The Effect of Exchange Rates, India's GDP, and Global Price Fluctuations on Indonesia's CPO Exports to India

Benius
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: benius@feb.upr.ac.id

Rambu Anarki
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: anarkyrambu177@gmail.com

Puput Iswandyah Raysharie
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: raysharie@feb.upr.ac.id

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ABSTRACT

Indonesia's crude palm oil plays a vital role in global vegetable oil markets, with India consistently ranking as one of its main importers amid dynamic macroeconomic conditions. This study examines how exchange rates, India's GDP, and international CPO prices affect Indonesia's crude palm oil exports to India from 1994–2024. Using a quantitative approach with time-series data, secondary sources were obtained from the Central Bureau of Statistics, UN Comtrade, and the World Bank. Classical assumption tests and multiple linear regression were performed using Stata. The results show that the IDR exchange rate has a positive and significant effect on crude palm oil export volumes, indicating that depreciation improves export competitiveness. In contrast, India's GDP has a negative and significant effect, suggesting that economic growth is associated with import diversification and substitution toward domestic vegetable oils. International CPO prices exhibit a positive but insignificant effect, reflecting relatively inelastic demand in India's food industry. The F-test confirms that all variables jointly influence exports, with the model explaining 66.44% of export variation. The study highlights the crucial role of exchange rates and the paradoxical impact of India's economic growth, implying that Indonesia should diversify markets, strengthen trade negotiations, and improve production efficiency.

***Keywords**: Crude Palm Oil, Exchange Rate, GDP, International Price, Export.*

ABSTRAK

Minyak sawit mentah Indonesia memainkan peran penting di pasar minyak nabati global, dengan India secara konsisten menempati peringkat sebagai salah satu importir utamanya di tengah kondisi makroekonomi yang dinamis. Studi ini meneliti bagaimana nilai tukar, PDB India, dan harga CPO internasional memengaruhi ekspor minyak sawit mentah Indonesia ke India dari tahun 1994–2024. Menggunakan pendekatan kuantitatif dengan data deret waktu, sumber sekunder diperoleh dari Badan Pusat Statistik, UN Comtrade, dan Bank Dunia. Uji asumsi klasik dan regresi linier berganda dilakukan menggunakan Stata. Hasil menunjukkan bahwa nilai tukar rupiah memiliki pengaruh positif dan signifikan terhadap volume ekspor minyak sawit mentah, menunjukkan bahwa depresiasi meningkatkan daya saing ekspor. Sebaliknya, PDB India memiliki pengaruh negatif dan signifikan, menunjukkan bahwa pertumbuhan ekonomi terkait dengan diversifikasi impor dan substitusi terhadap minyak nabati domestik. Harga CPO internasional menunjukkan pengaruh positif tetapi tidak signifikan, mencerminkan permintaan yang relatif inelastis di industri makanan India. Uji F mengkonfirmasi bahwa semua variabel secara bersama-

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sama memengaruhi ekspor, dengan model menjelaskan 66.44% variasi ekspor. Studi ini menyoroti peran penting nilai tukar dan dampak paradoks dari pertumbuhan ekonomi India, yang menyiratkan bahwa Indonesia harus melakukan diversifikasi pasar, memperkuat negosiasi perdagangan, dan meningkatkan efisiensi produksi.

***Kata kunci**: Minyak Sawit Mentah, Nilai Tukar, PDB , Harga Internasional, Ekspor.*

INTRODUCTION

International trade serves as a cornerstone of modern economic development, particularly for developing nations like Indonesia. As the world's largest producer of Crude Palm Oil (CPO), Indonesia plays a strategic role in meeting global vegetable oil demands. USDA data (2024) indicate that Indonesia produces over 44 million tons of CPO, far surpassing Malaysia and Brazil, with the sector contributing significantly to foreign exchange earnings, job creation, and national economic growth.

India, with a population exceeding 1.4 billion, represents a primary market for Indonesia's CPO exports. High demand stems from population growth, expansion in the food industry, and limited domestic vegetable oil production (Mustafa & Iqbal, 2021). Bilateral agricultural cooperation between Indonesia and India, initiated through the 1992 Memorandum of Understanding on Agricultural Cooperation, has further solidified CPO's position as a strategic commodity in their trade relations.

The dynamics of Indonesia's CPO exports to India are influenced by global macroeconomic variables, including IDR exchange rate fluctuations against the US dollar, India's Gross Domestic Product (GDP) growth, and international CPO prices (Antonio et al., 2020; Anggraini et al., 2024; Awaliyah et al., 2025). IDR depreciation, for instance, enhances the price competitiveness of Indonesian CPO, while India's GDP growth signals stronger purchasing power (Putri et al., 2025). Conversely, international CPO price volatility introduces uncertainty for exporters.

Despite the established theoretical foundations of bilateral commodity trade, empirical evidence on Indonesia-India CPO dynamics remains fragmented. Recent gravity model studies demonstrate that bilateral trade flows are significantly influenced by economic size, exchange rates, and trade costs, yet country-specific analyses of CPO exports remain limited (Amiruddin et al., 2021; Leitão, 2024). Prior studies on Indonesia's CPO exports have largely examined macroeconomic factors in aggregate or across multiple destinations (Rosyadi et al., 2021). Widad (2022) analyzed exports to ten countries but overlooked India-specific dynamics, while Warsito (2020) focused on India without simultaneously testing exchange rates, GDP, and prices over an extended post-pandemic period. This study addresses a critical research gap by quantitatively examining the impacts of exchange rates, India's GDP, and international CPO prices on Indonesia's CPO exports to India using time series analysis from 1994 to 2024.

Based on the identified phenomena and research gap, this study is conducted with the following research objectives. The study aims to analyze the effect of the IDR exchange rate, India's GDP, and international CPO prices on the volume of Indonesia's crude palm oil (CPO) exports to India. In line with these objectives, the research questions addressed in this study focus on the impact of the IDR exchange rate on the volume of Indonesia's CPO exports to India, the influence of India's GDP on the volume of Indonesia's CPO exports to India, and the effect of international CPO prices on the volume of Indonesia's CPO exports to India.

This research contributes theoretically, policy-wise, and practically. It strengthens international economics literature by providing empirical evidence on macroeconomic determinants of Indonesia's strategic commodity exports and extending trade theory to agricultural commodities. From a policy perspective, the findings offer a scientific basis for formulating adaptive CPO export strategies amid exchange rate fluctuations, India's economic dynamics, and global price volatility, while supporting market diversification and competitiveness. The study provides insights for palm oil industry stakeholders and

exporters to anticipate global market changes and develop more resilient and sustainable business strategies.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of the IDR Exchange Rate on Indonesia's CPO Exports to India

International trade involves the exchange of goods and services across countries, driven by differences in resources, technology, and production advantages (Shenkar et al., 2021). Brettell and Hollifield (2022) emphasize that international trade enables countries to allocate resources more efficiently based on comparative advantage principles. Salvatore (2019) adds that cross-border trade not only enhances efficiency but also expands markets, fosters economic growth, and strengthens global integration. Smith (2024) The absolute advantage theory posits that countries benefit by specializing in commodities they produce more efficiently than others. David Ricardo later developed the comparative advantage theory, highlighting that trade gains persist even without absolute advantages, as long as relative opportunity costs are lower (Ricardo, 1821). This framework explains Indonesia's CPO exports to India despite India's domestic vegetable oil production capacity.

Exchange rates are key macroeconomic variables that shape export competitiveness and international trade performance. The exchange rate overshooting model proposed by Dornbusch (2019) explains that short-term exchange rate fluctuations can have substantial effects on trade flows by altering relative prices across countries. In the Indonesian context, depreciation of the IDR generally enhances export competitiveness by reducing the dollar-denominated prices of domestic products, making them more attractive to foreign buyers. This condition particularly benefits commodity-based exports, such as coal, crude palm oil, and mining products, which become relatively cheaper in international markets when the IDR weakens (Matondang et al., 2024). However, exchange rate volatility also introduces uncertainty for exporters, especially firms that rely on imported inputs, as it can increase production costs and complicate financial planning. Purba and Magdalena (2017) state that exchange rate movements significantly affect export volumes, while studies on CPO exports to India indicate that the IDR–USD exchange rate is a primary determinant of trade volume.

H1: IDR exchange rate has a significant effect on Indonesia's CPO exports to India.

Influencing India's GDP on Indonesia's CPO Exports to India

Demand and supply theory forms the basis for commodity trade analysis. India's CPO demand is influenced by population growth, purchasing power, and substitution with other vegetable oils (Yadav & Chattopadhyay, 2025). Indonesia's CPO supply depends on production factors, tropical climate, and export policies, with international price fluctuations reflecting global demand-supply interactions that ultimately affect export volumes. According to Arthur (2021) consumer demand and producer supply interactions determine prices and traded quantities. In the CPO context, India's demand is shaped by population growth, purchasing power, and alternatives like soybean or sunflower oil, while Indonesia's supply relies on production inputs, climate, and policies. Global price volatility signals demand-supply equilibrium shifts, directly impacting export volumes.

Case and Fair (2007) define GDP as the total market value of all final goods and services produced within a country over a specific period by domestically located factors of production. Sukirno (2021) describes GDP as the value of goods and services produced by both domestic and foreign factors within the country. Mankiw (2013) views GDP as the market value of all final goods and services produced in a country during a given period. GDP reflects a nation's economic capacity and purchasing power (Park et al., 2019). India's rapid GDP growth since the 1990s signals rising consumption capabilities, including for vegetable oils. GDP increases should boost import demand; however, empirical findings by Christianingtyas et al. (2024) reveal a significant effect of GDP and

exports, attributable to import substitution policies and domestic oil diversification that enhance local production and reduce import reliance.

H2: India's GDP has a significant effect on Indonesia's CPO exports to India

International CPO Price in Indonesia's CPO Exports to India

Exports serve as key indicators of trade balances and economic growth. Makhoba (2024) stress that primary commodity exports like CPO play a strategic role in boosting foreign exchange and employment opportunities. However, overreliance on a single commodity poses risks from international price volatility, making analysis of influencing factors essential for adaptive trade policies. For Indonesia, CPO exports to India reflect comparative advantages and strategies to strengthen positions in the global vegetable oil supply chain.

International crude palm oil prices represent an important external factor influencing global market competitiveness and export performance (Hidayat et al., 2023; Judijanto, 2025). According to Marshallian price theory, an increase in prices tends to reduce demand, whereas a price decrease stimulates demand (Marshall, 2013). However, for strategic commodities such as CPO, demand is relatively price inelastic because of its essential role in household consumption and as a key input in the food and manufacturing industries. This low elasticity implies that even substantial fluctuations in international CPO prices may not lead to proportional changes in export volumes, particularly in major importing countries such as India. Nevertheless, price differentials between domestic and international markets remain crucial in determining trade flows. When domestic CPO prices exceed international prices, export volumes are likely to decline, whereas lower domestic prices can enhance export competitiveness and increase exports. Empirical evidence supports the relevance of price dynamics, as Nuryanto et al. (2023) find that international CPO prices significantly affect export volumes. While CPO demand tends to be inelastic, international price movements still play a meaningful role in shaping export performance.

H3: International CPO prices have a significant effect on Indonesia's CPO exports to India.

Simultaneous Effects on Indonesia's CPO Exports

Conceptually, Indonesia's CPO exports to India are shaped by the simultaneous interaction of exchange rates, India's GDP, and international CPO prices. The exchange rate determines price competitiveness by influencing the relative cost of Indonesian CPO in international markets, while India's GDP reflects aggregate demand capacity and consumption potential. At the same time, international CPO prices signal global demand–supply conditions and shape buyer preferences in importing countries. Rather than operating independently, these variables interact dynamically, reinforcing or offsetting each other's effects on export performance. Recent empirical evidence by Lugo et al. (2024) shows that declining vegetable oil prices combined with exchange rate depreciation significantly enhance palm oil export competitiveness across major exporting countries. This highlights that favorable price movements are more effective when supported by competitive exchange rates, particularly for commodity-based exports such as CPO.

Empirical studies further emphasize the importance of analyzing these determinants simultaneously. Tandra and Suroso (2023) find that bilateral exchange rates and importing-country GDP positively influence downstream palm oil trade, while exporter GDP may exert a negative effect due to domestic absorption and policy priorities. Similarly, Noor et al. (2024) demonstrate that palm oil prices, production levels, and GDP growth significantly drive net exports in Malaysia, with inflation and GDP growth acting as major macroeconomic drivers. Panel data evidence by Shukri et al. (2024) reinforces this view, revealing that a 1% increase in GDP raises palm oil demand by approximately

0.9%. However, findings from studies on Indonesia–India trade suggest potential nonlinear effects, where rising India's GDP may coincide with import substitution or diversification policies. These results underscore the value of multivariate and simultaneous approaches in capturing the complex dynamics governing strategic commodity exports such as Indonesia's CPO to India.

H4: IDR exchange rate, GDP, and international CPO price have a simultaneous effect on Indonesia's CPO exports to India.

This research's conceptual framework is illustrated in Figure 1, the relationships between the independent variables (exchange rate, India's GDP, international prices) and the dependent variable (volume of Indonesia's CPO exports to India). The framework posits that exchange rate depreciation enhances export competitiveness, India's GDP growth influences import demand capacity (potentially offset by substitution policies), and international CPO prices affect global market preferences, collectively determining export volumes. This structure aligns with empirical models in prior studies on palm oil trade dynamics between Indonesia and India.

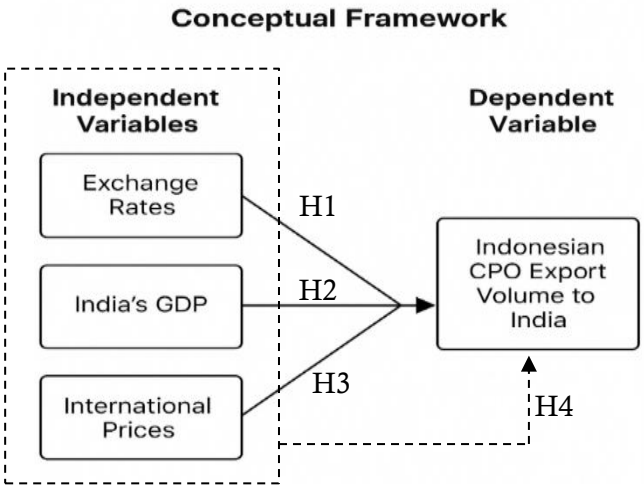

Figure 1. Conceptual Framework of the Research

RESEARCH METHODS

This study focuses on analyzing macroeconomic factors influencing Indonesia's Crude Palm Oil (CPO) exports to India from 1994 to 2024. The scope encompasses the IDR exchange rate against the US dollar, India's Gross Domestic Product (GDP), and international CPO prices, with the export volume to India as the research object due to its status as Indonesia's primary CPO market. This research employs a quantitative descriptive approach with time series-based analysis. The quantitative method tests inter-variable relationships empirically via multiple linear regression, enabling systematic hypothesis testing and generalizable results for international trade policy support. The study locations are Indonesia as the exporting country and India as the main importing nation. The analysis period spans 1994–2024, covering pre-Asian financial crisis dynamics, the 1997/1998 monetary crisis, India's economic growth phase, and COVID-19 pandemic impacts.

Secondary data are sourced from the Central Statistics Agency (*Badan Pusat Statistik*/BPS) for CPO export data, UN Comtrade for international trade statistics, and the World Bank for India's GDP and international CPO prices. Secondary data ensures high reliability, broad coverage, and long-term consistency. Data collection involves documentation and compilation from official Indonesian and Indian government/institutional sources, gathered as an annual time series for each research

variable. The dependent variable (Y) is Indonesia's CPO export volume to India (in tons). Independent variables (X) include IDR exchange rate against USD (IDR/US$), India's GDP (US$ billion), and international CPO price (US$/ton). These definitions ensure measurement consistency and facilitate result interpretation.

To ensure the validity of the regression model, classical assumption tests are conducted, including multicollinearity tests to confirm the absence of high correlations among independent variables, normality tests to verify that the residuals are normally distributed, heteroskedasticity tests to ensure constant residual variance, and autocorrelation tests to check for the absence of residual correlations in the time-series data. Furthermore, multiple linear regression analysis is employed to examine the simultaneous effects of the exchange rate, India's GDP, and international CPO prices on Indonesia's CPO exports to India.

$$Y = \beta_0 + \beta_i X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:
Y : Volume of Indonesia's CPO exports to India (in tons)
X_1 : IDR exchange rate against USD (IDR/US$)
X_2 : India's GDP (US$ billion)
X_3 : International CPO price (US$/ton)
β_0 : Constant (intercept)
β_i, β_2, β_3 : Regression coefficients
e : Error term

This standard notation is consistent with econometric time-series models commonly applied in CPO export studies, thereby supporting empirical validity in hypothesis testing. Hypothesis testing is carried out using several statistical procedures, including the t-test to examine the partial effect of each independent variable on Indonesia's CPO exports to India, the F-test to evaluate the simultaneous effect of all independent variables, and the coefficient of determination (R^2) to measure the proportion of export variation explained by the exchange rate, India's GDP, and international CPO prices. All analyses are performed using Stata, which is selected for its strong capability in handling econometric time-series analysis.

RESULTS

India ranks among the world's fastest-growing economies and largest populations, exceeding 1.4 billion people in 2024, positioning it as a prime market for vegetable oils like Indonesia's Crude Palm Oil (CPO). With a GDP of USD 3.9 trillion, India holds the fifth-largest economy globally, dominated by services (54%), industry (30%), and agriculture (16%). India's vegetable oil needs are substantial, with 2023 consumption at 25 million tons against domestic production of about 10 million tons, creating a deficit met through imports where CPO dominates due to competitive pricing and versatile applications in food and non-food industries.

Indonesia supplies 55-60% of India's CPO imports, outpacing Malaysia's 35% share. High demand stems from population size, rising incomes, and Indian government policies ensuring affordable cooking oil availability. Active import tariff and quota management, such as reducing CPO import duties from 7.5% to 5% in 2022, stabilizes domestic prices. CPO consumption in India primarily serves the food sector (70%), with the remainder for cosmetics and biodiesel, fueled by ongoing population growth and urbanization.

Indonesia-India bilateral ties, rooted in the 1992 Agricultural Cooperation MoU, underpin sustained CPO trade. Indonesia's CPO exports to India reached USD 5.1 billion in volume of 5.4 million tons in 2023, marking growth from prior years and highlighting India's strategic influence on Indonesia's export performance. Understanding India's

macroeconomy, oil consumption structure, and trade policies is essential for analyzing how exchange rates, GDP, and international prices affect CPO export volumes.

The study spans the period 1994–2024 and incorporates key variables, namely the IDR–US dollar exchange rate, India's GDP, international CPO prices, and Indonesia's CPO export volumes to India, with data sourced from the BPS, the World Bank, and UN Comtrade. Descriptive statistics indicate that Indonesia's average CPO export volume to India reached 3,749,467 tons, characterized by substantial inter-year fluctuations and peaking at 7.32 million tons in 2017. Over the same period, the IDR exchange rate experienced a long-term depreciation from IDR 2,160 per USD in 1994 to IDR 16,162 per USD in 2024, with an average of IDR 10,704 per USD. India's GDP increased markedly from USD 327 billion in 1994 to USD 3.91 trillion in 2024, reflecting strong and sustained economic growth. Meanwhile, international CPO prices displayed notable volatility but followed a generally upward trend, averaging approximately USD 759 per ton.

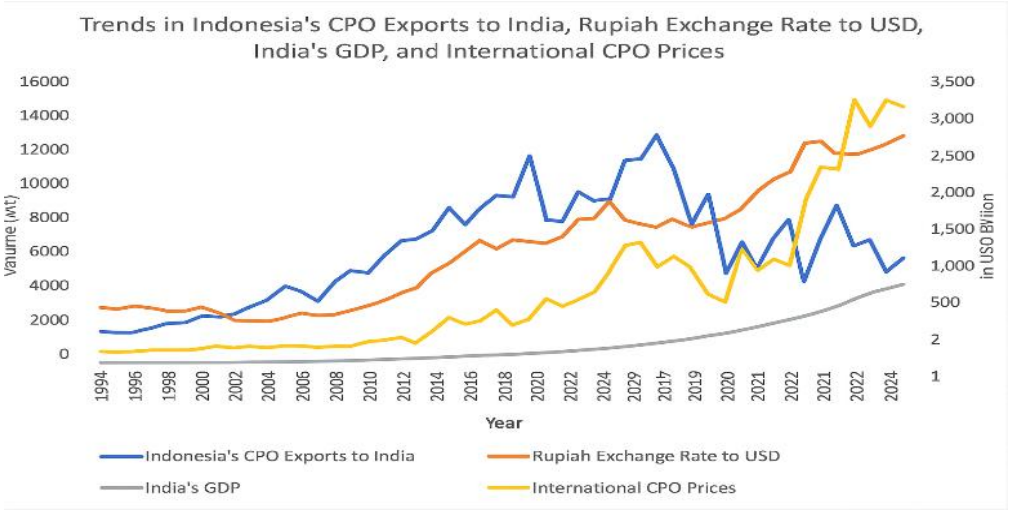

Figure 2. Trends of Indonesia's CPO exports to India, the IDR/USD exchange rate, India's GDP, and international CPO prices from 1994 to 2024

Classical assumption tests confirm the multiple linear regression model meets BLUE criteria. No multicollinearity is present (VIF: exchange rate 1.27; GDP 1.74; price 2.08; all < 10). Residuals are normally distributed (Prob > Chi² = 0.3020 > 0.05). No heteroskedasticity exists (Prob > Chi² = 0.5327 > 0.05). Residuals show no autocorrelation (Prob > Chi² = 0.1038 > 0.05). Detailed classical assumption test results are presented in Table 1. These tests validate model reliability for time series econometric analysis of CPO exports.

Table 1. Results of the Classical Assumption Test

Classical Assumptions Test	Testing Method	Test Results	Decision Criteria	Conclusion
Multicollinearity	Variance Inflation Factor (VIF)	Exchange rate: 1.27 GDP: 1.74 Price: 2.08	VIF < 10	There is no multicollinearity
Residual Normality	Normality Test (Prob > Chi²)	0.3020	Prob > 0.05	Normally distributed residuals
Heteroskedasticity	Heteroscedasticity Test (Prob > Chi²)	0.5327	Prob > 0.05	There is no heteroscedasticity
Residual Autocorrelation	Autocorrelation Test (Prob > Chi²)	0.1038	Prob > 0.05	There is no residual autocorrelation

Table 1 shows that the VIF for all independent variables (exchange rate, GDP, and prices) is well below the threshold of 10, indicating no multicollinearity issues. This means

the variables are not highly correlated, so the regression model is stable and the coefficient estimates are reliable. The residual normality test shows that the Chi² probability of 0.3020 is greater than 0.05, indicating that the model residuals follow a normal distribution. This is important for the validity of other statistical tests and the model's predictions to be unbiased.

The heteroscedasticity test shows that the probability value of 0.5327 (>0.05) indicates no evidence of heteroscedasticity, so the residual variance is constant across observations, fulfilling one of the assumptions of classical linear regression. The residual autocorrelation test shows that the probability value of 0.1038 (>0.05) indicates no autocorrelation in the residuals. Thus, the model error is not correlated with the error of the previous period, it is important for time series data that the coefficient estimates remain BLUE (Best Linear Unbiased Estimator).

Table 2. Results of Regression Coefficient Calculations

Variables	Coefficient	Std. Error	T-Statistic	P-Value	Interpretation
Constant	58.23294	117.44	0.50	0.624	Basic export volume without influence
IDR Exchange Rate (X1)	0.03449	0.00645	5.35	0.000	Positive and significant
GDP India (X2)	-0.00034	0.00014	-2.46	0.020	Negative and significant
International CPO Price (X3)	0.08102	0.11602	0.70	0.491	Positive, not significant

Based on Table 2, the estimated regression equation is: Y = 58.23294 + 0.03449 (X1) – 0.0003406 (X2) + 0.081024 (X3) + e. T-test results indicate that the exchange rate (X1) exerts a positive and significant effect (p=0.000), signifying that IDR depreciation boosts CPO exports. India's GDP (X2) shows a negative effect (p=0.020), implying GDP growth reduces Indonesian CPO export volumes. International CPO price (X3) has a positive but insignificant effect (p=0.491), indicating price fluctuations lack a significant impact on export volumes.

Table 3. Simultaneous Test (F-test) and Coefficient of Determination

Statistical Test	Value	Interpretation
F-statistic (Prob > F)	0.000	All independent variables jointly have a statistically significant effect on Indonesia's CPO export volume to India
Coefficient of Determination (R^2)	66.44%	Exchange rate, India's GDP, and international CPO prices explain approximately two-thirds of the variation in export volume

Table 3 shows that the simultaneous F-test (p=0.000) confirms that all variables jointly significantly affect export volumes. The coefficient of determination (R^2 = 66.44%) shows the model explains approximately two-thirds of the variations in Indonesia's CPO exports to India. Results were computed using Stata 17 software.

DISCUSSION

This study confirms the IDR-USD exchange rate as the dominant macroeconomic factor influencing Indonesia's CPO exports to India. Regression results show a positive and significant coefficient, proving IDR depreciation boosts export volumes. The novelty lies in long-term empirical evidence (1994–2024) demonstrating exchange rate consistency at national and regional levels, reinforcing comparative advantage theory for strategic commodities. Data from BPS supports a clear correlation between IDR weakening and export growth, particularly during 2020–2023. This finding is consistent with the exchange rate–export competitiveness theory and prior empirical studies showing that currency depreciation enhances commodity export performance in developing economies when price competitiveness outweighs cost pressures (Dornbusch, 2019; Warsito, 2020; Hakim, 2024).

While depreciation enhances price competitiveness, sharp volatility creates long-term contract uncertainty and raises import-dependent input costs. External factors like Indian tariffs and Malaysian competition limit positive effects, underscoring the need for exchange rate stability and adaptive trade policies to optimize depreciation benefits.This aligns with international trade literature emphasizing that exchange rate volatility, rather than depreciation itself, can weaken export sustainability through contractual risk and policy interaction effects (Suryanto, 2021; Umeaduma & Dugbartey, 2023).

The result is consistent post-pandemic evidence that IDR depreciation drives CPO exports, alongside structural risk identification from fluctuations and external policies, extending comparative advantage theory with practical global trade contexts. Findings reveal India's GDP exerts a significant and negative effect on Indonesia's CPO exports to India. GDP increases coincide with reduced import volumes, indicating economic growth does not always heighten CPO reliance. This contradicts classical import demand theory, assuming positive income-import links, presenting a key novelty in international trade literature. This outcome is supported by empirical and policy-oriented studies, which argue that rising income levels in importing countries may strengthen domestic production capacity and trade protection, weakening the classical positive relationship between income growth and import demand (Singh, 2020; Karim, 2021).

This study used GDP-driven import substitution and strengthened domestic vegetable oil production (soybean, sunflower, mustard). Thus, GDP growth bolsters India's fiscal capacity for protectionism, consumption diversification, and oil self-sufficiency, rather than automatically raising Indonesian CPO demand. Recent agricultural trade studies and policy reports confirm that India's economic growth has been accompanied by strategic food security programs and tariff instruments aimed at reducing dependence on imported palm oil (Government of India, 2023). Empirical patterns show CPO import values are more influenced by global price swings and tariff adjustments than GDP alone, affirming that trade policies and substitute pricing dominate over national income in shaping Indian import behavior. This supports the argument in international trade literature that institutional and policy variables often dominate macro-income effects in commodity trade among developing economies (Makhoba, 2024; Leitão, 2024).

India's GDP paradox growth suppresses Indonesian CPO imports against classical theory; long-term (1994–2024) post-pandemic evidence has rarely been examined previously; and policy integration shows tariffs, consumption diversification, and food security strategies outweigh GDP. Results indicate international CPO prices have a significant effect on Indonesia's exports to India. Despite a positive regression coefficient, high insignificance confirms that global price fluctuations do not primarily explain export variations. Indian CPO demand proves relatively inelastic to prices, maintaining stable import volumes amid rises due to substantial domestic needs and long-term exporter-importer contracts. This finding is consistent with inelastic demand theory for essential agricultural commodities, where import volumes remain stable despite price increases (Mustafa & Iqbal, 2021; Pradina, 2023).

Research reveals that trade contract structures and supply dependencies outweigh short-term price changes. Recent trade data shows India imported over 3.3 million tons from Indonesia in 2023 despite significant global price hikes, reinforcing domestic needs and import policies over international demand theory predicting price rises reduce demand. This reinforces recent empirical studies showing that long-term contracts and supply security considerations buffer commodity trade flows from global price volatility (UN Comtrade, 2024; Lugo et al., 2024). Novelty encompasses the international price paradox rising prices sustain export volumes via inelastic demand; long-term contracts buffer global fluctuations; and post-pandemic empirical contributions affirming prices interact with import policies and Indian oil substitution rather than acting singularly.

CONCLUSION

Based on the results of multiple linear regression analysis of time series data from 1994 to 2024, this study concludes that the IDR exchange rate against the US Dollar has a

positive and significant effect on the volume of Indonesian CPO exports to India, indicating that IDR depreciation increases price competitiveness and drives export growth. Conversely, India's GDP shows a negative and significant effect, suggesting that economic growth in India encourages diversification of import sources and substitution with domestic vegetable oils, reducing reliance on Indonesian CPO. The international CPO price has a positive but statistically insignificant effect, reflecting relatively inelastic demand in India due to high food consumption and import policies. Simultaneously, the three variables jointly have a significant influence on exports, with a coefficient of determination (R^2) of 0.6644, meaning that 66.44 percent of export variation is explained by exchange rate, Indian GDP, and international prices, while the remainder is influenced by other factors such as trade policies, tariffs, and geopolitical dynamics.

The study offers several recommendations. The result reinforces international trade and supply-demand theories by providing empirical evidence of macroeconomic influences on strategic commodity exports, while the negative GDP effect opens avenues for further development of import diversification and domestic substitution theories. Policy-wise, maintaining IDR stability is crucial to sustain export competitiveness, and consistent monetary policies can mitigate exchange rate volatility risks. Expanding CPO export markets to China, Pakistan, and African nations is advisable to reduce dependence on India. Monitoring global price trends in export contracts and enhancing bilateral economic diplomacy with India, including favorable trade agreements and reduced tariffs, can further strengthen competitiveness. Palm oil industry stakeholders should improve production efficiency and product quality, while trade associations and exporters can leverage macroeconomic data for adaptive strategies responding to exchange rates, destination GDP, and international prices. Future research should incorporate additional variables such as Indian import tariffs, domestic oil substitution, and global geopolitical factors to provide a more comprehensive understanding of CPO export dynamics.

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