for Indonesia and its trade partners are sourced from the World Trade Indicators database (World Bank, 2025). These indicators are critical for measuring the economic output of each country and understanding the relative size of their economies, which influences trade relationships. All economic data are presented in constant 2018 prices to account for inflation, ensuring comparability across years.

Furthermore, the study includes variables capturing geographic and historical factors that may influence trade. The Centre d'Études Prospectives et d'Informations

Internationales (CEPII) database provides data on several control variables commonly used in gravity models, including Distance, Contiguity, Colony, and Language. Distance is measured as the geographical distance between countries, calculated based on bilateral distances between the largest cities in each country, weighted by population shares, Contiguity is a dummy variable indicating whether two countries share a land border, Colony is a dummy variable indicating whether countries had a historical colonial relationship, Language is a dummy variable indicating whether at least 9% of the population in both countries speak the same language (CEPII, 2025). These factors are essential for understanding how non-economic ties may affect trade flows, particularly in the context of BTAs. Although some correlation among the variables is possible, CEPII defines distance, contiguity, and common language as distinct variables, each capturing different bilateral characteristics between countries (Mayer & Zignago, 2011). In gravity model literature, these variables are commonly interpreted as representing different trade frictions.

This carefully curated dataset, which includes trade flows, economic size, and historical ties, is essential for examining the association of BTAs with the extensive and intensive margins of Indonesia's exports. The data is processed to ensure accurate and comparable results, providing a robust foundation for the analysis conducted in this study.

4.2. Method

This study examines the association of BTAs with Indonesia's export performance by dividing total exports into extensive and intensive margins. The theoretical foundation follows Kang (2018) and Dutt et al. (2013), who employ a gravity model framework to assess the drivers of international trade. Similar with Dutt et al. (2013), this study formulates extensive margin (N_{ist}) that is represent the number of products exported from Indonesia to trade partner countries i in sector s at year t, and intensive margin ($\bar{X}_{ist}$) captures the average export value per product from Indonesia to trade partner countries i in sector s, and year t:

$$\bar{X}_{ist} = \frac{X_{ist}}{N_{ist}} \tag{1}$$

where X_{ist} is the total export value from from Indonesia to trade partner countries i in sector s at year t. By separately analyzing logs of exports, extensive margin, and intensive margin (lnExport, lnExtensive, and lnIntensive), this study identifies whether trade agreements contribute more to product diversification (extensive margin) or increased trade volumes of existing products (intensive margin).

To analyze how BTAs are associated with export outcomes, the following final model is used:

$$Y_{ist} = \beta_0 + \beta_1 BTA_{it} + \beta_2 PTA_{it} + \beta_3 \text{lnRGDP}_{it} + \beta_4 \text{lnRGDPPC}_{it} + \beta_5 \ \ln(\text{Dist})_i + \beta_6 \text{Contig}_i + \beta_7 \text{Colony}_i + \beta_8 \text{Language}_i + \gamma_t + \delta_s + \lambda_{ts} + \varepsilon_{ist} \tag{2}$$

The dependent variable in this study is Y_{ist}, which represents three key aspects of export performance: lnExport (the logarithm of total exports), lnExtensive (the logarithm of the number of exported products, capturing the extensive margin), and lnIntensive (the logarithm of the average export value per product, representing the intensive margin) from Indonesia to trade partner country i in sector s, and year t. The main independent variables include BTA_{it}, a dummy variable that equals 1 if a BTA is in effect between Indonesia and trade partner country i in year t, and 0 otherwise.

The set of the control variables included in this model includes PTA_{it}, a dummy variable that equals 1 if a PTA is in effect, involving Indonesia and trade partner country i in year t, and 0 otherwise. The model also includes log of real GDP ($\ln RGDP_{it}$), which captures the effect of market size, and the log of real GDP per capita ($\ln RGDPPC_{it}$), which reflects economic development. This study further uses other traditional gravity theory variables, including $\ln(Dist)_i$, the logarithm of geographical distance between Indonesia and trading partner country i, while additional trade determinants include Contig (a dummy variable equal to 1 if Indonesia and country i share a common border, and 0 otherwise), Colony (a dummy variable equal to 1 if Indonesia and country i have a colonial relationship in the past), and Language (a dummy variable equal to 1 if at least 9% of the population in both Indonesia and country i speak the same language, and 0 otherwise), to assess elements that influence trade by either facilitating or restricting it (Dutt et al., 2013; Baier and Bergstrand, 2007).

To control for external influences, the model incorporates fixed effects, including γ_t (year fixed effects) to account for time-specific shocks, δ_s (sector fixed effects) to control for unobserved characteristics that are specific to each product or sector, and λ_{ts} (year-sector interaction fixed effects) to capture joint variations across different sectors over time. The error term ε_{ist} is included in the model with clustered standard errors at the country-year level, ensuring robust estimation by accounting for heteroskedasticity and serial correlation in the trade data. Table 4 presents the summary statistics of the variables used in the analysis.

Table 4. Summary Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
LREXPORT	19,916	9.039	2.943	-0.246	16.881
LEXTENSIVE	19,916	2.968	1.312	0.000	6.468
LINTENSIVE	19,916	6.071	2.139	-0.246	13.286
BTAR	19,916	0.031	0.174	0.000	1.000
MTAR	19,916	0.217	0.412	0.000	1.000
RGDP	19,916	26.471	1.715	22.027	30.687
RGDPPC	19,916	9.276	1.394	6.133	11.408
DIST	19,916	8546.369	4390.067	1012.916	18049.170
CONTIG	19,916	0.036	0.186	0.000	1.000
COLONY	19,916	0.018	0.133	0.000	1.000
LANGUAGE	19,916	0.055	0.229	0.000	1.000

In estimating the final model, this study use two estimation methods: Ordinary Least Squares (OLS) and Poisson Pseudo Maximum Likelihood (PPML). While OLS estimation in gravity models is a common approach, it poses econometric problems, OLS relies on a log-linear transformation of trade values, which cannot accommodate zero trade observations because the logarithm of zero is undefined. To overcome these issues, this study applies the

PPML estimator, introduced by Santos Silva and Tenreyro (2006). The PPML method naturally handles zero trade observations by estimating the gravity equation in its multiplicative form without requiring log transformation. Moreover, PPML is robust to heteroskedasticity, providing unbiased and consistent parameter estimates even when errors are heteroskedastic. Using both OLS and PPML methods allows for robustness checks and provides more reliable evidence regarding the relationship of BTAs with Indonesia's export margins.

4.3. Estimation Results

Table 5 shows the estimated results of the models with and without additional covariates. These results provide insights into the association of BTAs with export performance, including real exports, the extensive margin (variety of exported goods), and the intensive margin (volume of exported goods). The key models include both OLS and PPML estimations, with PPML used as a robustness test to address potential issues of heteroskedasticity, which can distort the results of traditional OLS models.

The coefficients of BTA are significantly positive for all models of real exports, extensive margin, and intensive except for the PPML estimation of the extensive margin, where the coefficient is positive but not statistically significant. Based on the estimated models with additional controls, BTA is associated with increases in real exports by 47.6%, extensive margin by 10.1%, and intensive margin by 37.5%. The results suggest that BTAs significantly enhance Indonesia's export performance through both extensive and intensive margins. This implies that BTAs not only facilitate the diversification of exported products by enabling access to new markets, but also strengthen existing trade relationships by increasing the volume of goods already being traded. Consequently, BTAs can serve as a strategic policy instrument for Indonesia to achieve sustained export growth and reinforce its competitiveness in the global market.

Concerning the control variables, PTA consistently shows positive and statistically significant relationship with exports across all models, except under the PPML specification with additional controls, where the coefficient for the real export is less significant. PTA is associated with increases in real exports by 63.3%, in the extensive margin by 29.2%, and in the intensive margin by 34.1%. The estimated coefficients indicate that participation in PTAs enhances both the variety of exported goods and their corresponding trade volumes.

Furthermore, real GDP (RGDP) consistently correlates positively with both the extensive and intensive margins of export, confirming the theoretical predictions that larger economies have more capacity to produce a diverse range of goods and services. This results in larger export volumes and greater variety, as larger economies typically import more due to higher incomes and are able to produce a wider array of goods, thereby driving greater trade volumes (Krugman et al., 2018).

Table 5. Estimation result of all products

	LREAXPORT			LEXTENSIVE			LINTENSIVE	
	OLS		PPML	OLS		PPML	OLS	
BTA	0.858***	0.476***	0.320***	0.315***	0.101***	0.013	0.544***	0.375***
	(0.176)	(0.092)	(0.089)	(0.066)	(0.032)	(0.016)	(0.118)	(0.081)
PTA	1.901***	0.633***	-0.102	0.945***	0.292***	0.1862***	0.956***	0.341***
	(0.086)	(0.090)	(0.084)	(0.037)	(0.040)	(0.014)	(0.053)	(0.057)
RGDP	0.888***	1.027***	0.873***	0.304***	0.374***	0.334***	0.583***	0.653***
	(0.020)	(0.020)	(0.019)	(0.009)	(0.008)	(0.004)	(0.013)	(0.014)
RGDPPC	0.045***	-0.036	0.001	0.104***	0.074***	0.102***	-0.058***	-0.110***
	(0.030)	(0.027)	(0.024)	(0.013)	(0.011)	(0.004)	(0.019)	(0.018)
Distance	-	-0.000***	-0.000***	-	-0.000***	-0.000***	-	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)
Contiguity	-	0.709***	-0.319***	-	0.447***	0.214***	-	0.262***
		(0.098)	(0.085)		(0.044)	(0.027)		(0.072)
Colony	-	1.983***	1.139***	-	0.631***	0.457***	-	1.352***
		(0.052)	(0.094)		(0.019)	(0.014)		(0.038)
Common Language	-	0.964***	1.519***	-	0.383***	0.432***	-	0.581***
		(0.161)	(0.111)		(0.057)	(0.027)		(0.114)
Constant	-15.319***	-16.832***	-11.329***	-6.260***	-7.070***	-5.450***	-9.059***	-9.763***
	(0.415)	(0.438)	(0.586)	(0.199)	(0.171)	(0.102)	(0.281)	(0.316)
Sector-Year Effects	yes	yes	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes	yes	yes
Year Effects	yes	yes	yes	yes	yes	yes	yes	yes
R-square	0.551	0.594	0.589	0.724	0.778	0.822	0.465	0.487
Obs.	19,916	19,916	21,660	19,916	19,916	21,660	19,916	19,916

In contrast, geographical distance negatively relates to export margins, as indicated by the small but significant negative decreases for Distance. This is consistent with gravity model predictions that greater distances increase trade costs and hinder export expansion. Even though trade agreements eliminate formal trade barriers, national borders still significantly influence trade. Even with minimal tariffs and legal restrictions, trade flows more heavily within a country than between similar regions across different countries (Krugman et al., 2018). Colonial ties and common language also play an important role in export performance. The positive and significant coefficients of these variables suggest that historical and linguistic connections contribute to trade facilitation, likely through reduced transaction costs and better mutual understanding of business practices.

The inclusion of sector and year effects in the models demonstrates the importance of accounting for temporal and sector-specific variations. Year effects capture global and regional trade dynamics that influence trade patterns over time, while sector effects recognize that different industries experience varying impacts from trade agreements. These effects confirm that the influence of trade agreements on export performance is not uniform across time or sectors, highlighting the need for nuanced policy design that considers the specific characteristics of different industries and their trading partners.

Together, these results highlight the crucial role of BTAs and PTAs, along with economic size, colonial and linguistic ties, and geographical distance, in shaping export behavior and trade patterns between countries.The use of PPML as a robustness test is particularly valuable in this analysis. PPML helps to address potential biases and inaccuracies in the standard OLS estimates, especially in the context of trade data, which often exhibit heteroskedasticity, where the variance of errors is not constant across observations. By using PPML, we can ensure that the estimated coefficients are more reliable, as it provides consistent estimates even in the presence of heteroskedasticity, making the results more robust and trustworthy. The findings from PPML thus serve to validate the results obtained from OLS, confirming the robustness of the relationship between trade agreements and export performance.

Furthermore, the analysis includes a specific focus on manufactured products, given that the majority of trade flows are dominated by these products. In the HS classification, most export transactions fall under chapters 25-97, which broadly cover manufactured goods, reflecting the central role of industrial products in global trade. Including this additional analysis allows the study to capture more accurately the export dynamics in sectors that account for a substantial portion of Indonesia's trade activities. Table 6 shows the results for manufactured products only (HS Chapter 25-99) with and without additional covariates. The findings are consistent with those observed for all product categories. Both BTA and PTA show statistically significant and positive association on the extensive and intensive margins of exports. However, there are notable differences in the magnitude of the coefficients, particularly when using PPML as a robustness test.

For BTA, the PPML model for the extensive margin is positive, but the result is not statistically significant. Similarly, for PTA, the PPML model for real exports shows a positive effect, but again, it is not statistically significant. Despite these exceptions, both BTA and PTA generally exhibit positive and statistically significant coefficients in models for both the extensive and intensive margins.

For the extensive margin, PTA are associated with an increase of 34.5%, compared to 11.6% under BTA. This suggests that plurilateral agreements may offer broader

opportunities for product diversification in manufactured exports than bilateral agreements. Similarly, for the intensive margin, PTA exhibits a higher increase of 51.8% compared to 47.4% under BTA, indicating that plurilateral agreements may have a stronger effect in enhancing trade volumes of existing products.

The coefficient of GDP (RGDP) remains significant across all margins, reinforcing the idea that larger markets drive higher trade flows. The variable for per capita GDP (RGDPPC) shows mixed effects; while it positively influences extensive margin, it negatively impacts intensive margin. This suggests that while higher income levels may encourage diversification in exports, they might not necessarily lead to higher trade volumes per product. Colonial ties and common language effects remain robust, reinforcing the idea that historical and linguistic connections continue to facilitate trade, particularly in manufactured goods where relationship-based trade mechanisms are crucial.

From the findings of this study, it can be observed that while both bilateral and plurilateral trade agreements significantly enhance Indonesia's export margins, the impact of PTA is consistently greater than that of BTA. This indicates that trade agreements involving a larger number of member countries generate more substantial trade benefits compared to country-specific agreements.

These findings show a partially consistent results with the study by Chafer et al. (2022) that conducted an extensive panel-gravity estimation covering 211 countries from 1948–2013 and find that PTAs significantly enhance trade flows, although their study find that BTAs exhibit no significant trade-creating effect. Using the PPML estimator with high-dimensional fixed effects, the study reports that PTAs increases trade by an average of 44%, whereas BTA effects were statistically insignificant or even negative in several specifications.

V. Conclusions and Policy Recommendations

This study aimed to investigate the role of BTAs in promoting the extensive and intensive margins of Indonesia's exports. By analyzing Indonesia's trade performance before and after the implementation of these agreements, the study sought to provide insights into how trade liberalization through these agreements influences the diversification and deepening of Indonesia's export base. The findings confirm that BTAs have a significant and positive association on both margins, contributing to a 10.1% increase in the number of products exported (extensive margin) and a 37.5% increase in the volume of existing exports (intensive margin).

The empirical analysis also revealed that other factors, such as PTAs as the other form of trade agreements, the size of the economy (measured by GDP), historical relationships (such as colonial ties), and common language, play crucial roles in shaping trade flows. The results shows that PTAs have a positive and significant association with the enhancing margins of exports, larger economies tend to trade more, and historical or linguistic connections between countries help reduce transaction costs, thereby facilitating trade. On the other hand, geographical distance continues to be a barrier, as trade costs tend to increase with distance, despite the elimination of tariffs and non-tariff barriers through trade agreements. These findings underscore the importance of trade agreements in enhancing Indonesia's export performance.

Table 6. Estimation result of manufactured products

	LREAXPORT			LEXTENSIVE			LINTENSIVE	
	OLS		PPML	OLS		PPML	OLS	
BTA	0.942***	0.590***	0.289***	0.317***	0.116***	0.021	0.626***	0.474***
	(0.174)	(0.101)	(0.088)	(0.063)	(0.035)	(0.017)	(0.120)	(0.088)
PTA	2.008***	0.864***	0.008	0.965***	0.345***	0.200***	1.043***	0.518***
	(0.084)	(0.092)	(0.085)	(0.036)	(0.040)	(0.015)	(0.052)	(0.060)
RGDP	0.882***	1.006***	0.880***	0.310***	0.376***	0.331***	0.572***	0.630***
	(0.020)	(0.021)	(0.021)	(0.009)	(0.009)	(0.004)	(0.013)	(0.014)
RGDPPC	0.107***	0.041	0.147***	0.100***	0.073***	0.096***	0.007	-0.032*
	(0.029)	(0.026)	(0.0245)	(0.012)	(0.011)	(0.004)	(0.019)	(0.018)
Distance	-	-0.000***	-0.000***	-	-0.000***	-0.000***	-	-0.000***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)
Contiguity	-	0.803***	-0.173**	-	0.508***	0.203***	-	0.296***
		(0.094)	(0.088)		(0.052)	(0.029)		(0.073)
Colony	-	1.819***	0.840***	-	0.582***	0.425***	-	1.237***
		(0.060)	(0.098)		(0.020)	(0.014)		(0.046)
Common Language	-	0.754***	1.292***	-	0.350***	0.426***	-	0.404***
		(0.162)	(0.113)		(0.060)	(0.029)		(0.116)

Constant	-15.681***	-17.057***	-14.114***	-6.242***	-7.034***	-5.418***	-9.440***	-10.024***
	(0.430)	(0.449)	(1.218)	(0.211)	(0.178)	(0.242)	(0.291)	(0.323)
Sector-Year Effects	yes	yes	yes	yes	yes	yes	yes	yes
Sector Effects	yes	yes	yes	yes	yes	yes	yes	yes
Year Effects	yes	yes	yes	yes	yes	yes	yes	yes
R-square	0.568	0.607	0.624	0.731	0.784	0.815	0.446	0.466
Obs.	16,588	16,588	17,328	16,588	16,588	17,328	16,588	16,588

This study finds that BTAs contribute significantly to improving Indonesia's export performance through their positive effects on the extensive and intensive margins. Therefore, Indonesia should continue to utilize BTAs as a strategic policy tool, particularly in cases where specific targeted partner countries can unlock market potential and complement existing trade relations.

Future trade negotiations should be guided by empirical evidence on margins of trade and not only by the increase of exports value. Incorporating the extensive and intensive margins as part of the decision-making framework can help ensure that new agreements are aligned with Indonesia's broader trade development goals. Agreements that demonstrate potential for product diversification or export scaling should be prioritized based on historical trade patterns.

While the study distinguishes between BTAs and other agreements like PTAs, it does not analyse by the depth or scope of the agreements. In reality BTAs vary in terms of scope, ranging from basic tariff reduction under Preferential Trade Agreement to more comprehensive like Comprehensive Economic Partnership Agreement (CEPA) which may include investment, services, and cooperation. Future research could investigate whether the scope and depth of trade agreements lead to different effects on export margins. Moreover, this study relies on aggregate sector-level data, which may overlook heterogeneity across both sectors and firms. Although the analysis treats manufacturing as a single group, the underlying dataset contains detailed sectoral classifications based on HS codes. The manufacturing sector comprises a wide range of distinct categories such as chemical products (HS 28–38), textiles (HS 50–63), and machinery (HS 84–85), that may respond differently to trade agreements. While this study focuses on the aggregate relationship in the manufacturing sector, future research could take advantage of the available sector-level detail to explore different effects across subsectors. Additionally, using firm-level or product-level data may provide deeper insights into how different types of exporters react to trade liberalization under various trade agreement frameworks.

References

Anggraini, U., Muchtar, M., & Sihombing, P. R. (2023). *The impact of free trade agreements on Indonesia's trade performance. Buletin Ilmiah Litbang Perdagangan*, 17(1), 1–18.

Ardiyanti, S. T. (2015). *The impact of Indonesia-Japan Economic Partnership Agreement (IJEPA) on bilateral trade performance. Buletin Ilmiah Litbang Perdagangan, 9*(2), 129–152.

Baier, S. L., & Bergstrand, J. H. (2007). Do free trade agreements actually increase members' international trade? *Journal of International Economics*, 71(1), 72–95. https://doi.org/10.1016/j.jinteco.2006.02.005

Baier, S. L., Bergstrand, J. H., & Feng, M. (2014). Economic integration agreements and the margins of international trade. *Journal of International Economics, 93*(2), 339–350. https://doi.org/10.1016/j.jinteco.2014.03.005

Baldwin, R. (2016). *The World Trade Organization and the future of multilateralism. Journal of Economic Perspectives, 30*(1), 95–116. https://doi.org/10.1257/jep.30.1.95

Centre d'Études Prospectives et d'Informations Internationales (CEPII). (2024, December 24). *CEPII - Database*. Retrieved from http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp

Chafer, C., Gil-Pareja, S., & Llorca-Vivero, R. (2022). *Warning: Bilateral trade agreements do not create trade. Bulletin of Economic Research, 74*(1), 135–144. https://doi.org/10.1111/boer.12281

Chandra, A. C. (2005). *Indonesia and bilateral trade agreements (BTAs). The Pacific Review, 18*(4), 541–565. https://doi.org/10.1080/09512740500339018

Chaney, T. (2008). Distorted Gravity: The Intensive and Extensive Margins of International Trade. *American Economic Review, 98*(4), 1707–1721. https://doi.org/10.1257/aer.98.4.1707

Dutt, P., Mihov, I., & Van Zandt, T. (2013). The effect of WTO on the extensive and the intensive margins of trade. *Journal of International Economics, 91*(2), 204–219. https://doi.org/10.1016/j.jinteco.2013.08.001

Foster, N., Poeschl, J., & Stehrer, R. (2011). The impact of Preferential Trade Agreements on the margins of international trade. *Economic Systems*, *35*(1), 84–97. https://doi.org/10.1016/j.ecosys.2010.11.004

International Trade Centre (ITC). (2024, November 18). *TradeMap - International Trade Statistics*. Retrieved from https://www.trademap.org

Kang, K. (2018). The effect of immigrants on the extensive and intensive margins of trade. *Applied Economics Letters, 25*(2), 92–95. https://doi.org/10.1080/13504851.2017.1299092

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). *International economics: Theory & policy* (11th Global ed.). Pearson.

Laksana, M.P.A. (2022). Export Taxes and Trade Pattern: Case from the Indonesian Mineral Industry. *The Indonesian Journal of Development Planning* , VI (1) 37 – 53. https://doi.org/10.36574/jpp.v6i1.243

Mayer, T., & Zignago, S. (2011). *Notes on CEPII's distances measures: The GeoDist database* (CEPII Working Paper No. 2011-25). Centre d'Études Prospectives et d'Informations Internationales (CEPII). https://www.cepii.fr/PDF_PUB/wp/2011/wp2011-25.pdf

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica, 71*(6), 1695–1725. https://doi.org/10.1111/1468-0262.00467

Ministry of Trade of Indonesia. (2025, May 3). Export import statistics information system. Retrieved from https://sister.kemendag.go.id/

Rasbin. (2020). *The benefits of international trade agreements on trade and investment in Indonesia. Kajian*, *25*(4), 301–322.

Santos Silva, J. M. C., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics, 88*(4), 641–658. https://doi.org/10.1162/rest.88.4.641

United Nations Conference on Trade and Development. (2020). *World investment report 2020: International production beyond the pandemic*. United Nations. https://unctad.org/publication/world-investment-report-2020

Utomo, N. B. (2023). *Analysis of the impact of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) on Indonesia's trade balance*. *Jurnal Perspektif Bea dan Cukai*, *7*(2), 406–418.

Winanti, P. S. (2022). *Assessing Indonesia's readiness in responding to international trade agreements*. *POLITIKA: Jurnal Ilmu Politik*, 13(1), 23–40. https://doi.org/10.14710/politika.13.1.2022.23-40

World Bank. (2024, November 18). *World Trade Indicators*. Retrieved from https://www.wti.org

World Trade Organization (WTO). (2025, April 27). *Regional Trade Agreements Database*. Retrieved from https://rtais.wto.org/UI/PublicSearchByMemberResult.aspx?MemberCode=360&lang=1&redirect=1

World Trade Organization. (2025, March 9). Glossary. *World Trade Organization*. Retrieved from https://www.wto.org/english/thewto_e/glossary_e/glossary_e.htm

Yao, X., Zhang, Y., Yasmeen, R., & Cai, Z. (2021). *The impact of preferential trade agreements on bilateral trade: A structural gravity model analysis*. PLOS ONE, 16(3), e0249118. https://doi.org/10.1371/journal.pone.0249118

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