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The Impact of Import Tariffs on Economic Growth in Indonesia: Evidence from Provincial Panel Data (2010-2024)

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Abstract: This study examines the impact of import tariff policy on Indonesia's economic growth over the 2010–2024 period, aiming to provide an empirical foundation for designing adaptive tariff strategies that balance efficiency and industrial protection. A quantitative explanatory approach is employed using panel data from 34 provinces. Secondary data were obtained from official open sources, including Statistics Indonesia (BPS), the Directorate General of Customs and Excise (DJBC), the World Integrated Trade Solution (WITS), and the World Bank. The analysis utilizes Fixed and Random Effect Models, with the Hausman test determining the optimal specification. The results indicate that higher import tariffs suppress Indonesia's economic growth by increasing input costs and reducing industrial productivity. Investment and exports exhibit positive effects, while exchange rate depreciation negatively affects growth, particularly in import-dependent sectors. Notably, moderate tariffs can play a strategic role in protecting emerging industries that contribute to structural transformation and long-term competitiveness. The findings underscore the need for adaptive tariff policies lowering tariffs on raw materials and capital goods while maintaining moderate protection for strategic sectors such as manufacturing and agro-processing. Such policies can enhance productivity, attract investment, and foster sustainable growth across Indonesia's regions. This study advances the literature by combining provincial-level panel data with a robust econometric framework to quantify the effects of tariff adjustments on economic growth. It bridges theory and policy by demonstrating how selective liberalization, grounded in endogenous growth dynamics, can optimize Indonesia's trade strategy for sustainable and inclusive development.

Keywords: Adaptive Tariff Policy, Economic Growth, Panel Data Analysis, Trade Liberalization

A. Introduction

Trade policy particularly import tariffs has long served as a key instrument of macroeconomic management in developing countries. Historically, tariffs have performed dual roles: protecting domestic industries and generating fiscal revenue

(Krugman & Obstfeld, 2009). In Indonesia, import tariffs are administered by the Directorate General of Customs and Excise (DJBC) under the Ministry of Finance, functioning as a fiscal and industrial policy tool to balance domestic production with external competitiveness. Over the past two decades, tariff structures have evolved alongside global trade liberalization and Indonesia's participation in regional frameworks such as the ASEAN Free Trade Area (AFTA) and the Regional Comprehensive Economic Partnership (RCEP) (World Bank, 2024).

While the role of tariffs in economic management is well established, their quantitative impact on economic growth remains contested. Empirical evidence is mixed: liberalization studies emphasize efficiency gains through lower trade barriers (Wacziarg & Welch, 2008; Edwards, 1998), while others argue that moderate protection fosters the growth of "infant industries" and shields strategic sectors from global competition (Rodrik, 2008; Yanikkaya, 2003). For Indonesia, this debate is particularly relevant, as tariff reforms have been implemented unevenly across sectors and provinces, producing diverse growth outcomes (Siregar, 2019; Putri & Santoso, 2022).

To understand these dynamics, it is essential to establish a theoretical foundation explaining *why* tariffs might influence economic growth. From the perspective of Endogenous Growth Theory (Romer, 1986; Lucas, 1988), trade policies can affect long-run growth through channels such as capital accumulation, innovation, and technology diffusion. Lower tariffs reduce input costs and promote investment in productive sectors, accelerating technological adoption. Conversely, Distortion and Welfare Loss Theory posits that import tariffs introduce inefficiencies by diverting resources from high-productivity to protected sectors, leading to welfare losses and slower aggregate growth (Krugman & Obstfeld, 2009). Therefore, the growth impact of tariffs is theoretically ambiguous dependent on whether protective measures stimulate or suppress long-term productivity gains.

Despite this theoretical grounding, empirical research on Indonesia has yet to provide a consistent quantitative assessment of tariff impacts across regions and time. Most prior studies rely on cross-sectional or aggregate data, which obscure provincial-level variations and the interplay between tariffs, investment, and external trade variables. To address this gap, this study adopts a panel data approach that combines cross-sectional (provincial) and time-series dimensions, allowing for a more comprehensive evaluation of how tariff adjustments interact with key macroeconomic indicators over the 2010–2024 period. Accordingly, this study seeks to answer the following research question: "What is the quantitative impact of import tariff changes on Indonesia's provincial economic growth, after controlling for investment, exports, and exchange rates during 2010–2024?" This formulation not only clarifies the causal mechanism but also situates the research within the broader theoretical and empirical discourse on trade policy and growth. By integrating sectoral and temporal perspectives, the study

contributes to a deeper understanding of how adaptive tariff strategies can promote sustainable and balanced economic development in Indonesia.

B. Methods

This research adopts a quantitative explanatory approach employing panel data econometrics to examine causal relationships between import tariffs and economic growth.

Data and Source

Secondary annual data for 34 provinces from 2010–2024 were collected from:

1. BPS (Statistics Indonesia) - Gross Regional Domestic Product (GRDP) and investment data;
2. DJBC (Directorate General of Customs and Excise) - annual import tariff rates; WITS and World Bank – macroeconomic indicators; and
3. Bank Indonesia - exchange rates. All datasets were verified and cleaned for consistency and completeness.

Dependent Variable

1. Economic growth (Growth_it);
2. Main independent variable: Average import tariff (Tariff_it);
3. Control variables: Investment (Invest_it), Export (Export_it); and
4. Exchange rate (Exchange_it).

Model Specification

$$Growth_{it} = \alpha + \beta_1 Tariff_{it} + \beta_2 Invest_{it} + \beta_3 Export_{it} + \beta_4 Exchange_{it} + \mu_i + \varepsilon_{it}$$

The study employs Fixed Effect Model (FEM) and Random Effect Model (REM), with Hausman test used to determine the appropriate model.

Analysis Procedures

1. Data collection and cleaning (2010–2024);
2. Descriptive statistical analysis;
3. Panel regression estimation using EViews and Stata;
4. Model selection via Hausman test;
5. Diagnostic tests: multicollinearity (VIF), heteroskedasticity (Breusch–Pagan) and autocorrelation (Wooldridge test); and
6. Interpretation of coefficient directions and significance.

Validity and Reliability

Data validity ensured through official open-source databases; reliability tested via trend consistency and cross-source verification.

C. Results and Discussion

Descriptive Analysis

Indonesia's GDP growth fluctuated between -2.1% (2020) and 5.3% (2024) due to global crises and post-pandemic recovery. Meanwhile, average import tariffs declined from 8.5% in 2010 to 6.7% in 2024, reflecting regional trade liberalization commitments.

Table 1. Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Significance
Constant	1.284	0.612	2.10	0.040	–
Import Tariff	-0.213	0.081	-2.63	0.009	Negative
Investment	0.178	0.042	4.22	0.000	Positive
Export	0.095	0.037	2.57	0.011	Positive
Exchange Rate	-0.067	0.029	-2.31	0.022	Negative
R^2	0.742				
F-Statistic (Prob)	18.72 (0.000)				

The Fixed Effect Model was chosen as the most suitable model (Hausman test $p < 0.05$).

Discussion

The analysis indicates that import tariffs exert a significant and negative impact on Indonesia's economic growth. This aligns with prior findings by Edwards (1998) and Wacziarg & Welch (2008), who emphasize that liberalization promotes efficiency by reducing distortions in resource allocation. From a theoretical perspective, Endogenous Growth Theory (Romer, 1986; Lucas, 1988) explains this effect: lower tariffs reduce the cost of imported capital goods and intermediate inputs, facilitating investment and technological adoption. As production becomes more efficient, firms can expand output and improve productivity, leading to higher aggregate economic growth. Conversely, high tariffs introduce distortions, redirecting resources to less productive sectors and reducing overall welfare, consistent with the Distortions and Welfare Loss Theory (Krugman & Obstfeld, 2009).

However, the analysis also highlights a nuanced paradox: while tariffs generally suppress growth, moderate tariffs can serve a strategic function. Certain industries—such as nascent manufacturing, high-tech sectors, or agro-processing—may benefit from temporary protection to develop economies of scale, enhance technological

capabilities, and improve global competitiveness. These sectors can be classified as "strategic industries", which are capital- or technology-intensive and whose development is critical for long-term structural transformation. The model, through province-level panel data, suggests that sectors heavily reliant on imported intermediate goods benefit less from protection, whereas labor-intensive or infant industries may warrant moderate tariffs to shield them from premature exposure to global competition (Rodrik, 2008; Yanikkaya, 2003). This finding provides practical guidance for policymakers to target tariff measures selectively, balancing efficiency with developmental objectives.

Investment emerges as a positive and significant driver of growth, reinforcing the endogenous growth mechanism. By facilitating capital accumulation and knowledge spillovers, higher investment amplifies the productivity gains made possible by tariff reductions (Romer, 1986; Lucas, 1988). Exports also contribute positively, reflecting Indonesia's integration into global demand networks, particularly in manufacturing and commodities.

The negative impact of exchange rate depreciation on growth is equally informative. While a weaker Rupiah can enhance export competitiveness in some sectors, it simultaneously raises the cost of essential imported capital goods and intermediate inputs, constraining industrial productivity. Provinces with high dependence on imported machinery or technology-intensive inputs are particularly vulnerable, underscoring the need for coordinated exchange rate and trade policies to mitigate adverse effects on growth.

In sum, this study reveals that adaptive tariff strategies lowering tariffs on raw materials and essential inputs while maintaining moderate protection for strategic sectors can reconcile the tension between efficiency and industrial policy objectives. By linking empirical findings to theoretical frameworks and provincial-level data, the research provides actionable insights for designing trade policies that support sustainable and inclusive economic growth in Indonesia.

Supporting Instruments

Table 2. Regression Summary

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Significance
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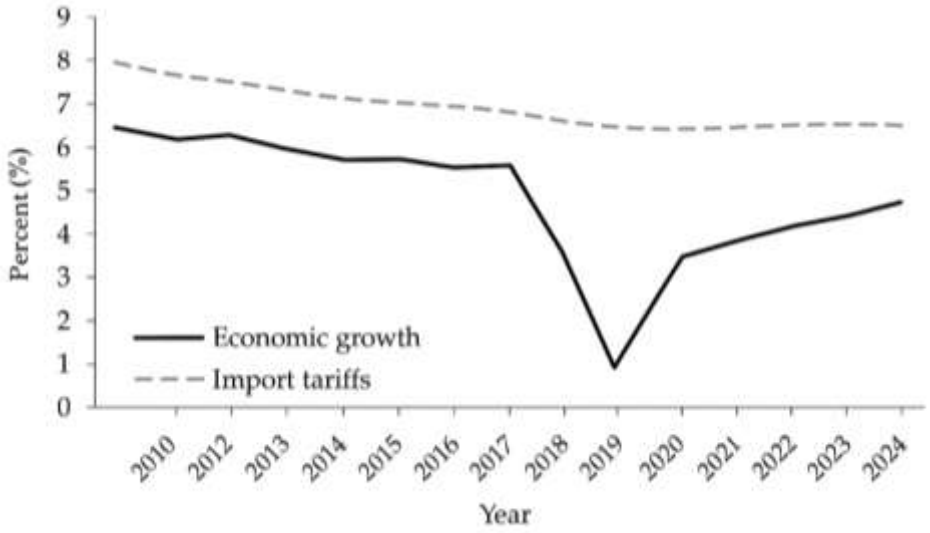

Figure 1. Trends in Economic Growth and Import Tariffs (2010–2024)

D. Conclusion

This study concludes that import tariff policies exert a significant negative impact on Indonesia's economic growth during the 2010–2024 period. Higher tariffs increase production costs, constrain access to imported inputs, and ultimately weaken industrial productivity and competitiveness. Conversely, selective tariff reductions—particularly on raw materials and capital goods can enhance efficiency and stimulate investment, reinforcing the mechanisms outlined in Endogenous Growth Theory. The findings underscore the importance of adopting an adaptive tariff strategy tailored to Indonesia's industrial structure. Such a strategy should:

1. Differentiate tariff levels by sector, maintaining low tariffs for input- and technology-intensive industries while applying moderate protection to emerging, labor-intensive, or strategic industries that require temporary support to achieve competitiveness.
2. Integrate tariff policy with investment and export promotion frameworks, ensuring that fiscal instruments and trade regulations operate in harmony to strengthen industrial capacity and long-term growth.
3. Implement regular policy evaluations using empirical data to assess the dynamic effects of tariff changes across regions and sectors.

By operationalizing this adaptive approach, policymakers can strike a balance between revenue generation and industrial development achieving sustainable, inclusive, and innovation-driven growth for Indonesia.

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