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Analysis Competition Coffee Exports from Producing Countries in the United States Market with Use Almost Ideal Demand System (AIDS) Model

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Abstract

For the Indonesian economy, coffee is one of the commodities plantation methods. Coffee's contribution to state revenues, especially in the form of foreign exchange, is what gives it its strategic worth. Indonesia follows Brazil, Vietnam, and Colombia as the world's top four coffee producers. Other nations besides Indonesia sell coffee to the US market, including Brazil, Vietnam, and Colombia. This study uses the Almost Ideal Demand System (AIDS) Model to examine competitiveness between coffee-supplying nations in the US market. Examine Data spanning 2003 to 2022 is used for this. According to research, Brazilian and Indonesian coffee prices are inelastic, whereas Vietnamese and Colombian coffee prices are elastic. Colombian, Vietnamese, and Indonesian coffee are competitors of Indonesian coffee. This is demonstrated by the mark elasticity positive cross (substitution), and Brazilian coffee has a complementary relationship.

Keywords: *Competition Exports, AIDS Model, Coffee, Strategic, Market.*

Introduction

After Brazil, Vietnam, and Colombia, coffee is Indonesia's fourth most important national product (International Coffee Organization, 2019). The four exporting nations' international markets are characterized by intense competition. This is evident from each exporting nation's percentage of the world's coffee-importing nations (Dita Milih Anggraini et, 2022). Destination countries that export the main Indonesian coffee products are the United States, Egypt, Japan, Spain, Malaysia, Belgium, Italy, and India. The United States has Indonesia's most accepted coffee exports (Fatha, 2018).

Demand for Indonesian coffee is predicted to increase both in the world market and domestically. Increase the population along with the improvement in the amount of population and level of income population. In keeping with openness, free global trade leads to more intense market competition, necessitating work to boost power competitiveness (Boto et al., 2021).

Indonesia focuses on coffee exports, one of the commodities superior to coffee in demand in the global market. Based on total coffee production, Indonesia has good potential in the worldwide market, with production highest reaching 794,762 million tons, increasing by 1.09% compared to the year previously (Data Center and Systems) Information Agriculture, 2023). The volume of Indonesian coffee exports to destination countries can seen in Table 1.

Table 1. Indonesian Coffee Exports in The United States Market

Year	United States of America	Japan
2019	58,672	25,594
2020	54,488	23,484
2021	57,703	27,301
2022	55,809	18,840
2023	36,707	15,318

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Source: Trade Map (2024)

The United States of America is one of the world's biggest importers since its culture involves daily coffee intake, making it the country with the most significant coffee consumption worldwide. Day to begin activities and engage in conversation about business and personal matters to get acquainted with the environment. This establishes ties between Indonesian coffee exporters and the United States, the primary market share target. Indonesian coffee is competitive and has superior prices. This is demonstrated by the United States of America, a devoted customer of Indonesian coffee commodities and has excellent market demand in the American Union, making Indonesian coffee a premium coffee in the US. The term "Java" is synonymous with high-quality coffee, as Americans perceive it. Indonesia has good global market potential based on its coffee production. However, there are still a lot of issues, such as oversupply, which makes coffee exporting nations compete with one another in the world market. Therefore, the study examines how Brazilian, Vietnamese, Colombian, and Indonesian coffee compete in the US market.

Methodology

Utilizing data in research, This is secondary data in the form of series data time (time series) from 2003 to 2022. The information used included coffee pricing data from Indonesia, Brazil, Vietnam, and Colombia; coffee quantity data from these countries; and coffee value data from the US market. One model utilized in this research is the Almost Ideal Demand System (AIDS) model. Additionally, it is estimated using the Seemingly Unrelated Regression (SUR) approach, which is processed using SAS On Demand Software to determine the model's coefficient regression. This study uses the AIDS model to assess requests for coffee exports from Colombia, Vietnam, Brazil, and Indonesia to the US market. This is the generic AIDS model for equality:

$\mathbf{Wi = \alpha\ i + \sum_{j}^{n} = 1yij\ log\ Pj + \beta\ log\ (\frac{x}{(\alpha)p}) + \mu\ i}$ Where :

α, γ, β , :Parameters / Coefficients estimate

Wi : *Budget share of* coffee expenditure from supplier countries (%)

Acting : Coffee price (USD)

ij : Supplier country

X : Total value coffee exports (USD)

(a) P : Index price *(Stone)*

ui : Standard Error

From the equation general said , then can formed four equation models For each exporting country coffee is :

Brazil $wb = \alpha 1 + \gamma 11 \ln pb + \gamma 12 \ln pc + \gamma 13 \ln pn + \gamma 14 \ln po + \beta 1 \ln (X/(a)P^*) + u1$

Vietnam $wc = \alpha 2 + \gamma 21 \ln pb + \gamma 22 \ln pc + \gamma 23 \ln pn + \gamma 24 \ln po + \beta 2 \ln (X/(a)P^*) + u2$

Kolombia $wn= \alpha 3 + \gamma 31 \ln pb + \gamma 32 \ln pc+ \gamma 33 \ln pn + \gamma 34 \ln po+ \beta 3 \ln (X/(a)P^*) + u3$

Indonesia $wo= \alpha 4 + \gamma 41 \ln pb+ \gamma 42 \ln pc+ \gamma 43 \ln pn + \gamma 44 \ln po + \beta 4 \ln (X/(a)P^*) + u4$

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Three requirements must be met when applying the AIDS model. Specifically adding up, homogeneity, and symmetry Slutsky in the model. Calculations are made to observe the elasticity of coffee to see competitiveness among exporting nations in the US market. The price alone, price cross, and elasticity expenditure are shown in this elasticity formula:

Elasticity Price Alone eii = $\frac{1}{wi}\{yii - \beta i\}$– 1

Elasticity Cross Price eii = $\frac{1}{wi}\{yii - \beta i\}$– 1

Elasticity Expenditure ei = 1 +$\frac{1}{wi}[\beta i]$

Estimated parameter coefficients of the Almost Ideal Demand System (AIDS) model can be used to count the elasticity price itself, the elasticity price cross, and the elasticity expenditure (Mizobuchi & Tanizaki, 2013).

Results and Discussion

Share Exports of Coffee Producing Countries in the United States Market

The development of plantations and adequate markets make Indonesia one of the largest coffee producers in the world and can be highly competitive. Fulfillment of the demand for coffee exports in the United States market has been exported by four other countries, namely Brazil, Vietnam, Colombia, and Indonesia. The four countries are coffee producing countries, Indonesia is a country that is able to compete to export coffee commodities to the world market, but based on the data that has been obtained, Brazil is one of the countries that is able to meet the largest demand for commodities in the United States market when compared to the other three countries, namely Vietnam, Colombia and Indonesia, which are quite competitive countries in the competition to export coffee commodities in the global market. Table 2 below shows the large market share of coffee commodities from Brazil, Vietnam, Colombia and Indonesia in the United States market.

Table 2. Average Share of Coffee Exports in the United States Market

Country	Average share
Brazil	39, 35 %
Vietnamese	12, 15 %
Colombia	39, 11 %
Indonesia	09, 37 %

Source: TradeMap data processed, 2024

Competition Coffee Exports from Brazil, Vietnam, Colombia, and Indonesia to the United States Market

The results of the AIDS model analysis of the value elasticity of Brazil, Vietnam, Colombia, and Indonesia as exporting countries in the United States market are seen in Table 3.

Table 3. Value Elasticity Price Own Country Exporter

Country	Elasticity Price Alone
Brazil	-0.709
Vietnamese	0.059
Colombia	0.188
Indonesia	0.167

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Source: Processed data, 2024

According to the analysis, the price of mark elasticity is on its own, and Vietnam, Colombia, Indonesia, and Brazil all have distinctively inelastic and elastic characteristics. Considering the outcomes, The AIDS model estimates in Table 3 reflect mark elasticity price alone in Brazil, which shows a sign negative meaning that Brazilian coffee prices are volatile elastic - 0.709.

Features of elasticity Brazil's values have characteristic elastic and meaningful that every improvement Brazilian coffee prices will reduce request coffee exports from Brazil to the United States market . With mark elasticity, the highest Brazilian coffee prices have sufficient value tall among other countries, indicating that Brazil has a level of sensitivity necessary to change the price. Appropriate with what was revealed in the research conducted Fortunika (2021) stated that the more tall mark elasticity price Alone an exporting country so the more tall level of sensitivity to change prices in that country . Brazil is less profitable in conditions like this because price fluctuations affect the demand for Brazilian coffee in the US market. Elastic Brazilian coffee conditions like This must anticipated with notice standard quality that the United States has set.

According to the analysis, Vietnam, Colombia, and Indonesia have a positive mark elasticity, indicating that their coffee prices are inelastic—by 0.059, 0.188, and 0.167, respectively. This implies that the amount requested will increase by 0.059, 0.188, and 0.167 percent if the prices of coffee in Vietnam, Colombia, and Indonesia increase by 1%. Theoretically, elasticity pricing does not exist in Vietnam, Colombia, or Indonesia. Non-adherence This is apparently because Vietnam, Colombia, and Indonesia have long held market leadership positions in the US market, where requests do not influence price changes. This is consistent with evidence from statistics. Exports from Vietnam, Colombia, and Indonesia demonstrate that these three nations are the top producers in the US market. Table 4 shows the mark elasticity price cross for the rivalry between Brazil, Vietnam, Colombia, and Indonesia.

Table 4. Cross-Price Elasticity Values Of Brazil, Vietnam, Colombia, And Indonesia

Variables	**Brazil**	**Vietnamese**	**Colombia**	**Indonesia**
	icity			
Brazil Price	-	-0.361	-0.171	-0.036
Vietnam Price	0.059	-	-0.208	0.225
Colombia Prices	0.188	-0.065	-	0.143
Indonesian Price	0.167	-0.148	-	-

Source: Processed data, 2024

On value elasticity cross can concluded that elasticity between coffee prices in Brazil and Indonesia show number positive as big as 0.059 and 0.225 which means both countries own characteristic substitution or each other replace . On the contrary mark elasticity between Indonesian and Brazilian coffee prices are also positive which means own connection substitution between both of them .

The condition of Brazilian coffee is competitive with Indonesia or each other replace in the United States market Therefore That If increase Indonesian coffee prices the can influence increase (demand) for coffee from Brazil in the United States market . Findings This in line with research conducted by Manalu et al. (2020) which shows that that mark elasticity price cross show that change the price of a country 's coffee can give profit for competing countries nya . In situation like this is the United States will switch to Brazil supply if Indonesian coffee prices are increasing . Therefore That in context improvement Indonesian coffee prices are at the same level as Brazil more profitable in the United States market (Saputro , 2018).

Connection each other complete between Vietnamese and Colombian coffee , showing that No There is competition between the two countries . Relations each other complete between Vietnamese and Colombian coffee , this This prove that No There is competition between the two countries . Relations each other complete This allegedly Because coffee from Vietnam and Colombia imported by the United

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States different type . Vietnam tends to import other types of coffee to the United States whereas Colombia tend import specialty coffee types differences type this is what caused Vietnam and Colombia No compete in the United States market but each other complement (FAO, 2022).

Elasticity expenditure is also utilized For observe competition between Brazil, Vietnam, Colombia and Indonesia. Elasticity expenditure used For show whether a commodity own characteristic normal goods , *luxury* and *inferior*. Elasticity value expenditure Vietnam, and Colombia that is as big as 1,074 and 1,211 . While mark elasticity Brazil and Indonesia's expenditures are as big as 0.851 and 0.644 . This is indicates that coffee from Vietnam and Colombia can categorized goods luxurious while Brazil and Indonesia are normal item .

Table 5. Elasticity Values Brazil, Vietnam, Colombia and Indonesia Expenditure

Commodity	Elasticity Value	Nature of Goods
Brazilian Coffee	0.851 (inelastic)	Normal
Vietnamese Coffee	1,074 (elastic)	Luxurious
Colombian Coffee	1,211 (elastic)	Luxurious
Indonesian Coffee	0.644 (inelastic)	Normal

Source: Processed data, 2024

Table 5. Explains that based on elasticity expenditure from every country that exports coffee to the United States market, Vietnam and Colombia show superiority Because elasticity makes expenses big compared to Brazil and Indonesia. In line with results research conducted by Rosario (2022) which states that mark elasticity expenditure in general more high (>1) indicates quality more stuff well , that's it This show that coffee from Vietnam and Colombia considered own quality taller than coffee from Brazil and Indonesia.

Elasticity coffee production originating from Vietnam and Colombia is the highest mark compared to Brazil and Indonesia, showing that Vietnamese and Colombian coffee nature goods luxury in the United States market. describe if the total expenditure United States coffee exports increase so request on Vietnamese and Colombian coffee will increase more big compared to coffee that comes from the other two countries namely Brazil and Indonesia because mark elasticity of Brazilian and Indonesian coffee (<1) and is normal goods . Based on matter the can interpreted that if the total expenditure United States coffee exports increase so request to Brazilian and Indonesian coffee exports also increased However No more big compared to Vietnam and Colombia which have mark elasticity expenditure higher (Wisnujati, 2020).

According to his expenses based on mark elasticity, Vietnamese and Colombian coffee are of higher quality than Brazilian and Indonesian coffee. This supports the claim made by Tomek and Robinson (1990) that a commodity with higher quality has a higher general elasticity and, therefore, higher costs. Thus, to surpass Vietnam and Colombia, Brazil and Indonesia must produce coffee of higher quality.

Conclusion

The price elasticity of coffee in the US market, as well as Vietnamese, Colombian, and Indonesian coffee pricing, is based on mark elasticity. However, Brazilian coffee is inelastic by nature. In contrast, crossbreeding Brazilian and Indonesian coffee to increase price elasticity in the US market leads to competition between the two coffee varieties. In contrast, Vietnamese and Colombian coffee are complementary or complete with one another and do not directly compete in the US market. Coffee from Colombia and Vietnam is considered a luxury good, but coffee from Brazil and Indonesia is commonplace.

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