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Analysis Of The Competitiveness Of Indonesian Coffee Exports In The International Market And The Factors That Affect It

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Abstract

Foreign trade provides a great opportunity to improve economic prosperity by maximizing the potential of the country's resources. Indonesia, as one of the world's largest coffee producers and exporters, faces a decline in coffee competitiveness which is reflected in volatile and declining exports. This study aims to analyze the influence of coffee production, international coffee prices, rupiah exchange rate, and land area on the competitiveness of Indonesia's coffee exports. The research was conducted over a period of 33 years (1990-2022) using the Revealed Comparative Advantage (RCA) Model, Error Correction Model (ECM), and multiple linear analysis using the Ordinary Least Squares (OLS) method. The results showed that coffee production had a significant influence in the short term, but not significantly in the long term. International coffee prices and the rupiah exchange rate have a significant negative effect in the long term, while not significant in the short term. Land area has a significant positive effect in the long term, but significant negative in the short term.

Keywords : Coffee export competitiveness, Coffee production, International coffee prices, Rupiah exchange rate, Land area

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INTRODUCTION

Foreign trade provides a great opportunity to improve economic prosperity by maximizing the potential of the country's resources. By focusing on superior sectors that have comparative advantages, such as abundant natural resources or skilled labor, countries can create products with more value and are more competitive in the global market. Economists assess competitive privilege based on differences in the value of resources, investments, and manufacturing systems, as well as local elements such as workers and property (Suhardi and Afrizal 2021).

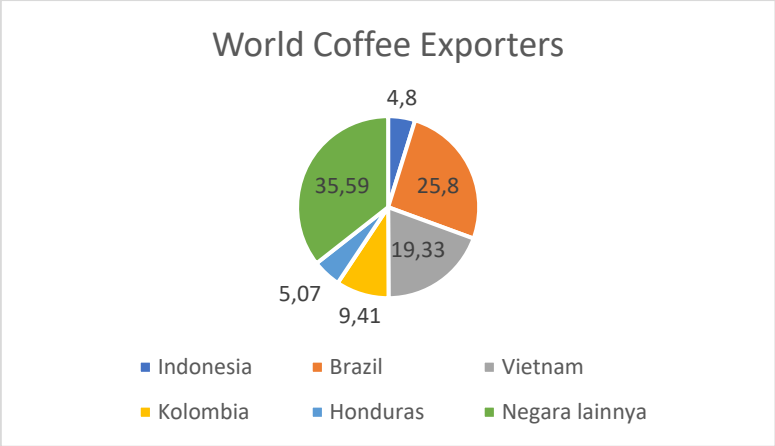
Based on Trademap data (2023), Indonesia ranks 28th in global export scores, reaching US$ 291,979,103 in 2022. As an agrarian country, Indonesia has an advantage in agriculture, which contributes greatly to exports, especially coffee. According to the publication of the 2018–2022 Export Commodity Analysis from BPS, coffee is the agricultural commodity with the highest export value in 2022, contributing an average of 39.38 percent to the export of the annual crop agricultural sector during 2018–2022. Its contribution increased from 36.42 percent in 2021 to 44.76 percent in 2022, showing great potential in the future.

Indonesia has great potential as the world's coffee exporter. Based on the 2022 Coffee Outlook from the Ministry of Agriculture, Indonesia occupies the fifth position with exports of 368.14 thousand tons per year (4.80% of the world market share) in the 2016-2020 period. Indonesia is slightly below Honduras which is in fourth position with a share of 5.07% (389.12 thousand tons). Brazil leads with exports of 1.98 million tons (25.81%), followed by Viet Nam in second place with 1.48 million tons (19.33%), and Colombia third with 721.64 thousand tons (9.41%) (Ministry of Agriculture 2022). Details of the world coffee export ranking can be seen in the following figure.

Figure 1 World Coffee Exporters

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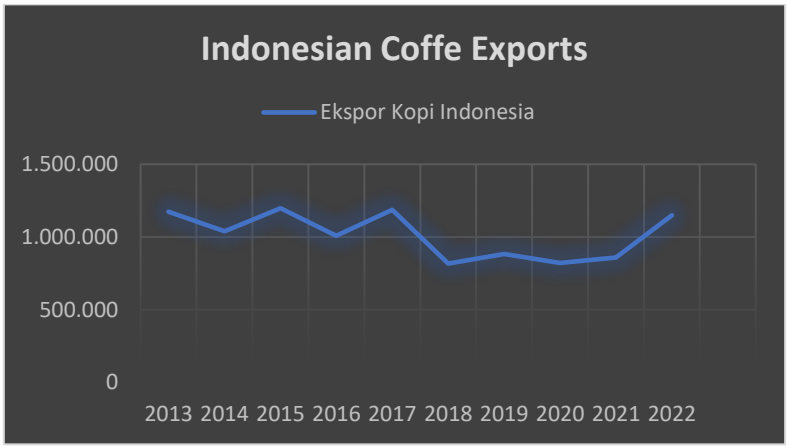
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Source: Ministry of Agriculture, 2022

According to Trademap (2023), Indonesia's coffee exports show a fluctuating trend, with significant declines in 2018 and 2020 of 31.35% and 7.24%, respectively. This decline could weaken Indonesia's coffee competitiveness in the international market, which is crucial to maintain its position as one of the world's largest coffee exporters. Products with high competitiveness tend to be more in demand, so increasing competitiveness is the key to increasing export volume. (Asbiantari, Hutagaol, and Asmara 2018) emphasizing the importance of strong competitiveness to encourage export development. The development of Indonesia's exports can be seen in the following figure.

Figure 2 Development of Indonesia's Coffee Exports



Source: UN Comtrade, 2024

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The decline in Indonesia's coffee competitiveness can be seen from the development of exports that fluctuate and tend to decline every year, inversely proportional to the stable and increasing world coffee exports. This shows that the competitiveness of Indonesia's coffee exports in the international market continues to decline, this problem needs to be overcome immediately so that the competitiveness of Indonesia's coffee in the global market improves. Details of the development of world coffee exports can be seen in the following figure.

Figure 3 Development of world coffee exports



Source: Trademap, 2024

The signing of the 2022 International Coffee Agreement (ICA) by Indonesia is an important momentum to increase coffee exports. This multilateral agreement involves coffee-producing and consumer countries, giving Indonesia the opportunity to strengthen its position in the global market. ICA 2022 aims to stabilize world coffee prices, improve quality, and ensure production sustainability. Trade Minister Zulkifli Hasan stated that ICA 2022 has a significant impact on increasing Indonesia's coffee exports and maintaining coffee price stability in the international market, which ultimately improves the welfare of coffee farmers in Indonesia (Ministry of Trade, 2023). Therefore, Indonesia must take advantage of this opportunity to strengthen the competitiveness of coffee exports in the international market.

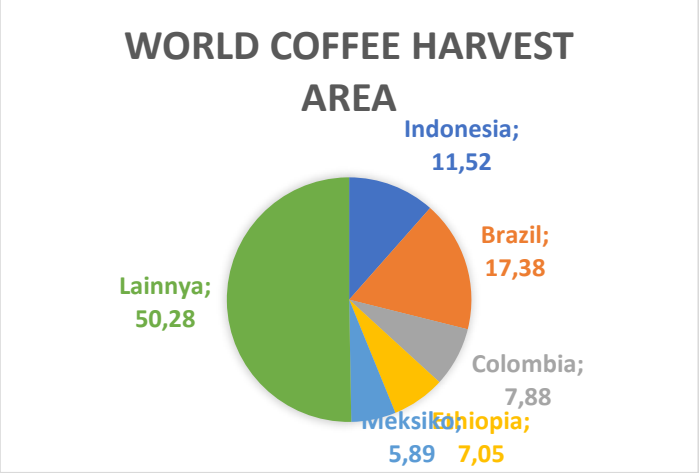
Export competitiveness is affected by several factors, such as exchange rates, which affect the cost of export goods because international prices are expressed in foreign currency. A strong exchange rate can increase exports and product competitiveness in the global market. Another factor is the area of agricultural land, which is closely related to production effectiveness; The larger the land, the greater the potential

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to increase effectiveness (Surya 2023). As an agrarian country, Indonesia has a large land area that supports the effectiveness of agricultural production, strengthening its position in international coffee commodity competition. According to the Ministry of Agriculture, the area of coffee in Indonesia increased by an average of 0.96% per year from 1984 to 2022, but in the past decade, the growth has slowed to 0.19% per year. Although Indonesia occupies the second position in the world's coffee harvest area (1.24 million hectares, 11.52% share), Indonesia's coffee export competitiveness is still weak, reflected in its position as the fifth largest coffee exporter in the world.

Figure 4 World Coffee Harvest Area



Source: Ministry of Agriculture 2022

Indonesia has vast coffee land and rapidly growing coffee production, with an average growth of 2.61% per year from 2002 to 2022. The peak of production occurred in 2017 with 717.96 thousand tons, an increase of 54.09 thousand tons from the previous year. This development shows Indonesia's great potential to increase coffee exports and strengthen competitiveness in the global market, which is important given the fierce international competition. Increasing competitiveness will strengthen Indonesia's position as the world's largest coffee exporter and encourage economic growth through stable commodity exports. The following graph shows the development of Indonesia's coffee production.

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Figure 5 Indonesia's Coffee Production



Source: Ministry of Agriculture 2023

Based on data, coffee production is increasing every year, so market expansion and strong competitiveness are needed to compete with competing countries. Indonesia, as the world's largest coffee producer and exporter, faces stiff competition from other coffee-producing countries. This cross-border competition can hinder market expansion and cause fluctuations in the volume and value of Indonesia's exports, which ultimately reduces the competitiveness of commodities in the global market. Therefore, increasing export competitiveness needs to be considered to develop Indonesia's coffee exports. Based on the details above, the researcher is interested in studying the competitiveness of Indonesia's coffee exports so that this country can maintain and increase the value of coffee exports in the world market.

LITERATURE REVIEW

International Trade

Mercantilists argue that in order to advance a country, it must engage in international trade. The profits from trade, in the form of gold and silver, are considered a source of wealth that can advance the country (A. M. Purba et al. 2023). Adam Smith argued that with free trade, every country can focus on producing goods that have absolute superiority or high efficiency, and import goods whose production is less efficient (Nijar and Abbas 2019). According to David Ricardo's theory of comparative advantage, global trade remains advantageous even if a country has no absolute privilege over another country, because differences in opportunity costs or relative advantages allow for

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advantages for both parties in international trade (Priyono and Zainuddin Ismail 2017). Meanwhile, according to Heckscher and Ohlin, they predict trade patterns between countries based on their characteristics. They argue that the superiority of one country over another is due to differences in prosperity in elements of production such as labor and capital. The country will specialize in the abundant and cheap goods in the country, export them, and import rare and expensive goods (Diphayana 2018).

Demand and Supply Theory

The study of the concept of demand focuses on the relationship between demand and cost innovation assuming that other factors remain constant (ceteris paribus). According to the Law of Putong Requests, 2000 in (Sugiyanto and Ramadhina 2020), when the price of a product rises, the quantity requested decreases, and vice versa. In other words, demand is inversely related to price, but this law applies only if the assumption of ceteris paribus is met. According to (Mankiw 2011), supply theory explains the number of goods that are ready and able to be sold by the seller. (Zahara and Anwar 2021) adding that supply is the quantity of goods available at various cost levels and certain periods. The concept of supply norms shows that an increase in the cost of goods will increase the quantity of goods supplied, while a decrease in costs will reduce the quantity of goods supplied.

Export Competitiveness Theory

According to Simanjuntak (1992) in (Wulansari, Yulianto, and Pangestuti 2016), competitiveness is the ability to produce quality assets at low costs, so that they can be marketed with profits in the international market. Meanwhile, according to the OECD in (Sedyastuti 2018), competitiveness refers to the ability of a company, sector, region, or country to obtain high profits and job prospects in a sustainable manner in order to face global competition.

Production

According to (Damayanti 2013), production is an effort to determine the number of goods to be made and sold as well as the quantity of income needed. (Zahara and Anwar 2021) added that production involves the manufacture and development of goods by combining production elements to meet needs. Production is also a financial activity that converts income into goods or services that reach customers.

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Price

According to Swastha (2008) in (Zusrony 2012), the price is the total money (and possibly additional products) to acquire goods and services(Sudiyono, Kurniawati, and Mustikowati 2018) Mention that price is the amount charged for a product or service. Pricing includes the value that customers pay to benefit from a product or service. International prices are prices that apply in the international market and have been agreed upon for that type of good (Wati et al., 2023). Tjiptono in Anggraini & Budiarti (2020) states that price has two main roles: allocation and information, which affect buyers' decisions.

Exchange rate

According to Nopirin (2013) in (Alfira, Fasa, and Suharto 2021), the exchange rate is the process of switching between two currencies that reflects the suitability of quality or cost between the two. Salvatore (1997) in (Wahyuni, Mustafa, and Hamid 2021) Defines an exchange rate as an exchange rate that indicates the quality or cost of one currency against another. Samuelson & Nordhaus (Puspitaningrum, Suhadak, and Zahroh, 2014) mentioned that the foreign exchange rate refers to the quality of foreign exchange against the rupiah, and in Indonesia, the population is generally more familiar with the USD exchange rate.

Land

According to Juhadi (2007) in (Hakiki and Asnawi 2019), land includes ecosphere elements that exist above and below the ground, including air, substratum, topography, and flora and fauna, which are influenced by human activities. Rachman (2018) in (Ibn et al. 2022) mentioned that land area is an important factor in village agriculture and affects cultivation results. Simanungkalit (2010) in Daini et al. (2020) explained that land is used for agriculture, although not all land is agricultural land. (P. S. Purba et al. n.d.) added that land area determines the location and agricultural products, while Ari and Sudirman (2018) showed that land area has a positive impact on exports, with an increase in land area having the potential to increase production and exports.

RESEARCH METHODS

Research Location

The research was conducted in Indonesia with a research period of 33 years, namely from 1990 to 2022.

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Data and data sources

The data data in this research is carried out through the filing of secondary data obtained from related institutions that have the required data. In this research, data in the form of export value, coffee production, global coffee prices, rupiah exchange rate, and land area obtained from official websites of data publications such as Trademap, IMF, international coffee organization (ICO) and the agriculture office of the Republic of Indonesia.

Data Analysis

This study uses the Revealed Comparative Advantage (RCA) Model, Error Correction Model (ECM) In addition, the multiple linear analysis technique with the Ordinary Least Squares (OLS) method is used to test the influence of variables such as export value, amount of coffee production, global coffee price, rupiah exchange rate, and land area All of these analyses were carried out using Eviews 12 software.

Revealed Comparative Advantage (RCA)

The Revealed Comparative Advantage (RCA) method is used to assess a country's competitiveness in a particular commodity based on comparative advantage. In this research, RCA is applied to determine the competitive position of Indonesia's coffee exports, with the calculation using the following formula. The equation for using is as follows:

$$RCA=(Xij/Xit)/(Wi/Wt)$$

Information:
Xij = Export value of commodity I (coffee) from country j (Indonesia)
Xit = Total export value of country j (Indonesia) commodities
Wi = Value of world commodity exports I (Coffee)
Wt = Total export value of world commodities

Error Correction Model (ECM)

This study uses the Error Correction Model (ECM) to analyze the long-term and short-term effects of independent variables, namely Indonesia Coffee Production (X1), International Coffee Price (X2), Exchange Rate (X3), and Land Area (X4) on the competitiveness of Indonesia's Coffee Exports (Y).

The equation for using ECM in the long term is as follows:

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$$Ext = \beta 0 + \beta 1Pt + \beta 2HIt + \beta 3NTt + \beta 4LHt + \varepsilon t$$

Information:
Ex = Coffee Export Competitiveness
DP = Coffee Production
DHI = International Coffee Prices
DNT = Exchange Rate
DLH = Land Area
β0 = Constant
β1 β2 β3 β4= Coefficient
t = Research Period
ε = Standard Error

The equation for using ECM in the short term is as follows:

$$DEkst = \beta 0 + \beta 1DPt + \beta 2DHIt + \beta 3DNTt + \beta 4DLHt + ECT(-1) + \varepsilon t$$

Information:
Dex = Coffee Export Competitiveness t – Coffee Export Competitiveness t -1
DP = Production t – production t-1
DHI = International Price t – International Price t-1
DNT = Exchange Rate t – Exchange Rate t-1
DLH = Land Area t – Land Area t-1
β0 = Constant
β1 β2 β3 β4= Coefficient
ECT = Error Correlation Tern
t = Research Period
ε = Standard Error

Ordinary Least Squares (OLS)

$$DEks = \beta 0 + \beta 1DP + \beta 2DHI + \beta 3DNT + \beta 4DLH + \varepsilon$$

Information:
Deks = Coffee Export Competitiveness
DP = Production

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DHI = International Price
DNT = Exchange Rate
DLH = Land Area
β0 = Constant
β1 β2 β3 β4= Coefficient
ε = Standard Error

RESULT

Revealed Comparative Advantage (RCA) Test

Table 1 RCA value of Indonesia's coffee commodity

Year	The Value of Indonesia's Coffee Exports	Indonesia's Total Export Value	World Coffee Export Value	World Total Export Value	RCA(Y)
1990	377,201	25,675,323	2,679,656	3,494,311,539	19.2
1991	372,430	29,142,360	4,483,128	3,499,256,430	9.98
1992	236,775	33,966,981	4,009,210	3,752,443,047	6.52
1993	344,211	36,822,753	4,402,399	3,748,990,301	7.96
1994	745,803	40,053,415	10,007,510	4,276,976,050	7.96
1995	606,369	45,417,963	12,055,783	5,114,694,850	5.66
1996	595,268	49,814,695	10,263,494	5,342,393,265	6.22
1997	511,320	53,443,579	13,079,017	5,540,219,114	4.05
1998	584,243	48,847,519	12,803,311	5,467,373,645	5.11
1999	466,825	48,665,419	10,375,215	5,667,520,337	5.24
2000	318,894	62,124,006	9,445,761	6,404,720,976	3.48
2001	188,491	56,316,867	6,782,483	6,136,656,152	3.03
2002	223,917	57,158,751	6,561,816	6,431,460,845	3.84
2003	259,106	61,058,187	7,559,687	7,496,126,203	4.21
2004	294,114	71,582,468	9,188,728	9,108,842,024	4.07
2005	504,407	85,659,948	12,427,730	10,353,920,380	4.91
2006	588,501	100,798,616	14,734,463	11,976,405,730	4.75
2007	636,417	114,100,873	17,703,445	13,809,745,453	4.35
2008	991,457	137,020,424	22,085,775	16,015,193,458	5.25
2009	824,015	116,509,992	19,910,461	12,386,924,567	4.4

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2010	814,310	157,779,103	24,271,358	15,093,263,749	3.21
2011	1,036,671	203,496,619	35,968,668	18,137,664,368	2.57
2012	1,249,518	190,031,839	33,023,985	18,391,908,309	3.66
2013	1,174,044	182,551,754	28,594,909	18,849,843,134	4.24
2014	1,039,609	176,036,194	31,897,447	18,856,957,626	3.49
2015	1,197,735	150,282,258	30,376,079	16,418,063,890	4.31
2016	1,008,549	144,494,206	30,276,710	15,924,203,652	3.67
2017	1,186,886	168,810,637	32,470,901	17,563,586,196	3.8
2018	817,789	180,215,036	30,544,650	19,329,050,174	2.87
2019	883,123	167,682,996	29,600,144	18,761,814,917	3.34
2020	821,932	163,306,490	30,730,480	17,514,968,797	2.87
2021	851,705	231,587,887	36,374,695	22,154,054,456	2.24
2022	1,149,168	291,979,103	46,435,135	24,719,795,601	2.1

Table 1 shows that the RCA value Indonesia for coffee during 1990-2022 has always been > 1, signifying comparative advantage in the international market. However, the RCA value has fluctuated downwards, with a peak of 19.2 in 1990 and a low of 2.1 in 2022.

Error Correction Model (ECM)

A. Long-Term Estimation

From the estimate of the duration of the project, the following results were obtained:

Table 2 Long-term estimation results

Variable	Coefficient	Std. error	t-statistic	Prob.	Information
C	41.74574	8.890379	4.695608	0.0001	
Indonesia Coffee Production	0.000013	0.000086	1.612301	0.1181	Insignificant
International Coffee Prices	-0.026267	0.010149	-2.588063	0.0151	Significant
Exchange rate	-0.000429	0.000201	-2.135410	0.0416	Significant
Land	0.000031	0.000087	-3.589553	0.0012	Significant

Source: Eviews Output

From the results of these estimates, the following is the long-term regression equation obtained:

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RCA = 41.74574 + 0.000013Produksi – 0.026267Harga – 0.000429Kurs + 0.000031Lahan + *ε*t

Here is a summary of the equation:

1. Constant(β0): 41.74574. If the variables Coffee Production (X1), International Coffee Price (X2), Exchange Rate (X3), and Land Area (X4) are constant, the RCA value (Y) is 41.74574.
2. Regression Coefficient X1 (β1): Production = 0.000013
   With a probability of 0.1181. The effect was insignificant, with a 1 ton increase in production leading to an increase in RCA by 0.000013, but partially in the long term it was insignificant (probability > 0.05).
3. Regression Coefficient X2 (β2): Price = -0.026267
   With a probability of 0.0151. Partially in the long run the variable has a significant and negative effect, where every 1 US cent increase in price leads to a decrease in the RCA of -0.026267.
4. Regression coefficient X3 (β3): Exchange rate = -0.000429,
   With a probability of 0.0416. Partially in the long term the variable has a significant and negative effect, with every 1 Rupiah increase in the exchange rate causing a decrease in the RCA of -0.000429.
5. Regression Coefficient X4 (β4): Land Area = 0.000031
   With a probability of 0.00120. Partially in the long term the variable has a significant and positive effect, with every 1 hectare increase in land area causing an increase in RCA by 0.000031.

B. Short-Term Estimation

From the short-term estimates carried out, the following results were obtained:

Table 3 Short-Term Estimation (ECM) Results

Variable	Coefficient	Std. Error	t-statistic	Prob.	Information
C	-0.468941	0.219738	-2.134093	0.0424	
D (Indonesia Coffee Production)	0.000015	0.000061	2.484576	0.0197	Significant
D(International Coffee Prices)	-0.011336	0.007566	-1.498251	0.1461	Insignificant

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D (Exchange rate)	-0.000157	0.000155	-1.010485	0.3216	Insignificant
D (Land)	-0.000024	0.000056	-4.437996	0.0001	Signifikn
ECT (-1)	-0.786240	0.111397	-7.057995	0.0000	

Source: Eviews Output

The short-term regression equation of the results is as follows:

DRCA = -0.468941 + 0.000015 Produksi – 0.011336 Harga – 0.000157 Nilai tukar – 0.000024 Luas lahan – 786240 ECT + εt

Here is a summary of the above equation:

1. Constant (β0): -0.468941,
   It shows that with the variables of Coffee Production, International Coffee Price, Exchange Rate, and Land Area constant, the RCA or Competitiveness of Indonesia Coffee Exports is -0.468941.
2. Production Regression Coefficient (X1, β1): 0.000015
   With a probability of 0.0197, it shows that partially in the short term there is a significant positive influence, every 1 ton increase in production increases the competitiveness of coffee exports by 0.000015.
3. Price Regression Coefficient (X2, β2): -0.011336
   With a probability of 0.1461, it shows that partially in the short term there is an insignificant negative influence; every 1 US cent increase reduces the competitiveness of coffee exports by -0.011336.
4. Exchange Rate Regression Coefficient (X3, β3): -0.000157
   With a probability of 0.3216, it shows that partially in the short term there is a non-significant negative influence, every increase of 1 Rupiah reduces the competitiveness of coffee exports by -0.000157.
5. Land Area Regression Coefficient (X4, β4): -0.000024
   With a probability of 0.0001, it shows that partially in the short term there is a significant negative influence, every increase of 1 hectare of land reduces the competitiveness of coffee exports by -0.000024.
6. Error Correction Term (ECT): 0.0000 < 0.05 indicates a valid ECM model. An ECT value of -0.786240 indicates a slow adjustment to the imbalance; If there is an

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imbalance of 100%, the change in the competitiveness of coffee exports adjusts by 78.62%, it takes 7-8 years to reach full balance.

Hypothesis Test

A. Determination Coefficient Test (R2)

The determination coefficient test assesses how well the model explains the variation of dependent variables with values between zero and one. In this study, the determination coefficient was used to evaluate the ability of the variables of Indonesia Coffee (X1), International Coffee Price (X2), Exchange Rate (X3), and Land Area (X4) to the Competitiveness of Indonesia's Coffee Exports in the period 1990-2022.

Table 4 Coefficient of Determination

	R-Squared
Long-term	0.631380
Short-term	0.711222

Source: Eviews Output

The Error Correction Model (ECM) analysis shows that in the long term, the coefficient of determination (R^2) is 0.631, which means that 63.13% of the variation of the bound variable is influenced by the independent variable, while 36.87% is explained by other factors. In the short term, the R^2 was 0.711, indicating that 71.12% of the variation of the bound variable was influenced by the independent variable, and 28.88% was explained by other factors.

B. Simultaneous Test (Test F)

The F (simultaneous) test is used to determine the overall influence of independent variables on dependent variables in a model. If the probability of the regression model is less than the significance level of 5%, then there is a simultaneous relationship between all independent variables and dependent variables; On the other hand, if it is larger, there is no significant relationship.

Table 5 Test Results F

Long-term		Short-term	
F-statistic	Prob.	F-statistic	Prob.
11.98973	0.000008	12.80693	0.000002

Source: Eviews Output

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The F test was carried out to evaluate the simultaneous influence of all independent variables on the dependent variables, with a significance level of 5%. The results of the long-term test show a probability of F of 0.000008 (< 0.05), which indicates that the independent variables namely Indonesia Coffee Production, International Coffee Price, Exchange Rate, and Land Area have a significant influence on the competitiveness of Indonesia Coffee Exports. The short-term test showed a probability of F of 0.000002 (< 0.05), which also confirmed the significant influence of the independent variable on the Competitiveness of Indonesia Coffee Exports.

C. Partial Test (t-Test)

The T-test (partial) is used to assess the influence of each independent variable on the dependent variable by considering the probability and t-statistical values from the estimation results of the regression model.

Table 6 Test Results

Variable	Long-term		Short-term	
	t-statistic	Prob.	t-statistic	Prob.
D (X1) Production	1.612301	0.1181	2.484576	0.0197
D (X2) International Price	-2.588063	0.0151	-1.498251	0.1461
D(x3) Exchange Rate	-2.135410	0.0416	-1.010485	0.3216
D (X4) Land Area	-3.589553	0.0012	-4.437996	0.0001

Source: Eviews Output

Long-term:

1. In the test of Indonesia coffee production variables (X1), the t-statistical value is 1.612301 with a t-table of 2.467. This means that the nilai t-statistic (1.612301) < t-table (2.467) with a probability of 0.1181> α 0.05. Based on the results of the long-term t-test, the results showed that there was an insignificant influence with a positive correlation on the variables of Indonesia's coffee production on the competitiveness of Indonesia's coffee exports.
2. In the test of the variable International Coffee Price (X2), the t-statistic is -2.588063 with a t-table of 2.467. This means that the nilai t-statistic (-2.588063) < t-table (2.467) with a probability of 0.0151 > α 0.05. Based on the results of the t-test in

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the long term, the results show that there is a significant influence with a negative correlation on international coffee prices on Indonesia's export competitiveness.

3. In the test of the exchange rate variable (X3), the t-statistic is -2.135410 with a t-table of 2.467. This means that the nilai t-statistic (-2.135410) < t-table (2.467) with a probability of 0.0416 > α 0.05. Based on the results of the t-test in the long term, the results showed that there was a significant influence with a negative correlation on the exchange rate variable on the competitiveness of Indonesia's coffee exports.
4. In the test of the variable land area (X4), nilai t-statistic is -3.589553 with a t-table of 2.467. This means that the nilai t-statistic (-3.589553) < t-table (2.467) with a probability of 0.0012 > α 0.05. Based on the results of the t-test in the long term, the results showed that there was a significant influence with a negative correlation on the variable of land area on the competitiveness of Indonesia's coffee exports.

Short-term:

1. In the test of Indonesia's coffee production variable (X1), the t-statistical value was 2.484576 with a t-table of 2.467. This means that the nilai t-statistic (2.484576) > t-table (2.467) with a probability of 0.0197 > α 0.05. Based on the results of the long-term t-test, the results showed a significant influence with a positive correlation on the variables of Indonesia's coffee production on the competitiveness of Indonesia's coffee exports.
2. In the test of the variable of International Coffee Price (X2), nilai t-statistic is --1.498251 with t-table 2.467. This means that the nilai t-statistic (-1.498251) < t-table (2.467) with a probability of 0.1461 > α 0.05. Based on the results of the t-test in the long term, the results showed that there was an insignificant influence with a negative correlation on international coffee prices on Indonesia's export competitiveness.
3. In the test of the exchange rate variable (X3), the t-statistic is -1.010485 with a t-table of 2.467. This means that the nilai t-statistic (-1.010485) < t-table (2.467) with a probability of 0.3216 > α 0.05. Based on the results of the t-test in the long term, the results showed that there was an insignificant influence with a negative correlation on the exchange rate variable on the competitiveness of Indonesia's coffee exports.
4. In the test of the variable land area (X4), nilai t-statistic is -4.437996 with a t-table of 2.467. This means that the nilai t-statistic (-4.437996) < t-table (2.467) with a

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probability of 0.0001 > α 0.05. Based on the results of the t-test in the long term, the results showed that there was a significant influence with a negative correlation on the variable of land area on the competitiveness of Indonesia's coffee exports.

DISCUSSION

The Influence of Indonesia's Coffee Production on the Competitiveness of Indonesia's Coffee Exports

Testing shows that Indonesia's coffee production variables have a significant influence on the competitiveness of coffee exports, both in the long and short term. In the long term, the effect is not significant but positive, while in the short term, the effect is significant and positive. According to the supply theory (Mankiw 2006), increased production can increase the supply of goods in the market. If the price of goods rises, production will increase, and vice versa. This is in line with this study, where coffee production has a significant positive influence on export competitiveness. Adam Smith's theory of absolute superiority also supports this finding, stating that countries with abundant resources, such as Indonesia with coffee, will have an advantage in exports and competitiveness. This principle is in line with the theory of surplus release, which suggests that excess domestic production needs to be exported to avoid a decline in local prices, and the product life cycle theory which suggests that an increase in production and exports occurs in tandem with the growth of market demand. This research is also in line with the findings (Suherman, Hikmah, and Firmansyah 2023) which shows that the increase in coffee production has a positive impact on Indonesia's export volume and competitiveness in the global market.

The Effect of International Coffee Prices on the Competitiveness of Indonesia's Coffee Exports

The test results with a significance level of 0.05 show that the international coffee price variable affects the competitiveness of Indonesia's coffee exports significantly in the long term, with a negative correlation. In contrast, in the short term, the effect is not significant, although it still shows a negative correlation.

According to demand theory (Zahara and Anwar 2021), the price affects the demand and supply of goods. An increase in price will reduce the quantity requested, while a decrease in price will increase the quantity requested. This is consistent with the findings of this study that international coffee prices have a significant negative impact on the competitiveness of Indonesia's coffee exports. Demand theory also explains that

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changes in the price of replacement goods can affect the demand for primary goods ((ZAKARIA 2012) Sukirno, 2008). An increase in coffee prices can reduce the demand for coffee and increase the demand for substitutes, thereby reducing the competitiveness of Indonesia's coffee exports.

Data shows that the increase in coffee prices in the international market is followed by a decrease in coffee demand, and vice versa. This is consistent with demand theory which indicates a negative relationship between price and demand. With high demand, the competitiveness of coffee in the international market can increase. These findings are different from the research (Ramadan 2018) and (Suherman, Hikmah, and Firmansyah 2023) which shows a significant positive influence of international coffee prices on the value of coffee exports. The difference lies in the variables used: this study focused on the competitiveness index (RCA), while the previous study used export values.

The Effect of Exchange Rate on the Competitiveness of Indonesia's Coffee Exports

The test with a significance level of 0.05 shows that the exchange rate variable has a simultaneous influence on the competitiveness of Indonesia's coffee exports, both in the long and short term. Partially, the exchange rate has a significant effect with a negative correlation in the long term and not significant in the short term.

The theory of the law of supply states that an increase in the selling price of goods will encourage producers to increase the quantity of goods offered. On the contrary, a price decrease will reduce the quantity offered. According to Salvatore (1997) in (Wardani and Sunyigono 2021), the exchange rate reflects the amount of currency required to acquire foreign exchange. Exchange rate appreciation can increase the number of goods offered and the competitiveness of products in the global market, which is consistent with the finding that exchange rates have a significant negative impact on the competitiveness of Indonesia's coffee exports.

(Setiawati 2021) explained that changes in the rupiah exchange rate against the US dollar affect the distance between local and international prices, as well as the value of production and consumption. Rupiah appreciation reduces producer losses and increases exports, while rupiah depreciation increases losses and lowers competitiveness. The results of this study are in line with (Muttoharoh, Nurjanah, and Mustika 2018) which found that the exchange rate had a significant negative impact on Indonesia's Arabica coffee exports. However, in contrast to (Ramadan 2018) which states that the exchange rate has a positive impact on the value of exports, this study uses the competitiveness index (RCA) and finds a negative impact on export competitiveness.

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However, Ramadhani's research shows that the increase in exports is positively related to export competitiveness.

The Effect of Indonesia's Coffee Land Area on the Competitiveness of Indonesia's Coffee Exports

The test results show that the land area variable has a significant effect simultaneously on Indonesia's coffee exports both in the long and short term. Partially, the land area has a positive effect on coffee exports in the long term, but has a negative effect in the short term.

According to the supply theory (Mankiw 2006), a larger land area supports an increase in coffee production and exports, which is in line with the results of this study. Land area plays an important role in increasing the competitiveness of coffee exports, supporting the theory of absolute and comparative advantage which states that the state must focus production on goods that utilize production elements efficiently (Setiawati 2021).

This research is also in line with the findings (Sabirin and Zakiah 2022), which shows that the area of coffee land affects the volume of Indonesia's coffee exports. With more land, production is increasing, allowing Indonesia to meet global market demand and strengthen its competitiveness as one of the major coffee producers.

CONCLUSION

Indonesia's coffee production variable showed a non-significant but positive influence on the competitiveness of coffee exports in the long term, with an increase of 0.000013 for every additional 1 ton of production, and a significant influence in the short term, increasing competitiveness by 0.000015 per ton. International coffee prices have a significant negative effect in the long term, decreasing competitiveness by -0.026267 per 1 US cent increase, and not significantly in the short term, reducing competitiveness by -0.011336 per 1 US cent increase. The exchange rate had a significant negative impact on competitiveness in the long term, decreasing by -0.000429 per 1 rupiah increase, and not significantly in the short term, reducing competitiveness by -0.000157. Land area has a significant positive effect on competitiveness in the long term, increasing by 0.000031 per hectare, but has a significant negative effect in the short term, decreasing competitiveness by -0.000024 per hectare.

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SUGGESTION

The Indonesia government is expected to continue to increase coffee production and productivity by expanding land, improving technology, and providing support such as farm insurance to protect farmers from price fluctuations. In addition, coordination of monetary and fiscal policies is needed to maintain rupiah exchange rate stability, providing certainty for coffee exporters. The expansion of coffee land must consider environmental sustainability, by opening up suitable new land or rehabilitating critical land that was previously used for other agriculture.

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