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Determinants of The Realization of Indonesian Resin Commodity Exports

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ABSTRACT

Indonesia's plastic resin sector has a lot of promise for both local and foreign consumers in terms of its industrial and marketing prospects. The packaging of food, cosmetics, electronics, plastic pipes, home appliances, automobiles, and other products is closely associated with the plastics sector. The growth of this industry will inevitably promote the growth of the nation's plastic resin sector. The building, automotive, and environmental industries present a wealth of growth opportunities for Indonesia's resin industry, which has extremely bright futures. Indonesia can establish a resin sector that is both competitive and sustainable in the global market by focusing on innovation, investing in technology, and enacting the appropriate policies. Analyzing the effects of production volume, selling price, investment, and currency exchange rate on the realization of Indonesian resin commodity exports is the goal of this study. This study aimed to examine the impact of resin production volume, selling prices, investment, and exchange rates on Indonesian resin commodity export realization.The Error Correction Model (ECM) is the data analysis technique employed in this investigation. The findings demonstrated that the realization of resin commodity exports was significantly and favorably impacted by production volume, selling price, and investment. The realization of resin commodity exports is significantly and negatively impacted by the rupiah's exchange rate against US dollars, both in the short and long terms.

Keywords: *Exchange, Rate Resin Commodity, Production*

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INTRODUCTION

The resin industry, which serves as the primary raw material for a variety of industrial applications, has grown to be one of the significant sectors in the worldwide economy (Hao, 2021). Since the beginning of its existence, the resin sector has experienced substantial global transformation (Zeng, 2021). The industry is poised to seize opportunities and confront obstacles thanks to its focus on sustainability, technological innovation, and product variety (C. Li, 2021). Achieving success in this field will support both the sustainability of the global environment and economic prosperity (Zhu, 2021).

The expansion of industries including construction, automotive, and electronics is driving up demand for resin. Rapid urbanization and industrialization have led to a notable increase in the consumption of resin in developing nations, particularly in Asia (Wang, 2021). Technological innovation in resin production has emerged as the primary force behind this business (Xiao, 2021). Resin manufacturers now have additional options thanks to the creation of environmentally safe and efficient processes as well as the application of nanotechnology to enhance material properties (Qu, 2022).

Exports of resin constitute a significant aspect of global commerce, given the extensive usage of resin across diverse sectors such as electronics, building, and automotives (Prykhodko, 2021). The resin market's dynamics have changed significantly during the past ten years due to a variety of environmental, technological, and economic variables. Global resin demand has been rising over the last ten years from both the industrial and consumer sectors (N. Chen, 2021b). The expansion of the building and automobile industries, particularly in developing nations, is the main driver of this. Growing consumer demand for eco-friendly products has fueled the development of bio-based resins, which are becoming more and more popular on the global market (Dixit, 2021).

Indonesia's resin market has promising futures due to a number of important variables that foster expansion. The demand for resin is rising due in large part to Indonesia's rapidly expanding construction and automobile industries (Bi, 2021). The ongoing construction of infrastructure and the rise in automobile manufacturing have led to a growing need for several kinds of resins, including epoxy and polyester resins. Natural resources abound in Indonesia, and among them are raw materials used to make resin (Henkensmeier, 2021). The creation of bio-based resins from regional flora, such as wood and agricultural waste, presents a chance to produce sustainable and ecologically friendly goods. By promoting investment and technological advancement, the Indonesian government demonstrates its dedication to bolstering the manufacturing sector, which includes the resin industry (Wu, 2023). Rewards for ecologically responsible

Recent years have seen notable advancements in Indonesia's resin sector. The following are some of the primary occurrences and patterns that illustrate the state of the Indonesian resin industry:

1) A rise in demand
   Along with the expansion of the industry, resin demand is also rising, particularly for applications in the automotive, construction, electronic, and packaging industries. Increased investment across multiple industries and economic activity are the main drivers of this.
2) Diversification of products
   Indonesian resin manufacturers started to innovate by creating other kinds of resins, like polyester, epoxy, and phenolic resins, to satisfy niche markets. It is essential to diversify in order to compete in the global market.
3) Consciousness of the environment
   Environmental concerns are receiving increasing attention, which motivates manufacturers to create more eco-friendly resins, like bio-based resins and recycled goods. Additionally, it promotes spending on eco-friendly technology.
4) Technological advancement
   The efficiency and quality of resin products are increased by the application of innovative technologies, such as automation and alternative raw material uses. In an effort to produce cutting-edge goods, businesses started to spend in research and development.
5) A rise in exports
   Indonesia started to emerge as a major force in the resin export industry, mostly to nations in Southeast and East Asia. This expansion is also facilitated by government programs that encourage industrial exports and development.
6) Raw material challenges
   The resin sector confronts difficulties with the supply of raw ingredients, such as petrochemicals, despite rising demand. Price fluctuations for raw materials can have an impact on the cost and profitability of production.
7) Rules and directives from the government
   Government regulations pertaining to the chemical sector and environmental preservation affect.
8) International rivalry
   Indonesia’s resin sector faces competition from manufacturers in China and India. Local businesses must improve their customer service, product quality, and innovativeness to become more competitive.

Analyzing the effects of production volume, selling price, investment, and currency exchange rate on the realization of Indonesian resin commodity exports is the goal of this study (Han, 2022). This study aimed to examine the impact of resin production volume, selling prices, investment, and exchange rates on Indonesian resin commodity export realization.The Error Correction Model (ECM) is the data analysis technique employed in this investigation. The findings demonstrated that the realization of resin commodity exports was significantly and favorably impacted by production volume, selling price, and investment. The realization of resin commodity exports is significantly and negatively impacted by the rupiah's exchange rate against US dollars, both in the short and long terms (L. Du, 2021).

There is great promise for Indonesia's resin industry's exports, and a number of factors are driving this expansion. The following elements show the Indonesian resin industry's potential for exports:

1) Growing Demand Worldwide
   In the global market, resin demand is still growing, particularly in the automotive, electronics, and construction industries. Potential markets for Indonesian resin goods include countries in Asia, Europe, and North America.
2) Benefits of Natural Resources
   Natural resources abound in Indonesia, including petrochemical raw ingredients required to produce resin. Local raw material availability can lower production costs and boost export market competitiveness.
3) Product diversification and innovation
   Indonesian resin manufacturers are beginning to innovate by creating novel, green products like bio-based resins. In the worldwide market where sustainability is valued highly, these items are becoming more and more in demand.
4) Policies of the Government
   Through policies, the Indonesian government encourages the growth of the chemical industry, which includes the production of resins.
5) Enhancement of Infrastructure
   Expanding ports and other transportation infrastructure makes it easier to distribute resin products to foreign markets. In order to increase productivity and save logistics costs, this is crucial.
6) Cooperation & Partnership
   In an effort to improve technology and get access to markets, Indonesian businesses are starting to collaborate with international businesses. Through this partnership, Indonesian businesses may be better positioned to compete internationally.
7) The downstream industrial sector's growth
   Resin production and exports could rise with the expansion of downstream businesses that use resin, like the electronics and automotive sectors.
8) Dangers and Obstacles
   The resin business has a large export potential, but it also faces obstacles including volatile raw material prices and competition from other nations.

Indonesia's resin industry has a considerable export potential, which is bolstered by rising worldwide demand, readily available raw materials, and supportive government policies. The Indonesian resin sector can boost its contribution to the country's economy and take advantage of opportunities in the global market by putting an emphasis on innovation, product diversity, and efficiency development (Chong, 2023).

Notwithstanding the resin commodity export industry's bright future, exporters in exporting nations confront a number of difficulties. The actualization of resin commodity exports is hampered by a wide range of internal and external constraints, including worldwide competition and restrictions, as well as manufacturing costs and quality (Liu, 2021). Crude oil and other chemical costs, which are used as raw ingredients for resin, can vary greatly. Resin manufacturers' profit margins and production costs may be impacted by this. Environmental regulatory concerns can provide difficulties because many nations have tight laws governing emissions and the usage of dangerous substances. The need for producers to adhere to a number of environmental regulations may raise expenses and complicate the production process. Getting certified as environmentally friendly can be (Hickel, 2022).

Furthermore, the price competitiveness of resin products in the global market may be impacted by the rise in logistics and transportation expenses. The demand for resin may change as a result of the erratic state of the world economy. For instance, a downturn in the economy may result in lower demand from the automotive and construction industries (Adabi, 2021). The quality of resin goods needs to be up to par with what the global market demands. Variations in quality might make a business less competitive. Resin producers must create strategies that are flexible and sensitive to shifts in laws and market dynamics in order to meet this challenge (J. Li, 2021).

The phenomenon of worldwide resin production has grown significantly during the last ten years and is now expanding quickly. The production of resin has surged dramatically in response to the expanding demands of the global market. Global resin production is mostly influenced by the expansion of the industrial sector, particularly in developing nations like Brazil, India, and China (N. Chen, 2021a). The production of resin is fueled by the demand for consumer goods in these nations, where it is used to make furniture, electronics, appliances, and other consumer items. Furthermore, resin manufacturers have been able to create innovative, ecologically friendly, and more efficient products thanks to advancements in chemical and manufacturing technologies. As a result, the resin sector has more chances to expand and satisfy the more complicated demands of the market (Haider, 2021).

From a pricing standpoint, different economic, political, and environmental considerations in each nation have an impact on the domestic selling price of resin commodities. Resin costs can vary significantly in tandem with technological advancements and consumer demand. For instance, over the last ten years, resin production and exports may have increased in the US and China, which may have had an impact on domestic selling prices . Raw material prices fluctuate practically constantly during the day, and resin prices can rise and fall several times. It is getting more and harder for plastic manufacturers and consumers to forecast costs since there are so many erratic variables in the market (Mehmood, 2022).

Investment is another factor that affects the exports of resinous commodities. Innovation and increased production capacity in the resin industry depend on public and private sector investment. Research & development expenditures can yield more inventive and eco-friendly resin products, which are becoming more and more in demand on the international market. Because resin is utilized in many other industries, including manufacturing, construction, the automobile industry, and others, investing in the resin industry globally can be a lucrative option.

Furthermore, investments in infrastructure contribute to the efficient distribution and delivery of goods to global markets. Today's corporate partnerships go far beyond international trade in goods and services in an attempt to stay competitive. In fact, reliance on a variety of industrial organization structures—such as overseas affiliates, foreign investments, mergers, joint ventures, outsourcing, subcontracting, or licensing agreements—is growing. FDI, or foreign direct investment, is one such economic tactic. Global investment in the resin sector has emerged as a fascinating phenomena driven by a number of variables, such as rising demand, advancing technology, and shifting laws. Natural and synthetic resin products have seen a sharp rise in demand in recent years (Dorninger, 2021).

Currency exchange rates have a major impact on the export of resin commodities from nations that produce and export resin. A country's currency gains value, which raises the export price of various goods from that country to other nations that sell them. The greater price may cause demand to decline as a result. On the other hand, when a nation's currency depreciates, other nations can purchase valuable commodities from that nation for less money. The cheaper price may lead to a rise in demand. However, there are drawbacks to currency devaluation as well, like increased import prices and inflation. Currency fluctuations should be monitored by nations that produce and export resin in order to manage risks and take into consideration their effects on commodities exports. Resin manufacturers can be shielded from unfavorable exchange rate risks by using financial tools like currency futures contracts or hedging. To lessen reliance on a single market and currency, diversifying export markets is also a crucial tactic (Xie, 2022).

The researcher draws on a number of theoretical studies and earlier research on resin commodity export activities for this study. These works are published in international publications published by Elsevier that are indexed in Scopus. Researchers from the major resin-exporting nations, including China, the US, Japan, India, and Indonesia, have undertaken the research. Yanan Ren, Guangxin Liu, Guangying Pu, Yimeng Chen, Wei-Qiang Chen, and Lei Shi (2020) conducted research on resin commodity exports. Their study, "Spatiotemporal Evolution Of The International Plastic Resin Trade Network," was published in the Journal of Cleaner Production Volume 276, 10 December 2020. Furthermore, the study "International Trade Of Gum And Resin (Frankincense) In Ethiopia" by A. Eyassu, M. Abebe, and T. Abate (2023) that was published in the Global Journal agric. Econ. Economet. Malek Hassanpour's paper, "A Review of Four Kinds of Resin Production Technologies Based On Recent Developments," which was published in the International Journal of Industrial Engineering Volume 8 Issue 2, is another source of information (202I). Jaworski C. Capricho, Bronwyn Fox, and Nishar Hameed (2020) carried out a study titled "Multifunctionality in Epoxy Resins," which was published in Polymer Reviews Volume 60, 2020 - Issue 1.

RESEARCH METHODOLOGY

The data evaluation method used to resolve the problems in this examine is a quantitative evaluation approach the usage of evaluation of the error correction model or ECM (error Correction version) and a couple of Regression with the OLS (ordinary Least square) approach due to the fact the records isn't desk bound at the extent degree, but desk bound at the differentiation stage and each variables are cointegrated (Nooraie, 2020). The technique used to look the relationship within the short term is with monetary idea and in fixing it against time series variables that aren't stationary at the extent degree and linear regression (Barker, 2022). Linear regression is a chaotic regression, wherein giant regression effects from unrelated facts. with a view to go back to the equilibrium cost within the long time with the situation that there is a cointegration relationship among the constituent variables (Hu, 2021).

RESULT AND DISCUSSION

Test of Stationarity

With the exception of short-term residuals, which need that the variables be stationary at the Level level, the stationarity test at the Level level reveals that none of the variables are stationary. Consequently, it is required to reevaluate each variable's degree of stationary. The stationarity test yielded the following findings.

Table 1. Results of the Stationarity Test

Variabel	At Level		At 1st Difference	
	ADF Prob	Explanation	ADF Prob	Explanation
Export Realization	0,4384	Not Stationary	0,0223	Stationary
Production Quantity	0,6682	Not Stationary	0,0001	Stationary
Selling Price	0,6335	Not Stationary	0,0005	Stationary
Investment	0,3847	Not Stationary	0,0000	Stationary
Exchange Rate	0,2486	Not Stationary	0,0000	Stationary

Source: Data processed by Eviews 12

The data for all variables become stationary after being differentiated once, as indicated by the results of the ADF statistical test on the first difference in Table 4.1, which indicates that the null hypothesis is rejected. has a likelihood that is smaller than 0.05. This indicates that all of those variables satisfy the conditions to be analyzed using the Error Correction Model (ECM) since they are free of unit root issues and have stationary data circumstances at the first difference level.

Cointegration Test

The Johansen method is used to conduct a cointegration test between the variables of export realization, production volume, selling price, investment, and exchange rate. The results of this test are displayed as follows:

Table 2. Results of the Johansen Cointegration Test

Trace Statistic	0.05 Critical Value	Probability	Explanation
85,31679	83,93712	0,0396	Cointegrated
Max Eigen Statistik	**0.05 Critical Value**	**Probability**	**Explanation**
42,09534	40,07757	0,0292	Cointegrated

Source: Data processed by Eviews 12

Table 4.2 presents the results of the aforesaid test, which indicate that the Max Eigen Statistic value (42.09534) > Critical Value (40.07757) and the Probability value 0.0292 < 0.05, as well as the Trace Statistic value (85.31679) > Critical Value (83.93712) and the Probability value 0.0396 < 0.05. Consequently, it can be said that the equation model's long-term cointegration of the export realization, production volume, selling price, investment, and exchange rate variables satisfies the conditions for error correction model analysis (ECM).

Error Correction Model Estimation

The analysis employed is the Error Correction Model (ECM) since a long-term equilibrium has been reached based on the results of the cointegration and stationarity tests that have been performed.

Table 3. ECM Short-term and Long-term Estimates

SHORT-TERM ESTIMATION				
Dependen Variable : Export of Resin Commodities				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	2,630205	0,356079	7,386578	0,0000
D(Ln_PRODUCTION)	5,647020	2,410845	2,342340	0,0247
D(Ln_PRICE)	4,161384	1,134423	3,668282	0,0007
D(Ln_INVESTMENT)	1,093085	0,475087	2,300813	0,0281
D(Ln_EXHC.RATE)	-0,009776	0,003867	-2,528232	0,0163
RES(-1)	-1,104710	0,168860	-6,542158	0,0000
R-squared	0,818750	**Prob(F-statistic)**	0,000002	
Adjusted R-squared	0,794765	**Durbin-Watson stat**	1,953742	
LONG TERM ESTIMATION				
Dependen Variable : Export of Resin Commodities				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	2,442272	0,623168	3,919123	0,0004
Ln_PRODUCTION	2,913796	0,475378	6,129428	0,0000
Ln_PRICE	3,798506	0,478292	7,941820	0,0000
LN_INVESTMENT	5,016887	0,848482	5,912780	0,0000
Ln_EXCH.RATE	-0,053255	0,016737	-3,181753	0,0031
R-squared	0,853178	**Prob(F-**	0,000000	

		statistic)	
Adjusted R-squared	0,820701	Durbin-Watson stat	1,831550

Source: Data processed by Eviews 12

Concurrent F Test

To ascertain if the independent factors collectively have an impact on the dependent variable, the F-statistic test is employed.A substantial influence is indicated by the data shown in Table 4.4, which show a significance value of 0.0000 ≤ 0,05 for the long-term estimate and 0.0002 ≤ 0,05 for the short-term estimate. This demonstrates how the realization of Indonesian resin commodity exports is significantly impacted by the simultaneous influence of production volume, selling price, investment, and currency rate (Sun, 2021). Economically speaking, the interpretation of significance is the ability to meaningfully and convincingly demonstrate how various hypotheses about production volume, selling price, investment, and currency exchange rate impact the realization of Indonesian resin commodity exports over the long and short terms (Z. Chen, 2022).

Partial Test

The Effect of Resin Production Volume (X_1) on Resin Export Realization

Based on the computation results shown in the estimation results table, it can be said that the variable Resin Production Volume (X1) significantly and favorably affects Indonesia's export realization because statistically, the probability value of Resin Production Volume is less than α (0.0247 ≤ 0.05) in the short-term estimate and (0.0000 ≤ 0.05) in the long-term estimate. Because of its significance, the hypothesis regarding the volume of resin production can be meaningfully and conclusively demonstrated to have an impact on Indonesia's export realized (N. Du, 2022). On the other hand, the positive interpretation suggests that rising resin production volume corresponds with rising export realization in Indonesia (Xiao, 2022).

The Effect of Selling Price (X_2) on Resin Export Realization

The statistical analysis of the estimation results table indicates that the Resin Selling Price variable (X2) has a significant and positive impact on Indonesia's export realization, with a probability value of less than α (0.0007 ≤ 0.05) in the short-term estimate and (0.0000 ≤ 0.05) in the long-term. The hypothesis of the Resin Selling Price's impact on Indonesia's export realization may be substantially and persuasively demonstrated, which is why it is significant (Dehghani, 2021). In the meantime, the positive interpretation suggests that a rise in Indonesia's export realization coincides with an increase in the resin selling price (Fan, 2021).

The Effect of Investment (X_3) on Resin Export Realization

It can be concluded that the variable amount of Resin Investment (X3) has a significant and positive effect on Indonesia's export realization because, statistically, the probability value of Resin Investment is less than α (0.0281 ≤ 0.05) in the short-term estimate and (0.0000 ≤ 0.05) in the long-term estimate based on the calculation results obtained in the estimation results table. The relevance indicates that the impact of the Resin Investment hypothesis on Indonesia's export realization may be demonstrated in a meaningful and persuasive way (Zhao, 2021). On the other hand, the positive interpretation is that rising resin investment is accompanied by rising export realization in Indonesia (Salvatore, 2021).

The Effect of Currency Exchange Rate (X_4) on Resin Export Realization

It can be concluded that the Rupiah Exchange Rate (X4) variable has a significant negative impact on Indonesia's export realization based on the calculation results shown in the estimation results table. Statistically, the probability value of the Rupiah Exchange Rate is less than α ($0.0163 \leq 0.05$) in the short-term estimate and ($0.0031 \leq 0.05$) in the long-term estimate. The substantial meaning suggests that it is possible to demonstrate in a meaningful and persuasive way how the Rupiah Exchange Rate influences Indonesia's export realized (Jiao, 2021). Conversely, the negative interpretation suggests that a decline in Indonesia's export realization coincides with the strengthening of the Rupiah exchange rate (D. Li, 2021).

CONCLUSION

The following are the study's conclusions, which are based on the findings of the investigation and analysis; a). The volume of production, selling price, investment, and exchange rate all have a major impact on Indonesia's ability to realize commodities exports of resin at the same time, b). The realization of resin commodity exports in Indonesia is positively impacted by the amount of production, c). The actual realization of resin commodity exports in Indonesia is significantly and favorably impacted by the local coal selling price, d). Investment significantly and favorably affects Indonesia's ability to realize commodity exports of resin. The realization of Indonesia's exports of resin-related commodities is significantly and negatively impacted by the currency rate.

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