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Gains or Losses? WTO Dispute Settlement Impacts for Indonesia Trade Flows

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ABSTRACT

This research investigates how Indonesia's trade patterns are affected by its involvement in WTO disputes, specifically through the lens of the Most-Favoured Nation (MFN) principle. Focusing on disputes involving Indonesia between 1996 and 2020, the study evaluates changes in trade flows by comparing Indonesia's outcomes to those of other WTO members. To control for hidden variables that may influence trade behavior within each case, a fixed-effects (FE) model is applied. The analysis reveals that Indonesia tends to benefit more when it acts as a complainant than other WTO members in similar roles. Nonetheless, the data offer minimal support for the idea that a country's economic size plays a decisive role in shaping post-dispute trade outcomes. Likewise, the hypothesis that democratic states are less likely to engage in biased settlements due to internal accountability pressures is not supported by statistically significant results. Importantly, the consistency and reliability of these findings are reinforced through bootstrap testing, which confirms the stability and significance of key coefficients across the models.

Keywords *Dispute Settlement, Export, Import, Trade Flow, WTO*

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INTRODUCTION

The creation of the World Trade Organization (WTO) in January 1995 resulted from the conclusion of the Uruguay Round. According to the WTO Agreement, one of the organization's central missions is to establish a robust legal structure that governs international commerce between countries (Merrills, 2005). Matters concerning disputes are addressed under the WTO's Dispute Settlement Understanding (DSU).

A foundational rule of the WTO is the Most-Favoured Nation (MFN) clause, which requires that any trade privilege granted to one member must be granted equally to all other members. This principle ensures that all WTO members are entitled to the outcomes of dispute resolutions, not just the original complainant. Consequently, if a respondent nation agrees to lift a trade restriction, it must do so for every member affected, not just the country that

initiated the complaint. This gives rise to a key concern: What exclusive benefit do complainant nations gain if the resulting advantages are shared universally due to the MFN obligation?

Between January 1995 and December 2022, the WTO's dispute resolution system handled 615 cases (WTO, 2023; Darmawan, 2025; Fauzia Ratna Dewi, et al., 2025). As a founding member, Indonesia has taken part in numerous disputes, both in the role of complainant and respondent. These engagements can influence the nation's trade dynamics, particularly in terms of import and export flows.

The extent to which the Most-Favoured Nation (MFN) rule influences Indonesia's outcomes in WTO-related disputes remains uncertain. As a complainant, does Indonesia witness increased exports of the contested goods to the respondent nations after the WTO Dispute Settlement System (DSS) process, in comparison to other member states? Conversely, when Indonesia serves as the respondent, do the complainant countries boost their exports of the disputed products to Indonesia more significantly than other WTO members who were not involved in the case? These questions raise a broader inquiry: does Indonesia ultimately benefit or suffer from engaging in WTO disputes?

Scholarly work examining WTO dispute outcomes has approached the issue from multiple perspectives. For example, Bown (2004) notes that a respondent's decision to eliminate trade restrictions often depends on the complainant's potential to impose trade sanctions. The MFN rule—a cornerstone of the WTO's legal architecture—mandates that any trade concession agreed upon in a specific case must also be extended to all member nations, not just to the complainant (Bagwell & Staiger, 2005b). As a result, once a respondent relaxes trade limitations, all affected members, not just the original disputing party, stand to gain. This leads to the issue of "free-riding," where nations not directly involved in disputes also enjoy the benefits of dispute resolution outcomes (Bown, 2005; Ritonga et al., 2025; Natasya Prawesti, & Kuswanto, 2025). Moreover, findings suggest that trade with respondent countries tends to increase after settlements, although how much complainant countries benefit depends on whether disputes are resolved early or after a ruling is issued (Kucik & Pelc, 2016). Shin & Ahn (2019) argue that when market access improves due to DSS rulings, the MFN framework allows even uninvolved countries to exploit new export opportunities and enjoy legal gains. However, existing literature has mostly concentrated on how disputes affect trade globally, with limited focus on how such cases specifically influence the trade patterns of developing members like Indonesia.

This research represents a pioneering effort to evaluate how WTO dispute proceedings influence Indonesia's trade flows, specifically through the lens of the Most-Favoured Nation (MFN) doctrine. It begins by investigating whether Indonesia, when acting as a complainant in WTO cases, sees an increase in its exports of contested goods to the respondent nations compared to other WTO countries not involved in the disputes. Conversely, when Indonesia is positioned as the respondent, the study examines whether complainant countries experience greater export penetration of the disputed goods into the Indonesian market relative to other uninvolved WTO members. By conducting a comprehensive analysis of Indonesia's involvement in all WTO disputes and benchmarking its trade activity against that of other members, this research aims to close a critical gap in the current academic understanding of how trade disputes affect the trade performance of developing nations.

To explore these questions, the analysis will implement a fixed-effects (FE) model, which is designed to control for dispute-specific factors that are not directly observable but may influence trade outcomes. Standard errors will be adjusted by clustering at the dispute level to ensure robustness. The methodology will involve panel data to assess bilateral trade flows between the countries involved and their trading partners after WTO dispute settlements. Multiple data repositories will inform this analysis, including the World Integrated Trade Solution (WITS), UN Comtrade, the World Development Indicators (WDI) from the World Bank, and Our World in Data. These sources will provide a broad array of variables such as trade values and volumes, macroeconomic metrics, and political characteristics of the countries studied.

RESEARCH METHOD

Data Sources and Dataset Construction

This research introduces a newly developed dataset that thoroughly documents Indonesia's involvement in WTO disputes, emphasizing the associated trade flows and product-level details. This carefully constructed dataset, to the best of our understanding, represents the most comprehensive record available on Indonesia's trade activity with WTO member nations concerning goods that are the subject of formal disputes. The central analytical unit in this study is defined as a unique combination of dispute case, trade partner, and calendar year. Here, "trade partners" refer to any WTO member engaged in trade with the dispute respondent, including primary complainants, third-party countries, and non-involved member states. The scope of the analysis is restricted to cases where complete trade information is accessible.

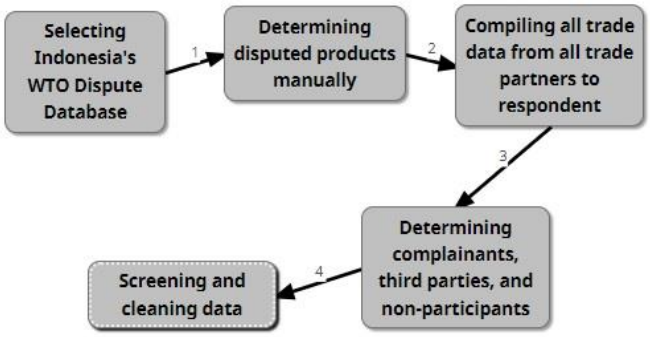

Figure 1.
Indonesia's WTO Dispute Dataset Construction
Source: Author's Construction (2023)

To build the dataset, each dispute is categorized by its assigned case number. The products under dispute are identified using six-digit Harmonized System (HS) codes, and the procedural roles of all participants—whether complainant, respondent, third party, or non-litigant—are systematically recorded. The data-gathering phase begins with the extraction of bilateral import figures for all goods explicitly named in merchandise-related disputes. This import data is drawn from the UN Comtrade database, accessed through the World Bank's World Integrated Trade Solution (WITS) platform. At the outset, imports are logged according to the classification level specified in the original dispute submission, which could fall at the 2-, 4-, or 6-digit HS level. These records are then consolidated into annual summaries based on dispute, partner country, and year, yielding an aggregate import measure for the contested products in each dispute.

This study constructs a dataset comprising more than 8,317 trade records for all countries annually from 1994 to 2022. To maintain accuracy and consistency, we implement an extensive data validation and refinement process. As a first step, all European Union (EU) member states are grouped under a single entity to reflect the classification used in the WTO's dispute records. Next, trade entries involving countries outside the WTO framework are excluded. We also eliminate entries lacking essential variables, including incomplete trade figures and missing national economic indicators like GDP.

After completing this rigorous data processing (see Figure 1), the finalized dataset includes economic, trade, and political data for 2,544 observations corresponding to WTO members over the 1994–2022 period. Among these, 620 data points represent import levels for the two years following each dispute settlement. The dataset captures a total of 16 WTO disputes in which Indonesia was involved as either a complainant or a respondent, occurring between 1996 and 2020. These cases include 16 unique complainants, 16 respondents, 88

nations participating as third parties, and 196 countries not directly engaged in the disputes.

For the dispute settlement (DS) case numbers related to Indonesia, this study primarily draws upon information from the WTO's official Dispute Settlement Database, which covers cases from 1995 to 2020. Supplementary data is sourced from multiple repositories, including the World Bank's World Integrated Trade Solution (WITS), UN Comtrade, the World Development Indicators (WDI), and Our World in Data. These sources provide comprehensive measures such as trade quantities and values, national economic metrics like GDP, and governance indicators such as a binary democracy classification.

Variable Definitions

At a glance, the methodological approach adopted in this research seeks to highlight the unequal allocation of benefits among WTO members. It is anticipated that countries initiating disputes will gain disproportionately more than those acting as third parties or remaining uninvolved. To measure these gains specifically for complainant countries, we analyze a set of variables as outlined in Table 1.

Table 1.
Variable Symbols and Definitions

Variable	Symbol	Definition
Disputed Imports	DM	the natural logarithm of the annual volume of imports into respondent from trade partner
Complainant	Comp	the WTO member bringing the dispute and complaining about restrictive trade measures from
Respondent	Resp	the WTO member concerned and complained about, with respect to matters of implementation and alleged violations of WTO agreements
Trade Partner	Part	the WTO member
Gross Domestic	GDP	as the logarithm of GDP in current US dollars
Democratic	Dempair	the dichotomous indicator of democracy
Total Imports	TM	the logarithm of total value of imports for all products from all trade partners into respondent

Source: Author (2023)

The focus of this investigation is on bilateral trade patterns following the conclusion of WTO dispute cases, particularly examining import behavior between respondent states and their various trading partners. The analysis covers yearly import volumes received by respondents from each WTO member during the two-year window after a dispute is resolved. When dispute

resolution processes function as intended—aligned with the MFN rule—they should facilitate the removal of trade restrictions found inconsistent with WTO obligations. As a result, an uptick in imports across a broad set of countries is expected post-settlement.

This research follows the framework used by Kucik and Pelc (2016), applying a dispute-specific lens to the analysis. The main variable of interest, 〖DM〗_(i,j,t), represents the log-transformed value of imports received by respondent country i from trading partner j in year t. Transforming the variable using the natural logarithm helps mitigate issues arising from extreme skewness in the distribution of trade volumes, as noted by Bown and Reynolds (2015).

The scope of our analysis is confined to product categories with complete and uninterrupted trade data available for the two-year period following the resolution of each dispute. Excluding product lines with missing information is essential to prevent distortions in the results that could arise from inconsistencies caused by temporary data gaps or later reintegration into the dataset. Additionally, we exclude all respondent–partner country pairs where no trade activity was recorded, as our primary interest lies in evaluating how dispute outcomes affect ongoing trade relationships rather than whether they initiate new trading links between previously inactive partners. This sampling choice is not expected to introduce systematic bias. Most disputes center around advanced economies, which generally maintain high-quality, detailed trade records. As a result, any gaps in the data are presumed to occur at random rather than due to structural issues.

We define the end point of a dispute as the calendar year in which the final decision or settlement is formally submitted to the WTO. Cases that remain unresolved—either lacking a settlement or a ruling—are not included in the dataset. The post-dispute observation period begins in the year immediately following the formal closure of the case, whether the resolution came through a mutually agreed settlement, withdrawal, or final ruling. Limiting the timeframe to two years post-resolution ensures a conservative and focused analysis. While expanding the window might increase the chance of capturing post-dispute trade growth, our approach prioritizes precision and minimizes overestimation of long-term trends.

From a substantive perspective, using import volumes allows for a straightforward comparison of trade dynamics among different categories of WTO members. This approach is particularly well-suited to identifying disparities in trade outcomes — specifically, whether some countries gain more from dispute resolutions than others. It also enables an assessment of whether

complainant nations generally secure greater market access to respondent countries than those not involved in the dispute. A further benefit of using trade levels is that it provides a consistent benchmark across observations, making the interpretation of results more intuitive and transparent.

The core of this analysis centers around one key explanatory variable. In the model framework, we explore whether gains from WTO dispute resolutions are distributed unevenly. Drawing on theoretical expectations and prior empirical findings, we hypothesize that respondents tend to increase their imports from complainant nations more than from those not involved in filing the dispute. To test this, we construct a binary variable, labeled $Comp_{j,d}$, which captures whether a country j acted as a complainant in a given dispute d. This variable equals 1 if the country was a complainant and 0 if it was not. The dataset includes all trading partners involved in each dispute, and non-complainants serve as the baseline group for interpreting the coefficient of $Comp_{j,d}$We anticipate a statistically significant and positive coefficient for this variable if complainants indeed experience enhanced trade with respondents compared to non-complainant members. This outcome would imply that being a complainant is associated with superior trade benefits, and that the MFN framework does not neutralize those advantages. On the other hand, if the coefficient is still positive but reflects smaller trade volumes for complainants relative to others, it would suggest that MFN obligations somewhat dampen the preferential gains typically available to disputing parties.

Each regression model in this study includes a set of control variables designed to minimize the influence of potential confounders. First, we incorporate indicators of market scale for both the respondent and the trade partner, expressed as the natural logarithm of Gross Domestic Product (GDP) in current U.S. dollars, with data sourced from the World Development Indicators (WDI). These variables, represented as $GDPResp_{i,t}$ for respondents and $GDPPart_{j,t}$. for trade partners, control for the well-established observation that countries with larger economies typically engage in higher trade volumes across a wide range of goods. Moreover, economically powerful nations may exert greater influence during dispute negotiations, often securing more favorable outcomes due to their stronger retaliatory capacity. As such, including GDP not only reflects market size but also relative bargaining power within the WTO framework—an important factor, given that institutional power dynamics significantly affect how benefits are distributed. In line with this, we anticipate a statistically negative coefficient for $GDPResp_{i,t}$, and a positive and significant coefficient for $GDPPart_{j,t}$. In addition, we include a binary variable to capture the democratic status of both countries in each

respondent–partner dyad. This control, designated as $Dempair_{i,j,t}$, is set to 1 if both the respondent and trade partner operate under democratic political systems. The rationale is that democracies may be less prone to biased dispute outcomes due to public accountability and pressure for procedural fairness. On the flip side, such governments might also be more easily swayed by domestic interest groups, potentially leading to preferential outcomes in favor of politically influential sectors. Data for this variable is sourced from the democracy index available via Our World in Data. Based on the conflicting theoretical expectations, we hypothesize a negative and statistically significant coefficient.

We also factor in the overall trading relationship between respondents and their partners by including a variable for the logarithm of total imports from each partner across all product categories, denoted as $TM_{i,j,t}$,. This variable helps control for the general intensity of bilateral trade, allowing us to assess whether stronger pre-existing trade ties influence post-dispute trade adjustments. For this measure, we expect a negative and significant association, suggesting that greater overall trade volumes might dampen the magnitude of changes in trade specific to disputed products.

Model Specification and Estimation

Our analytical framework is based on a modified version of the empirical model proposed by Kucik and Pelc (2016), represented by the following equation:

$$DM_{i,j,t} = \beta_0 + \beta_1 Comp_{j,d} + \beta_2 GDPResp_{i,t} + \beta_3 GDPPart_{j,t} + \beta_4 Dempair_{i,j,t} + \beta_5 TM_{i,j,t} + \alpha_d + \varepsilon_{i,j,t}$$

This study centers its analysis on the dependent variable $DM_{i,j,t}$, which reflects the natural log of the yearly import value received by respondent country i from trade partner j in year t. The primary explanatory variable, $Comp_{j,d}$, is a binary indicator that equals 1 if country j served as the complainant in dispute d, and 0 otherwise. To account for economic size, two control variables are included: $GDPResp_{i,t}$ and $GDPPart_{j,t}$. representing the logged GDP (in current USD) of the respondent and its trade partner, respectively. These controls help capture the tendency of larger economies to conduct higher volumes of international trade. Additionally, the model incorporates a variable named $Dempair_{i,j,t}$, a dummy set to 1 when both trading countries involved are classified as democracies. To measure the broader trade relationship, we include $TM_{i,j,t}$, which is the natural log of the total value of imports from each trade partner, allowing us to control for baseline trade

intensity prior to dispute outcomes. The model also controls for dispute-specific effects through fixed effects denoted by α_d, while $\varepsilon_{i,j,t}$ represents the error term.

All continuous variables related to import flows, GDP, and total imports are log-transformed prior to estimation. This approach helps to reduce variability in the dataset and linearize the relationship between the dependent and independent variables, as recommended in Lee (2020). The log transformation also assists in approximating normality—a key assumption in linear regression analysis. Finally, to account for intra-dispute correlations, standard errors are clustered by dispute case number.

This study employs a fixed effects (FE) estimation strategy to model the equation. This method is selected because the dispute cases in the dataset do not represent a random sample (Verbeek, 2017). In contrast to Pooled Ordinary Least Squares (POLS), which disregards all case-specific heterogeneity (Wooldridge, 2002), the FE method accounts for unique attributes of each individual dispute, allowing for more tailored and precise estimates. A further justification for adopting the fixed effects framework is the potential correlation between the regressors and dispute-specific unobserved characteristics.

By introducing fixed effects at the dispute level, the model controls for latent differences across disputes that may influence how trade outcomes are distributed among members. These fixed effects capture case-specific elements such as the outcome of the ruling and the perceived legal merit or robustness of the arguments presented. They also help to mitigate the impact of factors like dispute duration, which may shape trade patterns by altering the timeframe needed for policy shifts or market realignments to take effect.

The fixed effects (FE) model allows us to control for hidden heterogeneity by recognizing that each country may have unique characteristics that influence the dependent variable (Bester & Hansen, 2016). In this framework, these country-specific traits are captured by the intercepts, which are allowed to correlate with the explanatory variables, thereby accounting for individual dispute-level variation (Bester & Hansen, 2016). One of the strengths of the FE model lies in its ability to minimize estimation bias, leading to more reliable and consistent parameter estimates (Clark & Linzer, 2015). The presence of fixed effects in the model can be statistically confirmed through an F-test.

In contrast, the random effects (RE) method assumes no correlation between the unobserved individual effects and the independent variables, a condition that may not hold in practical applications. If this assumption is violated, estimates derived from the RE model may be inconsistent (Verbeek, 2017). The FE model overcomes this limitation by effectively removing the

individual-specific effects, thereby addressing the endogeneity issue that arises when those effects are correlated with the predictors.

RESULT AND DISCUSSION

Table 2.
Summary of Variables

	Model 1 (All Indonesia's Disputes)			**Model 2 (Indonesia as Complainant)**			**Model 3 (Indonesia as Respondent)**		
Post-Disputed Imports									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	0.693	21.223	13.149	0.693	21.223	13.080	1.099	19.523	13.249
N	620			366			254		
S.D.	4.161			4.178			4.143		
Complainants									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	0	1	0.049	0	1	0.041	0	1	0.063
N	2,544			1,573			971		
S.D.	0.216			0.198			0.243		
Non-Complainants									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	0	1	0.951	0	1	0.959	0	1	0.937
N	2,544			1,573			971		
S.D.	0.216			0.198			0.243		
GDP of Respondents									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	25.282	30.694	28.549	26.440	30.694	29.571	25.282	27.744	26.894
N	2,544			1,573			971		
S.D.	1.725			1.269			0.867		
GDP of Trade Partners									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	22.062	30.868	26.903	22.063	30.868	26.725	24.686	30.694	27.192
N	2,544			1,573			971		
S.D.	1.788			1.895			1.559		
Democratic Pair									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	0	1	0.542	0	1	0.606	0	1	0.439
N	2,544			1,573			971		

S.D.	0.498			0.489			0.496		
Total Imports									
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
	14.948	27.057	22.116	14.948	27.057	22.696	17.511	24.542	21.177
N	2,544			1,573			971		
S.D.	2.164			2.258			1.609		

Source: Stata Result (2023)

Desctiptive Analysis

Table 2 outlines the descriptive statistics for all variables used in the analysis and offers a breakdown of the model specifications. The analysis is organized into three separate models: Model 1 encompasses all WTO disputes involving Indonesia; Model 2 narrows the focus to cases where Indonesia served as the complainant; and Model 3 considers disputes in which Indonesia was the respondent. The dataset contains 2,544 observations representing WTO member countries and includes variables capturing trade activity, economic metrics, and political indicators across the 1994–2022 period. Since Indonesia's role differs across disputes, the total number of post-dispute trade records varies per model: Model 1 includes 620 observations, Model 2 includes 366, and Model 3 contains 254 entries, each reflecting two years of post-dispute import data.

The table also shows that the mean of post-dispute import volumes, expressed in logarithmic terms, is 13.080 in Model 2 and 13.249 in Model 3. This suggests that average imports into respondent countries were slightly lower in cases where Indonesia initiated the dispute. Additionally, GDP averages indicate that, in Model 2, respondent nations had stronger economies than their trade partners, while the opposite was true in Model 3, where respondents were generally less affluent than the countries exporting to them. Regarding democratic governance, the percentage of respondent–partner pairs classified as democratic was 54.2% in Model 1, 60.6% in Model 2, and 43.9% in Model 3. This indicates that over half of the country pairs in these disputes were democracies, though such pairings were more common in cases where Indonesia was the complainant.

In terms of the key explanatory variable, the proportion of complainants in the dataset is relatively small across all models. Specifically, Model 1 includes 4.9% complainants, Model 2 shows 4.1%, and Model 3 reports 6.3%. This reinforces the importance of evaluating how complainants fare relative to other non-complainant WTO members, particularly under the Most-Favoured Nation (MFN) rules, to understand whether initiating a dispute offers measurable trade advantages or not.

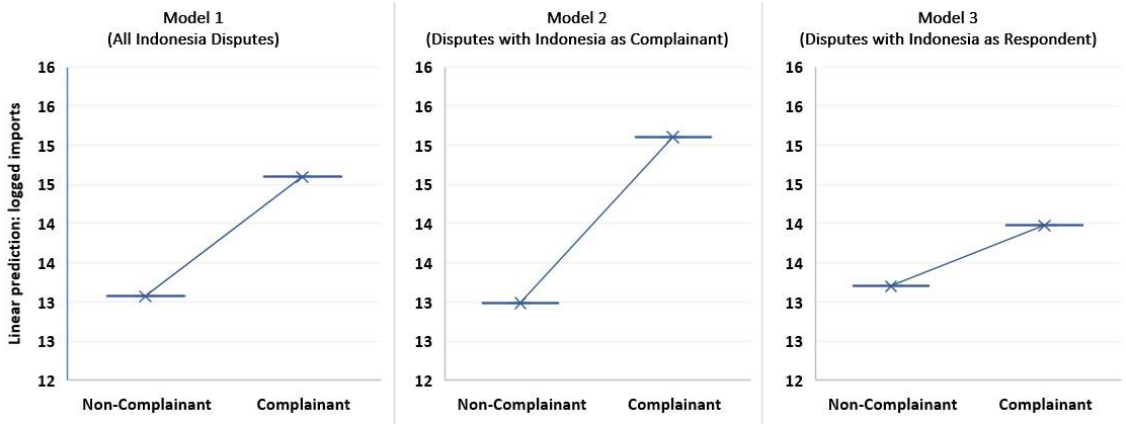

Figure 2.
Substantive Advantage of Complainant over
Non-complainant on Each Model
Source: Stata Calculation (2023)

Complainants in All Indonesia's WTO Disputes

The disparity in outcomes between complainant countries and other WTO members (non-complainants) highlights the uneven allocation of gains arising from dispute settlements. Our analysis begins with a Pooled Ordinary Least Squares (POLS) estimation, under the assumption that dispute-specific effects do not systematically influence trade outcomes. Rather than opting for a Random Effects (RE) model, we proceed with a series of Fixed Effects (FE) models to account for unobservable characteristics unique to each dispute that could bias results. The decision to adopt the FE specification is supported by the results of a Hausman test, which validates its appropriateness in this analytical context.

We replicate the regression framework across three distinct subsamples: (1) all WTO disputes involving Indonesia (Model 1), (2) those in which Indonesia was the initiating party (Model 2), and (3) those where Indonesia was the respondent (Model 3). Each model includes all countries that traded with the respondent during the post-dispute period, meaning the baseline group for interpreting the 〖Comp〗_(j,d) coefficient consists of WTO members who were not complainants. If complainant countries gain preferential access or improved trade terms following disputes, the corresponding coefficient is expected to be positive and statistically significant—indicating higher post-dispute trade flows with respondent nations compared to non-complainant partners.

To restate our objective, this analysis concentrates on uncovering differences in trade dynamics between complainants and non-complainants in relation to the respondent within each model. In essence, our goal is to evaluate

the comparative trade advantages that complainants may enjoy, rather than measuring absolute changes in trade volumes after dispute resolution. Through this comparative lens, the study seeks to produce three key insights. First, in cases where Indonesia acts as the complainant, we examine whether it achieves relatively greater exports of disputed products to the respondent countries than WTO members who did not file complaints. Second, in instances where Indonesia is the respondent, we investigate whether the complainant countries increase their exports of disputed goods to Indonesia more than non-complainants do. Finally, by juxtaposing these two scenarios, we aim to assess whether Indonesia's overall participation in WTO disputes results in net trade gains or losses, depending on its role in the proceedings.

Table 3.
Gains or Losses in Indonesia's WTO Disputes

	Model 1	**Model 2**	**Model 3**
	All Indonesia's Disputes	**Indonesia as Complainant**	**Indonesia as Respondent**
Complainant	1.524**	2.112*	0.775
	(0.587)	(0.930)	(0.574)
GDP of Respondent	-0.154	-1.643	2.929
	(1.688)	(1.892)	(3.914)
GDP of Trade Partner	-0.131	-0.0998	-0.261**
	(0.118)	(0.169)	(0.103)
Democratic Pair	-0.489	-0.454	-0.568
	(0.363)	(0.576)	(0.305)
Total Imports	0.456***	0.523**	0.303**
	(0.116)	(0.131)	(0.101)
Constant	4.255	46.51	-74.15
	(47.10)	(54.48)	(104.2)
N	620	366	254
R-squared	0.5436	0.4983	0.6817
Adj. R-squared	0.6759	0.5844	0.8252

Note: Clustered standard errors are presented in parentheses. The samples in these models differ. Model 1 examines all of Indonesia's disputes, Model 2 focuses solely on disputes where Indonesia acts as a complainant, and Model 3 considers disputes where Indonesia acts as a respondent. The dependent variable is post-dispute imports into the respondent market. The analysis is conducted at the country-product-year level. The coefficient on "Complainant" indicates whether complainants experience significantly greater (or lesser)

market access than non-participants. *p < 0.1, **p < 0.05, ***p < 0.01
Source: Stata Calculation (2023)

Complainants in Model 1

Model 1 captures the full spectrum of Indonesia's involvement in WTO disputes, encompassing both instances where Indonesia filed complaints and where it acted as the respondent. This model estimates the average benefit complainants receive through participation in dispute settlement procedures, irrespective of the final ruling (see Column 1 in Table 3). The model demonstrates a strong explanatory capacity, as reflected in a within R-squared of 0.5436 and an adjusted R-squared of 0.6759.

The variable 〖Comp〗_(j,d), representing complainant status, yields a statistically significant positive coefficient at the 5% significance level. This indicates that, on average, complainants experience post-dispute import volumes that are 1.524 units greater than those observed for non-complainants. Visual confirmation of this pattern is provided in Figure 2, where the estimated import volume for complainants is shown to be 14.59 (with a 95% confidence interval of 13.50 to 15.69), compared to 13.07 (13.01 to 13.13) for countries that did not initiate the dispute. These results suggest a meaningful and statistically robust advantage for complainants in post-dispute trade dynamics.

Complainants in Model 2

The central objective of this study is to determine whether Indonesia benefits more than other WTO member states through its involvement in trade disputes. While Model 1 provides a broad overview by including all disputes involving Indonesia, Model 2 narrows the analysis to those cases in which Indonesia initiated the complaint. This model specifically assesses the extent of Indonesia's trade gains as a complainant (refer to Column 2 in Table 3). The model fits the data well, with a within R-squared value of 0.4983 and an adjusted R-squared of 0.5844.

Model 2, which accounts for 59.03% of the total sample, reveals that Indonesia secures a significant trade advantage when acting as a complainant in WTO disputes. The effect is statistically significant at the 10% level and reflects a large increase in import volumes from Indonesia to respondent markets following dispute resolution. On average, Indonesia sees approximately a 211% increase in post-dispute imports compared to non-complainant WTO members. As shown in Figure 2, the predicted import volume for Indonesia is 15.10, with a 95% confidence interval of [13.36, 16.84], whereas for non-complainants, it is 12.99 [12.91, 13.07]. This highlights a pronounced relative trade gain, especially given the relatively modest scale of Indonesia's complainant-driven WTO

dispute activity. The confidence interval further underscores the robustness of the result. Overall, Model 2 provides strong evidence that Indonesia enjoys considerable trade benefits when it brings a case before the WTO.

Complainants in Model 3

Model 3 focuses exclusively on disputes where Indonesia was the responding party. This subset represents 40.97% of the entire dataset and evaluates the trade outcomes for complainants that brought cases against Indonesia, relative to other WTO members. Similar to the previous models, this one demonstrates a solid model fit, with a within R-squared value of 0.6817 and an adjusted R-squared of 0.8252.

When the regression is applied to this subset, the coefficient for 〖Comp〗_(j,d) remains positive, indicating that complainants tend to experience greater import volumes. However, unlike the previous models, this result lacks strong statistical significance. According to the results in Column 3 of Table 3, the average trade advantage for complainants over non-complainants is about 77%, suggesting a moderate but less robust gain. Figure 2 supports this interpretation, showing that complainant countries engaging in disputes against Indonesia receive an average post-dispute import level of 13.97, with a 95% confidence interval ranging from 12.92 to 15.03. In contrast, non-complainants record a lower average of 13.20, bounded by a narrower interval of [13.13, 13.27]. Although the trade benefit remains in favor of complainants, the effect in this model is more subdued compared to the earlier findings.

Indonesia gain or loss: comparison between the models

To conclude, complainant countries generally experience greater trade benefits than other WTO members, including third parties and non-involved states. However, the results from Model 3 show that this advantage is less pronounced when compared to the outcomes observed in Models 1 and 2. Specifically, complainants who initiated cases against Indonesia do not exhibit stronger trade gains than Indonesia did when it acted as the complainant. In contrast to Model 2, the findings in Model 3 (see Column 3 in Table 3) reveal that Indonesia's trade performance as a respondent does not afford its opponents the same level of benefit that Indonesia achieves when it brings a case (as shown in Column 2 of Table 3). In essence, Indonesia appears to secure more favorable trade outcomes when it is the complainant, outperforming its counterparts in the dispute process. Overall, this analysis suggests that Indonesia achieves greater relative gains from WTO dispute participation when it initiates the case, compared to when it is the target.

The Impacts of Variables on Disputed Imports

Table 3 provides insight not only into the comparative performance of complainants versus non-complainant WTO members in the context of Indonesia's trade disputes but also includes key statistical outcomes. These results serve as a foundation for further analysis, enabling comparisons with findings from prior studies on WTO dispute resolution. Several specific variables are used to quantify and evaluate these outcomes in alignment with the existing body of research.

Market power on disputed imports

Scholarly work suggests that countries with larger economies are often better positioned to obtain favorable outcomes in WTO disputes, as their greater market power enhances their ability to credibly threaten retaliation (Bown, 2004; Davis & Shirato, 2007; Busch et al., 2009; Chaudoin et al., 2016). In this analysis, we follow the methodology of Kucik and Pelc (2016) by using GDP as a proxy to assess the role of market size in shaping post-dispute trade outcomes.

In Model 1, the coefficient for the natural log of respondent GDP is approximately -0.154. This suggests that a 1% increase in respondent GDP corresponds to a 0.154% decrease in post-dispute import volumes. However, the lack of statistical significance implies that this relationship is not strongly supported by the data. Similarly, the coefficient for trade partner GDP is around -0.1309, also indicating a negative relationship, but this too is statistically insignificant.

Turning to Model 2, the estimated effect of respondent GDP is -1.643, suggesting a sharper decline in post-dispute imports as respondent GDP increases. Yet again, this relationship is not statistically meaningful. Likewise, trade partner GDP shows a coefficient of -0.099, pointing to a slight negative association, but without statistical significance.

Model 3 presents a different pattern: the coefficient for respondent GDP is positive, at approximately 2.929. This would indicate that larger respondent economies correlate with increased post-dispute imports. Still, this result is not statistically robust. On the other hand, the coefficient for trade partner GDP is -0.261 and is statistically significant at the 5% level, implying that higher GDP among trade partners is associated with lower import volumes after a dispute.

Overall, our expectations were that respondent GDP would show a negative and significant effect, while trade partner GDP would have a positive and significant impact. The empirical findings partially align with this for respondents in Models 1 and 2 but not in Model 3. In terms of trade partners,

the results deviate from expectations: the coefficients are consistently negative, with statistical significance observed only in Model 3.

Political regime on disputed imports

In Model 1, the estimated coefficient for the "Democratic Pair" variable is approximately -0.489, implying that when both the respondent and trade partner are democracies, the volume of post-dispute imports is, on average, 48.9% lower than in pairs without this political alignment. However, this relationship lacks statistical significance. Similarly, Model 2 yields a coefficient of roughly -0.454, indicating a 45.42% reduction in imports for democratic pairs, though this estimate also falls short of statistical significance.

Model 3 shows a slightly larger negative coefficient of -0.568 for democratic trade pairs, suggesting a further decrease in post-dispute imports under dual democratic governance. Yet again, this outcome is not statistically significant at conventional levels, limiting the strength of interpretation.

Theoretical perspectives in prior research argue that democratic states are typically less prone to engage in biased dispute resolutions, as their policy decisions are often influenced by the transparency demands of domestic actors (Mansfield et al., 2000; Milner & Kubota, 2005; Chaudoin et al., 2016). To test the effect of political regime type on trade outcomes in disputes, this study uses a democracy indicator variable. Although the direction of the coefficients aligns with expectations—showing negative values in all three models—the lack of statistical significance prevents us from confirming any strong effect of democratic pairing on post-dispute trade patterns.

Trade ties and disputed imports

As a key control variable across our models, the total import value effectively captures the strength of existing trade relationships and their influence on post-dispute outcomes—consistent with findings by Kucik and Pelc (2016). In Model 1, the coefficient for this variable is around 0.4565, indicating that a 1% rise in total imports corresponds to a 0.4565% increase in import volumes following dispute resolution. This result is highly statistically significant, reinforcing the explanatory power of trade relationship intensity. Model 2 reflects a similar pattern, with the coefficient rising to approximately 0.523. This suggests a stronger association, where each 1% increase in pre-existing trade flows is linked to a 0.523% increase in post-dispute imports. The result is statistically significant, further emphasizing the influence of entrenched trade ties. In Model 3, although the effect is slightly smaller, the coefficient remains positive at around 0.303. This value still confirms a meaningful link between total imports and post-dispute trade levels, and the result remains statistically significant. Collectively, these findings underscore

that the volume of prior trade plays a crucial role in shaping trade dynamics after a dispute is resolved.

Robustness Test

To validate the reliability of our model estimates, we conduct robustness checks using the bootstrap method—a widely accepted technique for estimating standard errors (Boos, 2003). As described by Guan (2003), this method involves repeatedly resampling the original dataset with replacement, recalculating the target statistic for each resample, and determining the standard error based on the distribution of these estimates.

The outcomes from our bootstrap procedure affirm the overall stability of the model. After running 1,000 bootstrap iterations, we observe some adjustments in the statistical significance levels of our coefficients (indicated by changes in significance stars), which result from variations in recalculated standard errors. Crucially, the core findings remain consistent: coefficient values across all models do not deviate materially. For instance, in Model 2, the effect of the complainant variable becomes more statistically robust. In Model 3, while the significance of the total imports variable decreases slightly, it remains statistically valid at the 10% level. These results confirm that our findings hold under resampling and remain reliable despite minor shifts in precision.

At the heart of this research lies a critical inquiry: what specific benefits do complainant nations truly receive following a WTO dispute, especially considering the Most-Favoured Nation (MFN) clause extends these outcomes to all WTO members (Bagwell & Staiger, 2005b)? This study addresses that question by examining Indonesia's role in WTO disputes and evaluating whether it secures distinct trade advantages compared to other member states. Within the framework of MFN obligations, this investigation offers a comparative analysis of Indonesia's trade outcomes relative to those of other WTO participants engaged in disputes involving Indonesia. Notably, this research is the first to deliver an in-depth, quantitative examination of Indonesia's trade performance in WTO dispute contexts, marking a novel contribution to the existing dispute settlement literature. The study underscores the value of empirical approaches when exploring the operations and effects of judicial bodies like the WTO Dispute Settlement Body (DSB).

The principal conclusion is clear: Indonesia experiences greater gains when acting as a complainant than other WTO members involved in its disputes. These findings align with prior literature showing that WTO rulings are generally associated with increased trade volumes (e.g., Bagwell & Staiger, 2005a; Bown & Hoekman, 2005; Davis, 2012; Maggi & Staiger, 2011; Shin & Ahn, 2019). However, across all three model specifications, the results offer limited

empirical support for the influence of market power—measured by GDP—on post-dispute trade, which contradicts earlier scholarship (e.g., Bown, 2004; Davis & Shirato, 2007; Kucik & Pelc, 2016). Similarly, the anticipated positive influence of democratic governance on trade outcomes is not statistically supported in our models, despite suggestions in previous research (Mansfield et al., 2000; Milner & Kubota, 2005). These inconsistencies suggest the potential omission of important explanatory variables or the limitations of existing data, highlighting areas where future studies could improve.

Several limitations should be acknowledged. First, key variables relevant to post-dispute trade—such as economic crisis indicators—could not be integrated into the models. This was mainly due to their unavailability at the EU regional level and because crisis data only extends to 2021, while this study includes data through 2022. Future research could benefit from overcoming this constraint by incorporating updated and disaggregated data.

Second, it may be necessary to control for trade values of specific products one year prior to a dispute to better understand the bilateral trade dynamics between respondents and partners. Doing so would require implementing a dynamic panel model. Moreover, the study recognizes the risk of endogeneity in its current design, especially concerning reverse causality between dispute outcomes and trade flows. To enhance causal inference, subsequent research should consider adopting alternative identification strategies or advanced econometric techniques that can address these concerns more rigorously.

Lastly, our inability to detect strong impacts of GDP and democracy variables could be attributed to limited data coverage or a narrow focus on Indonesia's roles solely as a complainant or respondent. Future research should broaden this scope to include cases where Indonesia was involved as a third party, offering a more complete picture of the country's participation and gains from WTO disputes.

CONCLUSSION

This study finds that Indonesia gains significantly more from participating in WTO disputes when acting as a complainant than when serving as a respondent. Despite the Most-Favoured Nation (MFN) principle mandating that dispute outcomes be extended to all members, the empirical analysis reveals that Indonesia experiences notable increases in exports to respondent countries after initiating a dispute—benefits not equally enjoyed by complainant countries targeting Indonesia. These findings suggest that initiating WTO disputes yields more substantial trade advantages for Indonesia compared to when it is the target of such complaints.

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