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PRICE FLUCTUATIONS AND ELASTICITY OF COFFEE PRICE TRANSMISSION IN THE WORLD AND DOMESTIC COFFEE MARKETS OF NORTH SUMATRA PROVINCE

Jusmer Sihotang[1], Martin Luter Purba[2], Nancy Nopeline, Lastri[4]
[1,2,3,4] Faculty of Economics and Business, Universitas HKBP Nommensen, Indonesia
E-mail: jusmersihotang@gmail.com, martinpurba2006@gmail.com, sitompulnancy84@gmail.com lastri.uhn@gmail.com

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Abstract

The research aims to analyze fluctuation Coffee prices in North Sumatra Province and districts selected (Taput, Simalungun, Karo, and Dairi), analyzing elasticity of coffee price transmission from the world coffee market to the coffee market in Sumatra Province, and analyzing elasticity of coffee price transmission between the North Sumatra Province market and Taput, Simalungun, Karo, and Dairi Regencies. Research data is secondary data series time 2012-2023, with tool analysis coefficient of variation and elasticity transmission price.Research findings show that coffee prices in North Sumatra Province and West Sumatra Regency Taput, Simalungun, Karo, and Dairi are very volatile and include in category fluctuation high price.The elasticity of coffee price transmission between the world market and the North Sumatra Province market is inelastic. Changes the price of arabica and robusta coffee on the world market is only cause change very small coffee prices in North Sumatra Province. This show market system yet efficient that can happen Because adjustment costs in the supply chain or the abuse of market power in oligopsony market structures by exporters or traders in the world market.The elasticity of Arabica coffee price transmission in Taput and Karo Districts is elastic, where the percentage change Arabica coffee prices in both regency the more big compared to with percentage change coffee prices in North Sumatra Province. This show existence market structure that is oligopoly, so that coffee producers in both regency be in position strong bargaining position in determine price. However, the elasticity of the transmission of Arabica and Robusta coffee prices in the Regency Simalungun and Robusta coffee in the Regency nature inelastic, where percentage change prices on both regency more small than percentage change coffee prices in North Sumatra Province. This show existence market structure that is monopsony in both regency so that can cause market abuse occurs power by intermediary traders in controlling prices in Simalungun Regency and Dairi Regency.

Keywords: *Fluctuation Price, Elasticity Transmission Price, Coffee Market*

INTRODUCTION

Sector coffee plantations contribute big in economy national. **First,** the data show that no less than of 99% of coffee production in Indonesia comes from the people's plantations, some of which big spread across various area rural. With thus, development coffee farming in Indonesia is effort development rural in add income and level life community in the village (Kamaruddin, Masbar, Syahnur, & Majid, 2021). **Second,** the management of coffee plantations people is business congested work (*labor intensive*) capable absorb lots power work so that become source income no only for farmer but also for perpetrator economy at the level *on farm* or at the level *off-farm* (Andani & Wardoyo, 2024). **Third,** the contribution of coffee exports to Indonesia's GDP is quite large. Data for the period 2011-2020 shows the average contribution of coffee exports to the GDP of the coffee sector plantation is by 3.13% per year (von Cramon-Taubadel & Goodwin, 2021). **Fourth,** contribution coffee exports to foreign exchange in Indonesia are quite large. In 2021, coffee exports generated foreign exchange of Rp12.35 trillion, the fifth largest foreign exchange earner in the plantation sector after palm oil, rubber, cocoa and coconut (Nuru & Gereziher, 2022). **Fifth,** in trading Internationally, Indonesia is the fourth largest coffee producer in the world after Brazil, Vietnam, and Colombia.

One of the problems with coffee in Indonesia is the relatively low absorption capacity of the domestic market, resulting in a surplus. According to (Zhang, Saghaian, & Reed, 2022), the comparison between consumption and production is 50.97%. This means almost 50% of Indonesia's coffee production is still aiming export to the international market. If it is assumed that the international coffee market is a competitive market in a way perfect, price tend stable Because seller No own market power (*bargaining power*) in influence price so that seller act as recipient price (*price taker*) (Yovo & Adabe, 2022). However if the international coffee market is a competitive market No perfect (monopoly, oligopoly, or monopolistic), price tend varies Because There is strength seller in determine price through restrictions product, diversification products, and advertising or promotion so that seller can become determinant price (*price setter*). Compared with The market share of coffee exports from Brazil, Vietnam and Colombia, the market share of Indonesian coffee exports is still relatively small, so that Indonesia is not yet able to be a price setter (*price setter*) but still as a follower or recipient of the price (*price taker*) in the world coffee market. As a price taker, fluctuations in coffee prices in the world market will be followed by fluctuations in coffee prices in the domestic market (Lan, Lloyd, McCorriston, & Morgan, 2022).

Fluctuation prices in the world coffee market (Figure 1), show 2020 average price of coffee Arabica as big as $3.32/kg/ month, much more expensive than average price of robusta coffee only $ 1.52/kg/ month. The average price of robusta coffee relatively stable, but average price of arabica coffee A little fluctuate with price lowest $2.99/kg in month February and a high of $3.67/kg in September (Olipra, 2020).

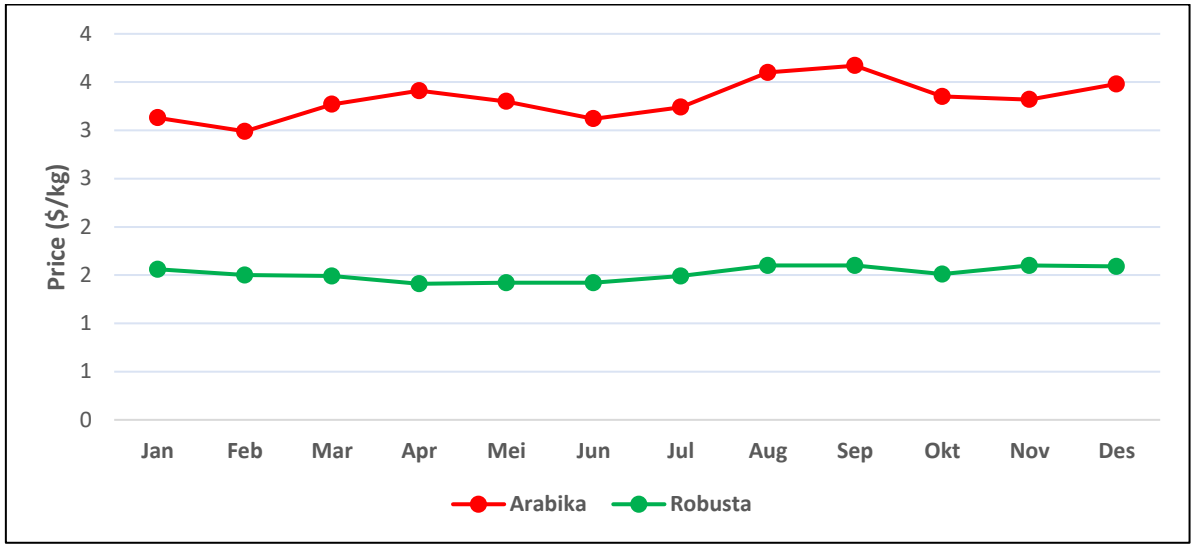
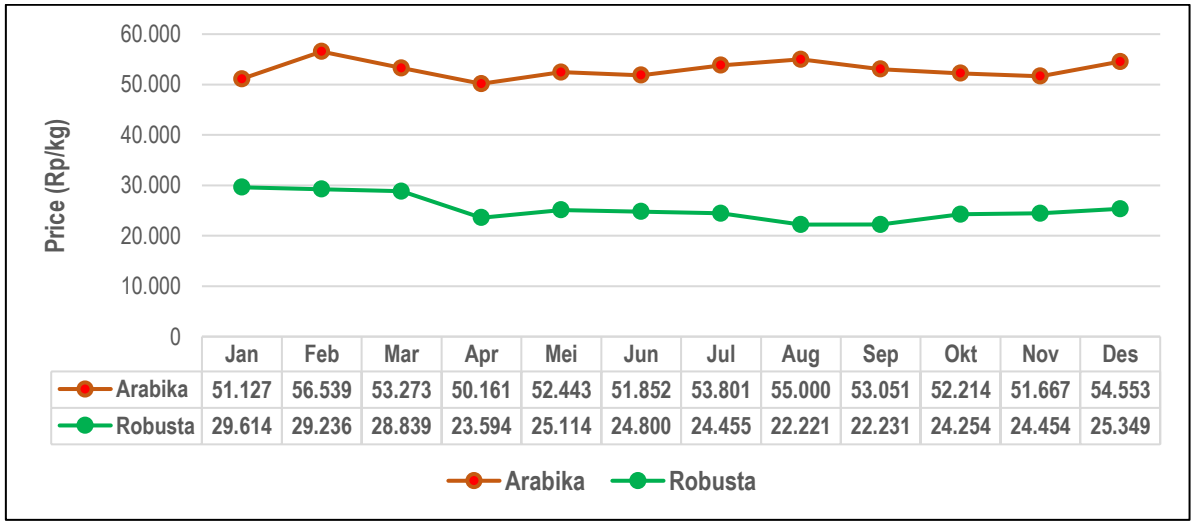


Figure 1. Development of Average Monthly Prices of Arabica Coffee and Robusta Coffee in the World Market in 2020

Fluctuation pattern coffee prices in the domestic market (Figure 2), it seems No Lots different with those that apply in the international market. During In 2020, the average price of Arabica coffee was IDR 52,973/kg/ month, the price the lowest was Rp50,161/kg in April and the highest was Rp56,579/kg in February. In the same year, the average price of robusta coffee was Rp25,347/kg / month, the price lowest IDR 55,000/kg per month August and the highest Rp29,614/kg in the month January (Tsega & Tsehay, 2020).



	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Aug	Sep	Okt	Nov	Des
Arabika	51.127	56.539	53.273	50.161	52.443	51.852	53.801	55.000	53.051	52.214	51.667	54.553
Robusta	29.614	29.236	28.839	23.594	25.114	24.800	24.455	22.221	22.231	24.254	24.454	25.349

Figure 2. Monthly Average Coffee Price Development in Domestic Market in 2020

In North Sumatra Province (Sumut) there are three regencies as the main centers of Arabica coffee production, namely North Tapanuli (Taput), Simalungun, and Karo, and two regencies as the main centers of Robusta coffee production, namely Simalungun and Dairi. The pattern of coffee price fluctuations in these regencies is presented in Figure 3. The price of Arabica coffee in Karo as well as the price of Robusta coffee in Simalungun and Dairi is relatively constant (Catacutan & Ulep, 2021). However, the price of Arabica coffee in Taput is very volatile, the lowest is IDR 10,600/kg in May and the highest is IDR 26,000/kg in March, June, and July. The price of Arabica coffee in Simalungun also fluctuates with the

lowest price of IDR 12,000/kg in April and the highest is IDR 20,500/kg in January, February, and March.

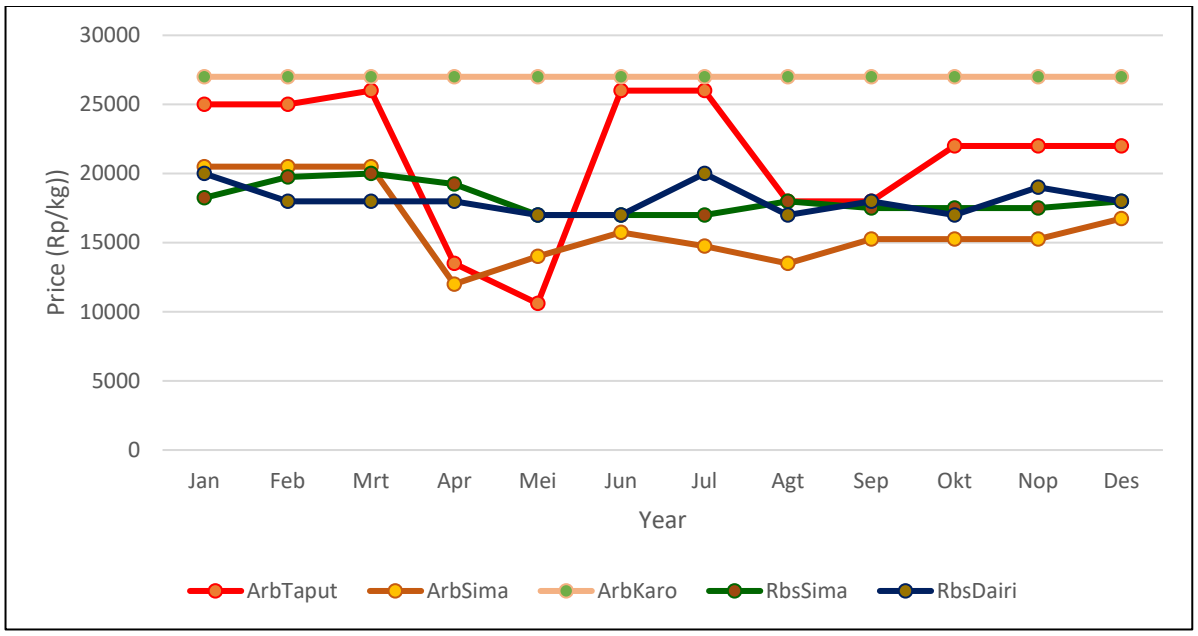


Figure 3. Monthly Producer Price Development of Arabica Coffee and Robusta Coffee in North Tapanuli, Simalungun, Karo, and Dairi in 2020

In Figures it appears that There is similarity pattern fluctuation price Arabica on the world market with the domestic market, but No thus as it is with the price of robusta coffee is relatively constant in the international market However tend decreased in the domestic market. In Figure 1.3, the pattern fluctuation coffee prices at the level producers in the district market Taput, Simalungun, Karo and Dairi are very different with those applicable in international and domestic markets (SINAGA, 2024). The question is is whether fluctuation coffee prices on the world market have an impact to coffee prices on the domestic market ? Is fluctuation the price that occurs at a transmitted market to other markets ?
Research (D. S. Audina, 2023). shows that in Taput district there is an asymmetrical price transmission pattern between wholesalers-producers and wholesalers-consumers in the short and long term., in his research in Garut district found that both in the local market subdistrict as well as at the central market district, it turns out rate change price at level retailer more tall than rate change price at level farmers. This shows the existence of monopsony and oligopsony powers that can control prices. Research (Budiman, Ginting, Sinaga, Lubis, & Sinaga, 2024), changes price coffee exports no transmitted to price received Arabica coffee farmers Gayo in AcehProvince., found a positive and significant coffee pricetransmission between world coffee market prices to domestic coffee producer markets., found a symmetrical price transmission between the United States, Germany and Japan to coffee export prices in Indonesia in the long term, but in the short term there was an asymmetrical price transmission between the United States and Japan to Indonesian coffee export prices. The results of the study found existence asymmetric price transmission between Indonesian coffee prices and coffee prices in importing countries (the United States, Japan, Italy, and Malaysia).

The existence of difference results a number of study previous and its importance formulate policies for developing Indonesian coffee in the future, then objective study This is For analyze : (1) fluctuations coffee prices in the Province North Sumatra and districts selected (Taput, Simalungun, Karo, and Dairi), (2) elasticity of coffee price transmission between the world market and the coffee market in the Province North Sumatra, and (3) the elasticity of coffee price transmission between the North Sumatra Provincial market and the Taput, Simalungun, Karo and Dairi Regencies.

METHODS

The research area, namely Taput, Simalungun, Karo, and Dairi Regencies in North Sumatra Province, was determined intentionally (*purposively*) for the following reasons: (1) North Sumatra Province is the center of Arabica coffee production in Indonesia and also produces Robusta coffee, and (2) Taput, Simalungun, and Karo are included as the main producers of Arabica coffee, while Simalungun and Dairi are included as the main producers of Robusta coffee in North Sumatra Province (Prativi & Priyadi, 2023). Research data namely the price of Arabica and Robusta coffee on the world market and the domestic market is secondary data *time series* 2012-2023 (Aprilianti, Sahidu, & Miharja, 2023). The price used is the price of coffee beans or often referred to as coffee beans, namely the price of dry coffee beans from post-harvest processing. Data sourced from the BPS website (bps.go.id) , Ministry of Agriculture Directorate General of Agriculture (ditjenbun.pertanian.go.id), World Bank Commodity Price Data (worldbank.org), Center for Economic and Business Data (databoks.katadata.co.id), and other relevant websites. Data is processed with use SPSS software application (Ebenezer, 2023).

To answer the research objective (1), the data was analyzed descriptively using the coefficient of variation analysis method, namely a statistical measure to calculate the level of data variation in a sample data or research population, so that information is obtained about how far the data varies from the average (Siswadi, Asnah, & Sari, 2020). Coefficient of variation (*coefficient of variation*) in percentage is calculated using the formula (M. Audina & Antoni, 2022).

$$CV = \frac{\delta}{\mu} \times 100\% \; ; \quad \delta = \sqrt{\frac{n \sum X^2 - (\sum X)^2}{n\,(n-1)}} \; ; \quad \mu = \frac{\sum X}{n}$$

Where : CV = Price variation coefficient coffee in each area study.
δ = Standard deviation price coffee in each area study.
μ =Average price coffee in each area study.
X = Price coffee in each area study.
n = Number of price data coffee in each area study.

The smaller the coefficient of variation of coffee prices, the more homogeneous or uniform the coffee price data is, meaning that coffee prices are more stable. Conversely, the larger the coefficient of variation of coffee prices, the more heterogeneous or varied the coffee price data is, meaning that coffee prices are increasingly unstable (MARPAUNG, 2021). According to the Indonesian Ministry of Trade, if the CV value is 5% - 9%, then the price fluctuation is classified as moderate, but if the CV value is above 9%, then the price fluctuation is classified as high (Chen, Kumara, & Sivakumar, 2021).

To answer research objectives (2) and (3), the data was analyzed using elasticity transmission prices and econometric models. Analysis Price transmission elasticity is to analyze the impact of price changes in one market on price changes in other markets (Avdjiev, Bruno, Koch, & Shin, 2019). The model econometrics is in the form of a simple linear regression equation, namely to find out whether price changes in a particular market have a significant effect or not on prices in other markets (Rivelda, 2022).

The elasticity of price transmission measures the ratio between price changes at the consumer level and price changes at the producer level, calculated using the formula.

$$Et = \frac{\delta Pr}{\delta Pf} \times \frac{Pf}{Pr}$$

Where : dPr = Price coffee at level consumers.
δPf = Changes price coffee at level manufacturer.
P f = Price coffee at level manufacturer.
δPr = Changes price coffee at level consumers.

Prices at the producer level are a function of prices at the consumer level, in the linear equation model it is written: Pf = a + b Pr. Based on this equation then:

$$\frac{\delta Pf}{\delta Pr} = b \quad or: \quad \frac{\delta Pr}{\delta Pf} = \frac{1}{b}$$

Thus, the Et formula can be rewritten as:

$$Et = \frac{1}{b} \times \frac{Pf}{Pr}$$

There are three criteria for Et value :

1. If the value of Et = 1, then the percentage change in price at the producer level is the same as the percentage change at the consumer level (Saunders, Cornett, & Erhemjamts, 2021). The market structure is a perfectly competitive market and the marketing system is efficient.
2. If the value of Et < 1, then the percentage change in price at the producer level is greater than the percentage change in price at the consumer level. The market structure is an imperfect competition market, the market is not yet efficient because there is monopoly or oligopoly power.
3. If the value of Et > 1, then the percentage change in price at the producer level is smaller than the percentage change in price at the consumer level. The market structure is an imperfect competition market, the market is not yet efficient because there is monopsony or oligopsony power.

The elasticity of price transmission can also be calculated using the equation: $Pf = a\ Pr^{b}$ which, when transformed into a linear function, becomes: ln Pf = ln a + b ln Pr, where :

a = Intercept
b = coefficient elasticity transmission price coffee.
Pf = Price coffee on level manufacturer.
δPf = Changes price coffee on level manufacturer.
Pr = Price coffee on level consumers.

δPr = Changes price coffee on level consumers.

By transforming the original data into data in the form of natural logarithms (ln), the regression coefficient obtained can be used as an estimator of the price elasticity coefficient to analyze the elasticity of transmission of independent variables to the dependent variable in the regression equation (Saeidi et al., 2019). There are three criteria for the coffee price transmission elasticity coefficient:

1. If the value of b = 1, it means that a 1% change in coffee price at the consumer level will cause a 1% change in coffee price at the producer level. The market structure is a perfectly competitive market and the marketing system is efficient.
2. If the value of b < 1, it means that a 1% change in coffee prices at the consumer level will result in a change in coffee prices of less than 1% at the producer level. Structure market Not yet efficient Because There is strength monopsony or oligopsony.
3. If the value of b > 1, it means that a 1% change in coffee prices at the consumer level will result in a greater than 1% change in coffee prices at the producer level. Structure market Not yet efficient Because There is monopoly or oligopoly power.

To determine the level of significance of the influence of coffee price transmission elasticity, a t-test was conducted with the following hypothesis:

H_0: b = 0, meaning that coffee price transmission at the consumer level does not have a significant effect on coffee prices at the producer level.

H_1: b > 0, meaning that coffee price transmission at the consumer level has a positive and significant effect on coffee prices at the producer level.

Criteria testing hypothesis is with compare prob.sig with α = 5% or 0.05. If sig. < 0.05, then H_1 accepted and H_0 rejected, on the other hand, if sig. > 0.05, then H_0 accepted and H_1 rejected.

RESULTS AND DISCUSSION

Coffee Price Fluctuations

The development of coffee prices in North Sumatra Province and in Taput, Simalungun, Karo and Dairi Regencies during 2012-2023 was very volatile but tended to increase (Figure 4). In 2013, coffee prices fell sharply compared to 2012 and then increased sharply in 2014. However, from 2015 to 2020, coffee prices fluctuated and then increased sharply until 2023 (except in Taput Regency). The highest increase occurred in Karo Regency, which increased very sharply from IDR 21,146/kg in 2021 to IDR 40,924/kg in 2023, much higher than the increase in coffee prices in other regencies.

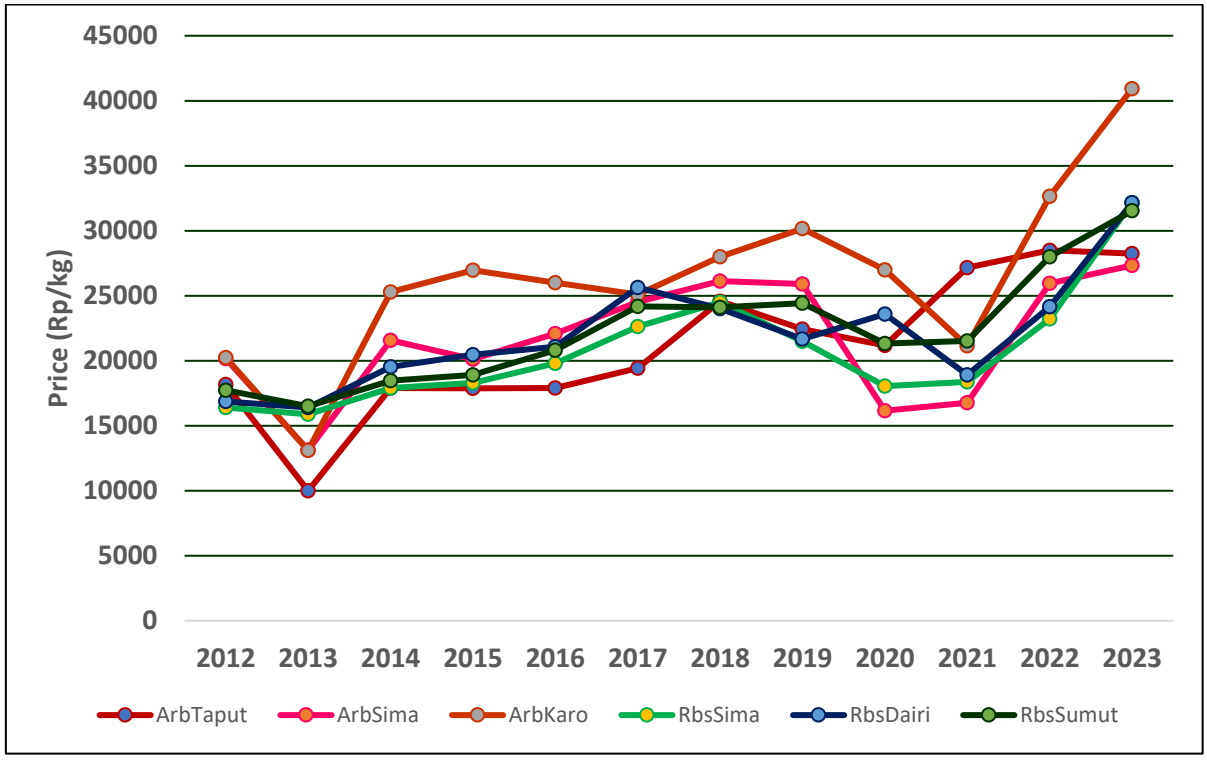


Figure 4. Coffee Price Fluctuations in North Sumatra Province, North Tapanuli, Simalungun, Karo, and Dairi Regencies 2012-2023

In Figure 4, during 2012-2023, the average price of Arabica coffee in Taput Regency was IDR 21,115.92/kg, the lowest was IDR 9,999/kg in 2013 and the highest was IDR 28,500/kg in 2022. In the same period, the average price of Arabica coffee in Simalungun was IDR 21,656.25/kg, the lowest was IDR 13,125/kg in 2013 and the highest was IDR 27,333/kg in 2023. Likewise in Karo Regency, the price of Arabica coffee fluctuated with an average price of IDR 26,380.42/kg, the lowest was IDR 13,104/kg in 2013 and the highest was IDR 40,924/kg in 2023. For Robusta coffee in Simalungun Regency, the average price was IDR 20,730.9... Rp15,884/kg in 2013 and the highest Rp32,167/kg in 2023. The average price of robusta coffee in Dairi is Rp22,039.08/kg, the lowest Rp16,406/kg in 2013 and the highest Rp32,153/kg in 2023.

As is common with agricultural commodity prices, coffee price fluctuations can occur due to climate and weather factors, such as excessive rain or prolonged dry seasons, so that coffee yields and supply decrease and prices increase. Conversely, when the climate and weather are conducive, coffee yields and supply increase and prices tend to decrease. Coffee price fluctuations can also occur due to pest and plant disease attacks, uncertainty in demand, domestic and international market competition, or due to monopoly or oligopoly power at the producer level or due to monopsony or oligopsony power at the consumer level (Shad, Lai, Fatt, Klemeš, & Bokhari, 2019). The coefficient of variation of coffee prices in the domestic and international markets during 2012-2023 (Table 1) is classified as high because it is greater than 9%. The coefficient of variation of coffee prices in Taput, Simalungun, Karo, Dairi and North Sumatra Regencies varies from 19.53% to 25.88%. The coefficient of variation of Arabica coffee prices in Taput, Simalungun, and Karo is in the range of 21.05% - 25.88%, more tall compared to with coefficient variation Robusta coffee prices in Simalungun, Dairi and North Sumatra are in the range of 19.53% - 21.82%. In the international market, the coefficient variation arabica coffee price by 21.69% far more tall compared to with

coefficient variation robusta coffee price only by 14.93%. This is because the production of Arabica coffee is generally relatively low compared to its demand, so its price and price variation are higher compared to Robusta coffee (Lechner & Gatzert, 2018).

Table 1. Descriptive Statistics of Coffee Prices in Domestic and World Markets 2012-2023

Market	Arabica Coffee			Robusta Coffee		
	Mean	Std Dev	CV	Mean	Std Dev	CV
North Tapanuli	21115.92	5409.494	25.62%	-	-	-
Simalungun	21656.25	4558.617	21.05%	20730.92	4522.510	21.82%
Karo	26380.42	6827.554	25.88%	-	-	-
Dairy	-	-	-	22039.08	4304.913	19.53%
North Sumatra	-	-	-	22293.75	4406.110	19.76%
World	3.8233	.82935	21.69%	2.0500	.30597	14.93%

Source: Research data 2012 - 20 23, data processed

The high coefficient of variation of coffee prices at all market levels illustrates how unstable coffee prices are, which poses a risk to the instability of income and the sustainability and welfare of coffee farmers in Indonesia. When coffee prices fall sharply, coffee farmers' incomes decline and make it difficult for farmers to survive and prosper. High fluctuations in coffee prices at various market levels can create opportunities for market players in oligopsony market structures to control and manipulate prices by changing prices at levels that are not in line with the actual price change signal, which can harm coffee farmers and create disincentives in coffee farming.

Elasticity of Coffee Price Transmission

Table 2 presents data on the elasticity of coffee price transmission at various market levels. The research data was transformed into natural logarithm (ln), then regressed using the simple linear regression equation method, and the regression coefficient obtained is the coefficient of coffee price transmission elasticity.

Table 2. Results of Coffee Price Regression in the World Coffee Market to the Coffee Market in North Sumatra Province

Market Levels		Types of Coffee	Statistical Values					
			R^2	b	t	Sig.	F	Sig.
I	World - North Sumatra	Arabica	0.081	0.262	0.940	0.369	0.884	0.369
		Robusta	0.050	0.281	0.729	0.483	0.531	0.483
II	North Sumatra - Taput	Robusta	0.655	1,223	4,354	0.001	18,954	0.001
III	North Sumatra - Simalungun	Arabica	0.555	0.891	3,529	0.005	12,454	0.005
		Robusta	0.878	0.975	8,476	0.000	71,850	0.000
IV	Sumut - Karo	Arabica	0.692	1,216	4,745	0.001	22,517	0.001
V	Sumut - Dairi	Robusta	0.814	0.884	6,621	0.000	43,835	0.000

Source: Research data 2012 - 20 23, data processed

Elasticity of World Coffee Price Transmission to North Sumatra Provincial Market

In Table, the coefficients regression Arabica and Robusta coffee prices marked positive gives the meaning that The prices of Arabica and Robusta coffee on the world market are related positive to coffee prices in the province North Sumatra. However based on the t-test, the relationship positive the No significant Because sig. value = 0.369 (arabic coffee) and sig. value = 0.483 (robusta coffee) is more big from α = 0.05. Likewise value coefficient determination (R^2) is very low, where the price of Arabica coffee on the world market is only capable explain variation coffee prices in the Province North Sumatra by 8.1% and not significant in a way statistics. The price of robusta coffee on the world market is only capable explain variation coffee prices in the Province North Sumatra by 5% and not significant in a way statistics. Coefficient elasticity transmission Arabica coffee price = 0.262 < 1 (inelastic), meaning that every change arabica coffee price by 1% in the world market only cause change coffee prices by 0.262% in the Province North Sumatra. Coefficient elasticity transmission Robusta coffee price = 0.281 < 1 (inelastic), meaning every change robusta coffee price by 1% in the world market only cause change coffee prices by 0.281% in North Sumatra Province.
Research result This to inform that change coffee prices on the world market are not transmitted with Good to coffee prices in the Province North Sumatra, so that market system yet efficient. This is can happen due to long marketing channel factors which give rise to additional costs or adjustment *costs cost*) that must be incurred by each actor in the marketing chain. Another causal factor is the abuse of market power (*market power*) due to the existence of an oligopsony market structure from intermediary traders (exporters) or traders in the international market who can control the purchase price from coffee producers (Barmuta et al., 2019).

Elasticity of Coffee Price Transmission from North Sumatra Provincial Market to Taput Regency Market

Coefficient regression worth positive of 1,223 with sig. value of t-test = 0.001, indicating that The price of coffee in North Sumatra Province has a positive and significant effect on the price of Arabica coffee in Taput Regency. The value R^2 statistic as big as 0.655, means price coffee in the Province North Sumatra can explain variation coffee prices in Regency Tapanuli by 65.5% in total significant (sig. value of F-test = 0.001 < 0.05). Coefficient elasticity transmission price = 1.223 > 1 (elastic), informs that every change coffee prices by 1% in the Province North Sumatra will cause change coffee prices by 1,223% in the Regency Taput. With thus coffee prices in the Province North Sumatra No transmitted in a way perfect to Regency Taput, in other words the market has not efficient. The inefficient coffee market system in this study was also found (Hofmann, Schleper, & Blome, 2018), where the price transmission pattern between Arabica coffee marketing institutions in Taput district is asymmetric in the short and long term.
Based on coefficient elasticity transmission price, market structure of Arabica coffee in the district Tapanuli is nature oligopoly so that No happen *market* abuse *power* because farmer coffee producers have strong *bargaining* position in determine coffee prices. This is No let go from effort improvement consistent coffee quality, so that an all- Indonesia coffee exhibition held Association Government Regency Throughout Indonesia (APKASI) in 2014, district Tapanuli to achieve mark highest in best taste image. Strength position bid manufacturers also do not let go from role Set Harmony Indonesian Farmers (HKTI) Regency The persistent Taput do policy increase the coffee economy, for example policy coffee village launch in the sub-district Fence Regency North

Tapanuli covering an area of 50 ha and the establishment of coffee cooperatives that can increase position farmers ' bargaining chip coffee producer.

Elasticity of Coffee Price Transmission from North Sumatra Provincial Market to Simalungun Regency Market

For Arabica coffee types, prices in the Province North Sumatra influential positive and significant to Arabica coffee prices in Simalungun as shown mark coefficient regression of 0.891 and t-test with sig. = 0.005 < 0.05. Based on the n value R^2 statistic as big as 0.555, price in North Sumatra Province can explain variation Arabica coffee prices in Regency Simalungun by 55.5% in total significant (sig. value of F-test = 0.005 < 0.05. Coefficient elasticity transmission price = 0.891 < 1 (inelastic) means that every change price by 1% in the Province North Sumatra will cause change arabica coffee price by 0.891% in the Regency Simalungun.

For Robusta coffee types, coffee prices in the Province North Sumatra influential positive and significant to Robusta coffee prices in Regency Simalungun as shown mark coefficient regression of 0.975 and the t-test with sig. = 0.000 < 0.05. The statistical value of R^2 as big as 0.878, indicating that price in North Sumatra Province can explain variation Robusta coffee prices in Regency Simalungun by 87.8% in total significant (sig. value of F-test = 0.000 < 0.05). Coefficient elasticity transmission price = 0.975 < 1 (inelastic) means that every change price by 1% in the Province North Sumatra will cause change robusta coffee price by 0.975% in the Regency Simalungun.

Coefficient value elasticity transmission the price of Arabica and Robusta coffee is inelastic, informing that change coffee prices in the Province North Sumatra No transmitted in a way perfect to the Regency market Simalungun so that market system yet efficient. This is show existence oligopsony market structure, so that it can cause the occurrence of abuse of market power (*market power) power*) because the intermediary traders can control the purchase price from coffee producers in Simalungun Regency. Abuse of market power is related to the long supply chain which causes additional costs or adjustment costs. *cost) that must be incurred by the actors* in the marketing chain. Research Sitinjak (Bukalska, Zinecker, & Pietrzak, 2021). there is two type channel distribution of arabica coffee in the Regency Simalungun. First is channel distribution short, where direct coffee farmers sell it to House coffee production. Both is channel distribution long that is from coffee farmers to trader collector small, then to trader collector big and last to coffee factory. The more long Distribution channels will certainly make coffee prices at the farmer level low because all marketing actors must make a profit from these marketing activities.

Elasticity of Coffee Price Transmission from North Sumatra Provincial Market to Karo Regency Market

The price of coffee in North Sumatra Province has a positive and significant effect on the price of Arabica coffee in Karo Regency, as shown mark coefficient regression of 0.975 and the t-test with sig. = 0.000 < 0.05.. Based on the n value R^2 statistic as big as 0.692, price coffee in the Province North Sumatra can explain variation Arabica coffee prices in Karo increased by 69.2 % significant (sig. value of F-test = 0.001 < 0.05. Coefficient elasticity transmission price = 1.216 > 1 (elastic) means that every change coffee prices by 1% in the Province North Sumatra will cause change arabica coffee price by 1.216% in Karo Regency. This is show existence market structure that is oligopoly in the Karo Regency coffee market so that market system yet efficient.

As well as with what happened in the Regency Taput, it turns out Coffee farmers in Karo Regency also have position strong bargaining position in determine price, no there is abuse of market power (*market power) power*). This is Can happen Because Karo Regency is one of the center coffee producers in the Province North Sumatra which has quality arabica coffee beans tall with unique aroma and taste characteristics compared to the general taste of coffee. Karo Regency Arabica coffee has received attention from the government and international coffee companies. Karo Regency has been designated by the Ministry of Agriculture as One from four best coffee production areas in Sumatra or One from three area in North Sumatra, after Mandailing and Simalungun. The international coffee company Starbucks chose Subdistrict Berastagi Karo Regency as One from nine *Farmers Support Center* (FSC) in the world (bachdar, 2018). Starbucks has been working with Arabica coffee farmers in Karo Regency through various initiatives, training and outreach to improve the quality and understanding of coffee farmers. FSC makes demonstration coffee garden so that coffee farmers can know method cultivating coffee effectively, efficiently and to global standards.

The results of the study using Comparative RCA (*Revealed Correlation) analysis Comparative Advantage*), found that Arabica coffee in Karo Regency has strong competitiveness. Likewise, with the competitive analysis of Porter's Diamond Theory, it was obtained that several related factors, namely condition factors, demand factors, related industry factors and supporting industries, strategy factors, structure and competition, and the role of government are related and mutually supportive. This will certainly have an impact on the management of coffee farming in improving the quality of coffee in Karo Regency which can ultimately strengthen the bargaining position of Arabica coffee farmers in Karo Regency.

Elasticity of Coffee Price Transmission from North Sumatra Provincial Market to Dairi Regency Market

Coffee prices in North Sumatra Province have a positive and significant effect on coffee prices in Dairi Regency. as shown by the regression coefficient value of 0.884 and the si g value. t-test = 0.000 < 0.05. The statistical value of R^2 as big as 0.814, meaning price coffee in the Province North Sumatra can explain variation Robusta coffee prices in Regency Dairy by 81.4% in total significant (sig. value of F-test = 0.000 < 0.05). Coefficient elasticity transmission price = 0.884 < 1 (inelastic) means that if happen change coffee prices by 1% in the Province North Sumatra will cause change robusta coffee price by 0.884% in the Regency Dairi. Same thing with in the Regency Simalungun, the robusta coffee market system in the Regency Dairi also not yet efficient. The cause Can Because existence *adjustment* costs *cost*) in a long supply chain or due to *market abuse power* in the oligopsony market structure of intermediary traders (wholesale traders in North Sumatra Province) who can control the prices of coffee producers in Dairi Regency.

The results of the study (Sfeir, 2023), there is a long coffee marketing channel in Dairi Regency so that farmers can only accept very low prices. Low prices often have a negative impact on farmers, for example, reducing farmers' enthusiasm to increase the quantity and quality of coffee.

CONCLUSION

1. Coffee prices in North Sumatra Province, Regency North Tapanuli, Simalungun, Karo, and Dairi are very volatile and are classified as tall with the coefficient of price variation ranges from 19.53% to 25.88%.

2. The price of coffee on the world market is related positive No significant to coffee prices in North Sumatra Province with elasticity transmission price nature inelastic, where rate change coffee prices in Sumatra Province are higher small than rate change Arabica and Robusta coffee prices in the international market so the market has not efficient. This show existence *adjustment cost* and abuse *market power* Because oligopsony market structure of intermediary traders (exporters) or traders in the international market.
3. The price of coffee in North Sumatra Province is related positive significant to coffee prices in Regency North Tapanuli, Regency Simalungun, Karo Regency, and the Regency Dairi. Coefficient elasticity transmission Arabica coffee prices in Regency North Tapanuli and Karo Regency are elastic to mean that rate change Arabica coffee prices in both regency the more big than rate change coffee prices in North Sumatra Province. This show market structure that is oligopoly so that coffee farmers in two regency own strong *bargaining* position in determine price. However coefficient elasticity coffee prices in Regency Simalungun and Regency Dairy is nature inelastic, meaning rate change coffee prices in both regency This more small than rate change coffee prices in North Sumatra Province. This show existence oligopsony market structure from intermediary traders who can control the prices of coffee producers.

Suggestion

1. High coffee price fluctuations pose a risk to farmers' income instability. To reduce this risk, the role of the government and cooperatives in empowering coffee farmers is needed, for example by diversifying processed coffee products, and increasing the added value of coffee products through strengthening downstreaming. This can also reduce farmers' dependence on the sale of raw coffee beans whose prices can change at any time.
2. For Regency North Tapanuli and Karo Regency which have coffee market structure that is oligopoly, *bargaining position* coffee farmers in control price need maintained with method increase coffee quality. Likewise for Regency Simalungun and Regency Dairi which has coffee market structure that is oligopsony, abuse *market The power* of the intermediary traders needs to be controlled by improving the quality of coffee by optimizing management coffee farming business starts from upstream activities (providers) seeds, facilities and infrastructure, fertilizers and medicines, tools machine agriculture) in coffee farming (*on-farm*) until to downstream that is processing and marketing (*off-farm*) with involving various institution support (organization) farmers, institutions research and development, institutions finance, government, and coffee associations).
3. For further studies, the results of the analysis of coffee price fluctuations and transmission need to be studied more deeply by expanding the scope of coffee producing areas in North Sumatra Province. This is important to determine the efficiency of the coffee market and the implications of relevant policies to stabilize prices, control the abuse of market power, and to increase the income of coffee farmers.

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