

USD EXCHANGE RATE CHANGES AND COAL PRICE FLUCTUATIONS: IMPACT ON INDONESIAN COAL EXPORTS

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ABSTRACT

Coal exports represent a significant component of the Indonesian economy, contributing to the country's foreign exchange earnings. In the context of globalization and international trade, Indonesia's coal export volume is influenced by a range of external factors, including exchange rates and coal prices in the international market. This study aims to determine the effect of exchange rates and international coal prices on Indonesia's coal export volume. This study employs time series data from 1992 to 2022 and the Error Correction Model (ECM) analysis method, utilizing the EViews 12 software, to examine the long-term and short-term relationships between the exchange rate and international coal prices and the volume of Indonesian coal exports. The results of the analysis indicate that in the short term, exchange rates and international coal prices do not exert a significant influence on the volume of Indonesian coal exports. Nevertheless, in the long term, the exchange rate and international coal prices exert a significant influence on the volume of Indonesian coal exports.

Keyword: *Coal export, Exchange rate, Coal price, Export volume*

ABSTRAK

Ekspor batubara merupakan salah satu komponen penting dalam perekonomian Indonesia, yang menyumbang devisa negara. Dalam konteks globalisasi dan perdagangan internasional, volume ekspor batubara Indonesia dipengaruhi oleh berbagai faktor eksternal, termasuk nilai tukar dan harga batubara di pasar internasional. Penelitian ini bertujuan untuk mengetahui pengaruh nilai tukar dan harga Batubara internasional terhadap volume ekspor batu bara Indonesia. Penelitian ini menggunakan data time series dari tahun 1992 hingga 2022 dan metode analisis Error Correction Model (ECM) dengan bantuan perangkat lunak EViews 12 untuk menganalisis hubungan jangka panjang dan jangka pendek dari nilai tukar dan harga batu bara internasional terhadap volume ekspor batu bara Indonesia. Hasil analisis menunjukkan bahwa dalam jangka pendek, nilai tukar dan harga batubara internasional tidak memiliki pengaruh signifikan terhadap volume ekspor batubara Indonesia. Namun, dalam jangka panjang, nilai tukar dan harga batubara internasional memiliki pengaruh signifikan terhadap volume ekspor batubara Indonesia.

Kata Kunci: *Ekspor Batu Bara, Nilai Tukar, Harga Batu Bara, Volume ekspor*

INTRODUCTION

Indonesia's economic development, like that of other countries, is closely linked to global economic conditions. In the current era of economic openness, countries are increasingly involved in international trade and cross-border economic activities due to globalization, which has pushed the system of economic openness around the world. International trade involves the import and export of goods and services and has a significant impact on economic development, international relations, and political stability (Milner, 1999) . For Indonesia, international trade provides access to the global market, allowing it to sell or buy products to various countries around the world.

The coal industry plays a crucial role in the country's exports. Coal is a crucial energy source for Indonesia, as it is one of the country's main export commodities (Deon & Julius Adiatma, 2019). The coal sector also plays a significant role in generating revenue through exports, particularly in the non-oil and gas sector. Coal is a crucial component of industry, serving as the primary energy source for power generation and as a raw material for other sectors (Wang et al., 2020). In Indonesia, coal-fired power plants generate the majority of the nation's electricity.

With total economically mineable coal reserves of 38.8 billion tons, and an annual production rate of around 566 million tons in 2020, the estimated life of these coal reserves is around 69 years. The dominant locations of Indonesia's coal reserves are in the provinces of East Kalimantan and South Sumatra, with total reserves of around 10.9 billion tons and 8.5 billion tons respectively (Yenni & Prabowo, 2021). The abundance of Indonesia's coal reserves and production has been an important asset in the country's development efforts, as well as making Indonesia one of the largest coal producers in the world. In reality, however, around 70 to 80 percent of Indonesia's total coal production is exported to the coal market. Based on Figure 1, Indonesia is one of the world's largest coal exporters and producers, and as such, it has become a significant player in the global coal industry and a major contributor to the global economy. Indeed, coal exports have become an important source of foreign exchange income for the Indonesian economy (Setiawan et al., 2022).

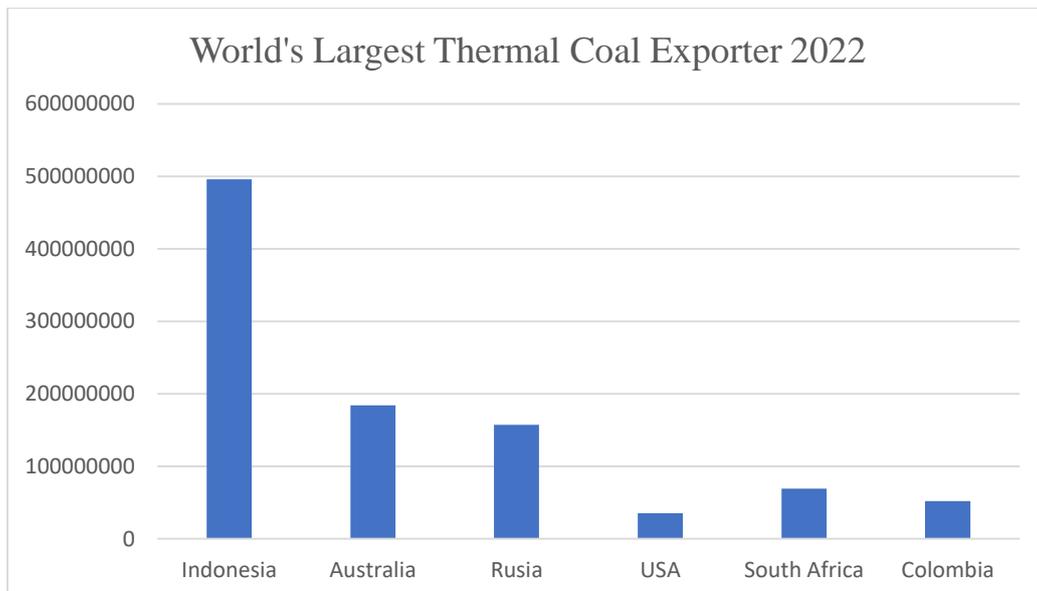


Figure 1. World's Largest Thermal Coal Exporter 2022

Source : International Energy Agency (IEA)

However, the use of coal has negative impacts on the environment and human health. Mining and burning coal can cause environmental damage and air pollution that harm public

health (Aristizabal et al., 2023). Despite this, Indonesia still relies on coal as its main source of energy and one of its largest foreign exchange earning sectors. However, Indonesia's coal export volumes may be affected by global situations and internal factors, such as currency exchange rates and international coal prices (Barasyid & Iriani, 2023).

International currency exchange rate and coal prices are crucial factors that impact Indonesia's coal export volumes. Fluctuations in currency exchange rates and international coal prices can lead to changes in coal export volumes, which can have a significant impact on the Indonesian economy. Therefore, it is essential to have a comprehensive understanding of the factors that affect Indonesia's coal export volume to develop appropriate policies to address the challenges and opportunities in the global market.

Several previous studies have been conducted to analyze the influence of certain factors on Indonesian coal exports. Anindita and Syaputra (2017) found that exchange rates, international coal prices, and production volumes simultaneously and partially had a significant effect on the volume of coal exports at PT Bukit Asam (Persero) TBK. Further research by Barasyid and Iriani (2023) showed that exchange rates, inflation, and benchmark coal prices partially had a significant effect on Indonesia's coal exports to China. However, simultaneously, the inflation variable does not significantly affect coal exports.

Wahyu et al. (2022) used the Error Correction Model (ECM) method to analyze the effect of the international price of coal, the international price of oil, and per capita income on the demand for Indonesian coal exports to Japan. The results show that fluctuations in coal and oil prices have no significant impact in the short term on the demand for Indonesian coal exports to Japan. However, there is a positive relationship between Japan's per capita income and Indonesia's coal export demand to Japan in the same period.

The three previous studies offer valuable insights into coal exports. However, their weakness is the limited coverage of secondary data in the research data. This limitation can affect the analysis, and the researcher aims to expand the data coverage to increase accuracy.

This study analyzes Indonesia's coal exports to the rest of the world over a 31-year period, providing a comprehensive understanding of the factors affecting these exports globally. The study's main strength is its ability to provide a deeper understanding of the global market dynamics and factors affecting Indonesia's coal exports over a long period of time. However, the study may be limited by factors that were not taken into account. Additionally, the use of limited data may have impacted the accuracy of the analysis and the interpretation of the results. Nevertheless, this study provides valuable insights into Indonesia's global coal exports.

LITERATURE REVIEW

International Trade

International trade is the exchange of goods and services between countries involving individuals, companies, and governments (Ghauri et al., 2021). This trade has a long history, but it experienced significant development after World War II, with many countries joining the United Nations (UN) and forming various free trade agreements. The World Trade Organization (WTO) and agreements like the General Agreement on Tariffs and Trade (GATT) were established in 1995 to promote free trade and provide a secure global trading system (Briella, 2021). The World Trade Organization (WTO) and agreements like the General Agreement on Tariffs and Trade (GATT) were established in 1995 to promote free trade and provide a secure global trading system. These organizations and agreements regulate international trade.

International trade is a more intricate process than domestic trade due to the involvement of national borders, cross-border shipping processes, customs regulations, language differences, currencies, estimation systems, scales, and trade laws. However, every

country, regardless of its development status, must participate in international trade as it has a significant impact on the global economy. International trade activities involve not only the exchange of goods but also foreign investment, trade policy, and infrastructure development.

There are two main theories that explain the basis of international trade: the theory of absolute advantage by Adam Smith and the theory of comparative advantage by David Ricardo. According to the theory of absolute advantage, countries benefit from international trade by specializing in the production of goods that they can produce at a lower cost than other countries (Shen et al., 2022). Meanwhile, according to the theory of comparative advantage, a country benefits from international trade by specializing in the production of goods that it can produce more efficiently than other countries (Liu et al., 2020).

Exchange Rate

The exchange rate is the agreed-upon price level between two countries for conducting trade, indicating the comparison between two different currencies (Dominguez, 2020). Exchange rate stability is crucial in maintaining a country's economic stability, as significant changes in exchange rates can have a considerable impact on inflation, trade balance, and foreign investment. There are three different exchange rate systems. In a fixed exchange rate system, the central bank maintains the value of its currency by fixing the exchange rate against a specific foreign currency. In a free-floating exchange rate system, the exchange rate is determined by the foreign exchange market. There are three types of exchange rate systems: fixed, free-floating, and controlled floating. In a controlled floating exchange rate system, the exchange rate is determined by demand and supply, but the government intervenes to maintain stability. Finally, a tied exchange rate system, in which a country's domestic currency has a fixed value against a foreign currency, is considered more stable (Omer et al., 2022).

Changes in the Rupiah exchange rate are influenced by various factors, both directly and indirectly. Direct factors include the demand and supply of foreign exchange due to imports and exports of goods, as well as exports and imports of capital. Indirect factors that affect the economy include the balance of payments position, inflation rate, interest rates, national income, monetary policy, and expectations and speculation from abroad.

Price

Price represents the value of a good or service measured in monetary units (Minerbo et al., 2023). It reflects the value of the good or service in the context of trade and the buyer's ability to obtain satisfaction and benefits from their purchase. The perceived benefits by the buyer determine the value that must be paid in money to obtain the goods or services. Price can be defined as the amount of money that buyers must spend to obtain a specific combination of goods or services, including any associated services. It plays a crucial role in determining the benefits that can be obtained and is the primary factor considered by consumers when making purchasing decisions.

Export Volume

Exports is the trade system of domestically originated goods sold to foreign countries in compliance with applicable regulations (Lewis, 1989). This includes the total value of goods and services exported by a country to other countries in a year, encompassing the nilai tukargoods themselves, related insurance, and certain services. Exports has a crucial role in the economy by creating opportunities for market expansion between countries, which can encourage growth in various industries stimulate other economic sectors (Jarreau & Poncet, 2012).

In essence, exports involve sending goods from one country to another in accordance with applicable rules. This includes the total sales of goods and services of a country to other

countries in a given year. Export activities has a crucial role in a country's economy. They involve shipping and selling domestically produced goods to other countries, creating a revenue stream for domestic companies. Additionally, exports help expand the market for domestic products to foreign markets, triggering growth in the industrial sector and creating jobs.

METHOD

This study analyzes the long-term and short-term relationship between the USD exchange rate variable and the international coal price on the volume of Indonesian coal exports using the Error Correction Model (ECM) analysis method. ECM is a commonly used method in time series data analysis to examine the long-term relationship between these variables and determine how quickly the short-term balance will be restored after a disturbance. ECM examine the long-term correlation between the USD exchange rate and international coal prices on the volume of Indonesian coal exports. The use of ECM enables a comprehensive analysis of the dynamics of the relationship between coal export variables, the USD exchange rate, and international coal prices over a 31-year period from 1992 to 2022.

The stages of data analysis in this study go through several stages, namely stationarity test, cointegration test, error correction model (ECM) test. The stationarity test aims to determine whether the time series data used is stationary or not. To determine whether the data used is stationary or not, a unit root test is performed using the Augmented Dickey Fuller (ADF) method. If the ADF statistic is greater than the McKinnon critical value, the observed data are stationary, and conversely, if the ADF statistic is less than the critical value, the data are not stationary.

The next step is the cointegration test, cointegration is a long run relationship between variables that individually are not stationary, but the linear combination between these variables can be stationary. The cointegration test is performed to determine whether there is a long-run relationship between the dependent variable and the independent variable. The non-stationary state of the variables creates the possibility of a long-term relationship between the variables in the ECM system. One of the conditions for achieving long-run equilibrium is that the equilibrium error must fluctuate around zero. In other words, the error term must be a stationary time series.

Third, the tehniqe to correct short-term imbalances towards long-term equilibrium is called the Error Correction Model (ECM). The ECM model is useful in overcoming the problem of time series data that is not stationary and experiencing spurious regression problems. In using the error correction method or ECM, it is necessary to test the stages starting with the Unit Root test to determine the existence of unit roots, then the second by conducting a degree of integration test, the third is the cointegration test to determine the existence of a long-term relationship, and the last is to compile an ECM model.

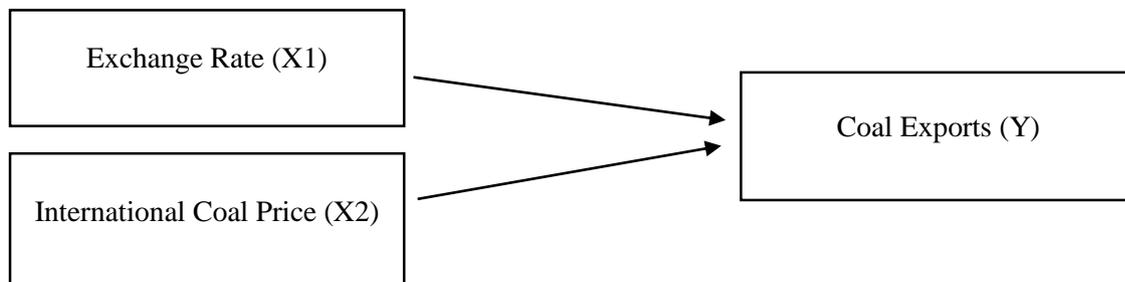


Figure 2. Research Model

Source : Processed by researchers

RESULTS AND DISCUSSION

Stationarity Test

In analyzing the estimation results of the ECM model in both the long run and the short run, data testing is first performed. The data used in this study must be tested using two types of stationarity tests, namely unit root test and cointegration test (Rizal, 2015). The unit root test is used to know if the data used has a unit root problem. The cointegration test is needed to avoid producing a pseudo multiple linear regression. The stationarity test performed on all variables in the research model is based on the Augmented Dickey Fuller test, which determines whether there is a unit root problem. According to the results of the Augmented Dickey Fuller test that has been carried out with the help of Eviews10, which aims to determine whether the variables of export volume, coal prices and exchange rates are stationary or not. Then, the results can be known from the following

Table 1. Unit Root Test Results of Each Variable at the First Difference Level

No.	Variable	Prob Level	Prob First Difference
1.	Export Volume	0.4620	0.0014
2.	Exchange Rate	0.2496	0.0085
3.	International Coal Price	0.9198	0.0022

Source : Eviews 12, Processed by Researcher

Based on the results of the Table1, it can be seen that the results of the unit root test at the level show that three variables are declared non-stationary because the prob value is more than 0.05, at the first difference level, the three variables consisting of export volume, international coal prices and USD exchange rates are stationary, so they can be declared to pass the unit root test where all variables have a prob value less than the value of 0.05.

Cointegration Test

The purpose of the Johansen Cointegration Test with Eviews is to determine the presence of cointegration among the variables used in the study. The purpose of the Johansen Cointegration Test with Eviews is to determine the presence of cointegration among the variables used in the study. This test is used to identify cointegration in a number of variables. If cointegration is present in the time series, it indicates cointegration in the time series. The processed data shows the occurrence of cointegration seen from the value listed on the trace statistic and eigenvalue is smaller than the value at the critical value (can be seen in Table 2). It is concluded that the data have a long run relationship.

Table 2. Johansen Cointegration Test Results.

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.407972	26.02702	29.79707	0.1279
At most 1	0.217046	10.82518	15.49471	0.2225
At most 2	0.120675	3.729413	3.841465	0.0535

Source : Eviews 12, Processed by Researcher

Error Correction Model

Error Correction Model (ECM) is utilized when the data is non-stationary at the level but stationary at the first difference level. This model can explain short-term and long-term relationships between variables (Granger & Weiss, 1983). In this study, the dependent variable is Coal Export Volume, which is influenced by independent variables such as Exchange Rates and International Coal Prices.

The results of the Error Correction Model test estimation are as follows:

$$D(\text{CEV}) = \beta_0 + \beta_1 D(\text{LN_ER}) + \beta_2 D(\text{LN_ICP}) + \text{ECT}(-1).$$

Table 3. Error Correction Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.098575	0.026666	3.696672	0.0010
D(LN_ER)	-0.041689	0.132708	-0.314141	0.7559
D(LN_ICP)	0.001054	0.075019	0.014049	0.9889
ECT(-1)	-0.173370	0.074728	-2.320016	0.0285

Sumber : Eviews 12, Processed by Researcher

- ER= Exchange Rate
- ICP = International Coal Price
- CEV = Coal Export Volume
- ECT = Error Correction Term

Based on the ECM model presented in Table 3, it is evident that the constant value is 0.098575. This indicates that if the variables of exchange rate and international coal price are both equal to 0, the volume of Indonesian coal exports will be 0.098575 percent. The results of the ECM analysis or short-term equation analysis lead to the following conclusions: The short-term equation model is valid, as evidenced by the negative ECT (-1) value of -0.1733 with a p value of 0.0285 < 0.05. This suggests that the balance between short-term and long-term will occur in the next 0.1733 periods.

If the exchange rate increases by one unit, CEV will decrease by -0.041689. However, the short-term effect is not significant, or H0 is accepted because the p-value of 0.7559 is greater than 0.05. The same applies to the ICP variable: if ICP increases by one unit, CEV will increase by 0.001054 in the short term. Again, the short-term effect is not significant, or H0 is accepted because the p-value of 0.9889 is greater than 0.05. According to the results of the research above, the ECT is negative, indicating a tendency to return to long-term equilibrium. Therefore, the following represents the output of the long-term research.

Table 4. Results of Long-Term Estimation of ECM Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.462517	1.063654	7.015924	0.0000
LN_ER	0.880482	0.140869	6.250367	0.0000
LN_ICP	0.814850	0.142286	5.726844	0.0000

Source : Eviews 12, Data processed by Researcher

Based on the long-term equation output above, it can be concluded that if the exchange rate increases by one unit and the international coal price (ICP) remains constant, CEV will increase by 0.880482 in the long run. This effect is significant because the p-value is $0.00 \leq 0.05$. Similarly, if ICP increases by one unit and the exchange rate remains constant, CEV will increase by 0.814850 in the long run. It is important to note that this increase is statistically significant. The long-term effect is considered significant and H1 is accepted due to the p-value being less than or equal to 0.05. Assuming constant exchange rate and ICP, CEV is expected to increase by 7.462517 in the long run.

Classical Assumption Tests

Classical assumption tests are conducted to determine if the classical assumptions are met in the regression formula. In this study, heteroskedasticity, multicollinearity, autocorrelation, and normality tests were performed.

Autocorrelation test

The probability value of Obs * R-squared, as indicated in the Table 5, is 0.8740, which is greater than 0.05. This indicates that the study is free from autocorrelation problems.

Table 5. Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.135464	Prob. F(2,24)	0.8740
Obs*R-squared	0.334879	Prob. Chi-Square(2)	0.8458

Source : Eviews 12, Data processed by Researcher

Normality test

The Jarque-Bera probability value of 0.620792, as indicated in the Figure 3, is greater than 0.05, thereby indicating that the data is normally distributed

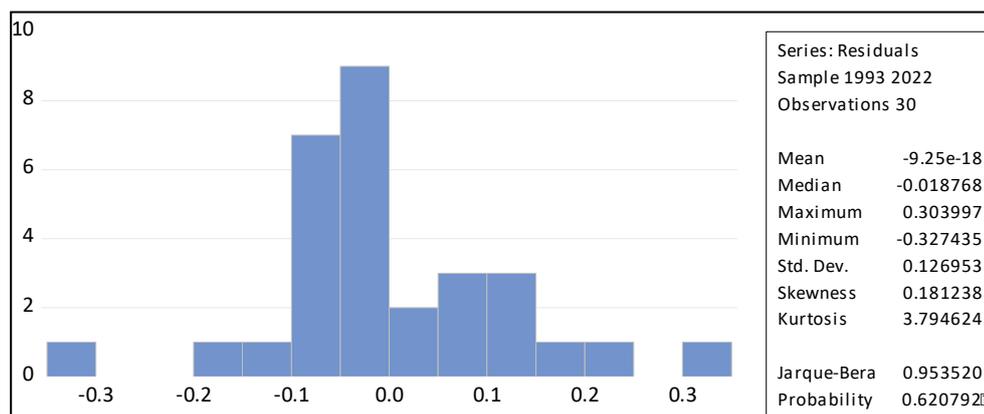


Figure 3. Normality Test Results

Source : Eviews 12, Processed by Researcher

Multicollinearity test

Based on Table 6, the results of the multicollinearity test indicate that there is no evidence of multicollinearity. The centered VIF value for the Exchange Rate/Exchange Rate Variable (X1) is 1.006427, while that for the International Coal Price (X2) is 1.080209. Therefore, it can be concluded that the data in this study does not exhibit multicollinearity, as

the VIF value is less than 10. Consequently, it can be stated that the model does not experience symptoms of multicollinearity.

Table 6. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000711	1.186644	NA
D(LN_KURS)	0.017612	1.141258	1.006427
D(LN_HBI)	0.005628	1.142104	1.080209
ECT(-1)	0.005584	1.097253	1.086270

Source : Eviews 12, Processed by Researcher

Heteroscedasticity Test

Based on Table 7, The results of the aforementioned test indicate that there is no heteroscedasticity as evidenced by the Prob. F value of 0.0870, which is greater than 0.05.

Table 7. Heteroscedasticity Test Results

Heteroskedasticity Test: Glejser			
Null hypothesis: Homoskedasticity			
F-statistic	2.439660	Prob. F(3,26)	0.0870
Obs*R-squared	6.589919	Prob. Chi-Square(3)	0.0862
Scaled explained SS	6.958060	Prob. Chi-Square(3)	0.0732

Source : Eviews 12, Processed by Researcher

The study analyzed the impact of exchange rates and international coal prices on the volume of coal exports from Indonesia between 1992 and 2022. The results indicate that in the short term, the exchange rate variable does not significantly affect the volume of coal exports. Similarly, the variable for international coal prices (ICP) is also insignificant in influencing the volume of Indonesian coal exports.

However, in the long run, if the exchange rate increases by one unit while ICP is held constant, then the volume of coal exports will significantly increase. Similarly, if ICP increases by one unit while the exchange rate is held constant, it will have a significant positive effect on the volume of coal exports in the long run. Similarly, if ICP increases by one unit while the exchange rate is held constant, it will have a significant positive effect on the volume of coal exports in the long run. Furthermore, assuming constant exchange rates and ICP, both will have a significant positive influence on Indonesia's coal export volume in the long run.

Discussion

The results of this research show that in the short term, fluctuations in exchange rates and international coal prices do not have a significant impact on the volume of Indonesian coal exports. This indicates that these factors are not strong enough to influence the short-term decisions of coal export players. There may be other more dominant factors or policies implemented by the government and companies that are able to reduce the impact of fluctuations in exchange rates and international coal prices in the short term (Susanto & Admi, 2021).

On the other hand, in the long term, international exchange rates and coal prices are proven to have a significant influence on the volume of Indonesian coal exports. This means that over a longer period of time, changes in exchange rates and international coal prices can influence the strategies and business decisions taken by coal exporters (Omer et al. 2023). These changes may be related to long-term contract price adjustments, investments in

infrastructure, or trade policy changes made to optimize profits from coal exports (Overland & Loginova, 2023).

The significant impact in the long term also shows that Indonesian coal exporters need to seriously consider fluctuations in international exchange rates and prices in their strategic planning. They may need to implement hedging or market diversification strategies to reduce the risks associated with such changes (Sun & Govind, 2017). Additionally, economic stability and supportive government policies can be important factors in helping exporters adapt to global market changes. Overall, these findings emphasize the importance of long-term planning and appropriate policies in dealing with global market dynamics. Although in the short term the effect may not be visible, in the long term, international exchange rates and coal prices play a crucial role in determining the volume of Indonesian coal exports. Therefore, a deep understanding of global market trends and adaptation to international economic changes is the key to the sustainability and growth of Indonesian coal exports.

CONCLUSION AND RECOMMENDATION

Conclusion

Indonesia's coal export volume is influenced by both the USD exchange rate and international coal prices. It is crucial for companies and governments involved in the coal industry to continuously monitor and analyze changes in these factors. This will enable exporters to respond quickly to market changes. An increase in international coal prices is expected to lead to a rise in Indonesia's coal export volume. Therefore, the government can encourage Indonesian coal companies to increase the added value of coal products by developing the coal processing industry and improving the quality of coal products. Additionally, the government should implement policies to ensure that the long-term benefits resulting from the rise in international coal prices are accessible to the Indonesian people.

Recommendation

The long-term impact of the USD exchange rate on Indonesia's coal export volume is positive. Consequently, companies and governments involved in the coal industry should continuously monitor and analyze changes in the USD exchange rate, allowing exporters to respond quickly to market changes. Additionally, the Indonesian coal export volume is positively influenced by international coal prices in the long run. An increase in international coal prices will result in an increase in the Indonesian coal export volume. Therefore, it is recommended that the government encourage Indonesian coal companies to increase the added value of coal products. This can be achieved by developing the coal processing industry and improving the quality of coal products.

Furthermore, the government must implement policies to ensure that the benefits of the long-term increase in international coal prices are distributed equitably among the Indonesian population. Future research should aim to expand data coverage by extending the research period to encompass a wider range of economic and political conditions that can influence the volume of coal exports. Alternatively, research could be conducted on specific export destination countries to analyze the differential impact of exchange rates and coal prices in each country.

REFERENCES

- Anindita, T., & Syaputra, A. (2017). Analisis Pengaruh Kurs USD, Harga Batubara Acuan, dan Volume Produksi Terhadap Volume Ekspor Pada Pt. Bukit Asam (Persero) Tbk. *Jurnal Manajemen Industri dan Logistik*, 1(2), 31-38.

- Aristizabal, H. G., Goerke-Mallet, P., Kretschmann, J., & Restrepo-Baena, O. J. (2023). Sustainability of coal mining. Is Germany a post-mining model for Colombia? *Resources Policy*, 81, 103358. <https://doi.org/10.1016/J.RESOURPOL.2023.103358>
- Barasyid, A. I., & Iriani, R. S. (2023). Analisis Pengaruh Kurs, Inflasi dan Harga Batubara Acuan Terhadap Ekspor Batubara Indonesia ke China, *PROMOSI : Jurnal Pendidikan Ekonomi*, 11(1), 23-33. <http://dx.doi.org/10.24127/pro.v11i1.7854>
- Briella, K. A. (2021). Sejarah Organisasi Ekonomi Internasional : World Trade Organization (WTO). *Jurnal Pendidikan Sejarah*, 9(1), 49-53. <https://doi.org/10.23887/jjps.v9i1.30381>
- Deon, A., & Adiatma, J. C. (2019). *Dinamika Batu Bara Indonesia*. www.iesr.or.id.
- Dominguez, K.M.E. (2020). Revisiting Exchange Rate Rules. *IMF Econ Rev*, 1, 693–719. <https://doi.org/10.1057/s41308-020-00120-6>
- Ghauri, P., Strange, R., & Cooke, F L. (2021). Research on international business: The new realities. *International Business Review*, 30(2), 101794. <https://doi.org/10.1016/j.ibusrev.2021.101794>.
- Granger, C. W. J., & Weiss, A. A. (1983). Time Series Analysis of Error-Correction Models. *Studies in Econometrics, Time Series, and Multivariate Statistics*, 255–278. <https://doi.org/10.1016/B978-0-12-398750-1.50018-8>
- Jarreau, J., & Poncet, S. (2012). Export sophistication and economic growth: Evidence from China. *Journal of Development Economics*, 97(2), 281–292. <https://doi.org/10.1016/J.JDEVECO.2011.04.001>
- Minerbo, C., Samartini, A. L. S. (2023). Sharing the benefits: How different dimensions contribute to value creation and capture. *Industrial Marketing Management*, 108, 251-262. <https://doi.org/10.1016/j.indmarman.2022.11.015>
- Lewis, S. R. (1989). Chapter 29 Primary exporting countries. *Handbook of Development Economics*, 2, 1541–1600. [https://doi.org/10.1016/S1573-4471\(89\)02016-4](https://doi.org/10.1016/S1573-4471(89)02016-4)
- Liu, X., Mattoo, A., Wang, Z., & Wei, S. J. (2020). Services development and comparative advantage in manufacturing. *Journal of Development Economics*, 144, Article No. 102438. <https://doi.org/10.1016/j.jdeveco.2019.102438>
- Milner, H. V. (1999). The Political Economy of International Trade. *Annu. Rev. Polit. Sci.* 2, 91-114. <https://web.stanford.edu/class/polisci243c/readings/v0002017.pdf>
- Omer, M., Kamal, J. & de Haan, J. (2023). Does an exchange rate depreciation improve the trade balance of Pakistan?. *International Journal of Economic Policy Studies*, 17, 163–185. <https://doi.org/10.1007/s42495-022-00096-3>
- Overland, I., & Loginova, J. (2023). The Russian coal industry in an uncertain world: Finally pivoting to Asia?, *Energy Research & Social Science*, 102, Article No. 103150. <https://doi.org/10.1016/j.erss.2023.103150>
- Rizal, J. (2015). Perbandingan Uji Stasioner Data Timeseries Antara Metode: Control Chart, Correlogram, Akar Unit Dickey Fuller, dan Derajat Integrasi. *Jurnal Gradien*, 11(1), 1040-1046
- Shen, J. H., Long, Z., Lee, C., & Zhang. (2022). Comparative advantage, endowment structure, and trade imbalances. *Structural Change and Economic Dynamics*, 60(12), 365-375. <https://doi.org/10.1016/j.strueco.2021.12.012>.
- Setiawan, A. (2022). Minerals and Coal Reserves Potential in Indonesia and the World. *INTAN Jurnal Penelitian Tambang*, 1(1), 20–31. <https://doi.org/10.56139/intan.v1i1.7>
- Sun, W. and Govind, R. (2017). Product market diversification and market emphasis: Impacts on firm idiosyncratic risk in market turbulence. *European Journal of Marketing*, 51(7/8), 1308-1331. <https://doi.org/10.1108/EJM-09-2016-0510>

- Susanto, D. A., & Admi, R. (2021). The Determinants of Indonesia's Coal Exports Demand to Six Asian Countries. *JDE (Journal of Developing Economies)*, 6(1), 66-78. <https://doi.org/10.20473/jde.v6i1.18916>
- Wahyu, I. N., T., Rahayu, A., & Purwiyanta. (2022). Pengaruh Harga Internasional Batubara, Harga Internasional Minyak Bumi dan Gross Domestic Product Per Capita Terhadap Permintaan Ekspor Batubara Indonesia Ke Jepang Tahun 2000-2020. *SINOMIKA Journal: Publikasi Ilmiah Bidang Ekonomi Dan Akuntansi*, 1(4), 933-950. <https://doi.org/10.54443/sinomika.v1i4.457>
- Wang, X., Liu, C., Chen, S., Chen, L., Li, K., & Liu, N. (2020). Impact of coal sector's de-capacity policy on coal price. *Applied Energy*, 265, 114802. <https://doi.org/10.1016/J.APENERGY.2020.114802>
- Yenni, F. R., & Prabowo H. (2021). Management Pengendalian Kualitas Batubara Berdasarkan Parameter Kualitas Batubara Mulai Dari Front Sampai ke Stockpile di PT. Budi Gema Gempita, Merapi Timur, Lahat, Sumatera Selatan. *Jurnal BINA TAMBANG*, 6,(1), 110-120, 2021. <https://doi.org/10.24036/bt.v6i1.111689>