



THE IMPACT OF GOVERNANCE POLICIES ON THE PRICE OF FRESH FRUIT BUNCHES (FFB) OF OIL PALM IN INDONESIA

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Abstract

As a strategic commodity, oil palm attends as a major supplier of raw materials to worldwide industries and makes a substantial contribution to national income and foreign exchange earnings. The upstream and downstream segments of this industry generate significant multiplier effects across both the macroeconomic and microeconomic sectors while improving the welfare of smallholders and surrounding communities. However, global market dynamics frequently create uncertainty in the prices of Fresh Fruit Bunches (FFB). This study aims to evaluate the sustainability of smallholder oil palm plantations based on FFB price trends over the nine most recent pricing periods and to determine the socio-economic impacts and the sensitivity of the government's proposed single-gate export policy for strategic commodities on FFB prices among scheme and independent smallholders. The study employs the Ordinary Least Squares method to examine price trends. The findings indicate that FFB prices for both scheme and independent smallholders are highly vulnerable to changes in government policies. The price trend for scheme smallholders is represented by the linear equation ($Y = 3,465.85 - 338.89X$), whereas the price trend for independent smallholders is represented by the equation ($Y = 3,394.11 - 36.42X$).

Keywords: Oil Palm, Policy, Fresh Fruit Bunch (FFB) Prices, Government Policy, Independent Smallholders, Price Sensitivity.

INTRODUCTION

Agricultural development is an essential component in achieving a resilient agricultural sector and serves as a key instrument for enhancing agricultural productivity. Among the various agricultural sectors, the plantation sector has been identified as a priority area. Plantation development may be undertaken by the government or private entities through large-scale estates or by local communities through smallholder plantations. In its development trajectory, this subsector has been influenced by various national and global dynamics.

The oil palm plantation subsector plays a crucial role in Indonesia's national income and foreign exchange earnings. This is reflected in the export value achieved in 2023 which reached US\$33.4 billion or approximately IDR 515.2 trillion. Furthermore, the plantation subsector contributed IDR 439.5 trillion to the national Gross Domestic Product in 2023 and recorded growth of 1.73% compared with the previous year. This increasing contribution is expected to strengthen the comprehensive development of the plantation sector (Ministry of Agriculture of the Republic of Indonesia, 2025).

Oil palm does not merely produce Fresh Fruit Bunches (FFB) and Crude Palm Oil (CPO). It has evolved into a strategic national industry through the sustainable integration of its upstream and

downstream sectors. Contributing approximately 56% of the global palm oil supply, this sector has become one of the main pillars of the Indonesian economy through job creation, the acceleration of rural infrastructure development, the generation of foreign exchange earnings and the improvement of living standards in major production areas (Plantation Statistics, 2024).

In addition, the plantation subsector plays a significant role in strengthening food security and environmental sustainability. Through policy innovations such as mixed farming systems, integrated oil palm-cattle systems and intercropping practices involving the simultaneous cultivation of food crops on unused land, land productivity can be optimised. This integrated strategy has proven capable of substantially increasing production while supporting national food self-sufficiency in line with the second *Asta Cita*, namely strengthening national defence and security systems and promoting national self-reliance through self-sufficiency in food, energy, water, the creative economy, the green economy and the blue economy (Nugraha et al., 2024).

As both an upstream and downstream industry, the oil palm commodity serves as a provider of raw materials for various derivative industries. Plantations managed by government agencies, private corporations and smallholders have created substantial agribusiness opportunities, resulting in the establishment of numerous companies operating in the oil palm plantation sector. The establishment of new businesses and industries in a particular region has considerable effects on both macroeconomic and microeconomic conditions as reflected in national economic growth and improved social welfare in surrounding communities. Agribusiness development by communities and corporations enhances comparative advantages in producing various raw materials, including plantation commodities, horticultural products, livestock and fisheries, while also expanding domestic and international market opportunities.

As plantation development continues to require increasing land resources, the plantation subsector, particularly oil palm cultivation, remains inseparable from various national and global dynamics. These include issues related to deforestation and biodiversity loss, peatland conversion, greenhouse gas emissions and climate change, water pollution and waste generated by palm oil mills (Bakhtiar & Fatia Ulfa, 2024).

These global dynamics have affected the stability of FFB prices throughout the period from 2016 to mid-2026, particularly at the smallholder level and especially among independent farmers. This situation is attributed to the asymmetric transmission of prices between the global Crude Palm Oil (CPO) market and the domestic FFB market. When international CPO prices increase on commodity exchanges such as Bursa Malaysia Derivatives, the growth of FFB prices at the farm level is often constrained by fiscal policies, particularly export duties and export levies. Conversely, when global markets experience oversupply, environmental pressures or sudden changes in domestic regulations, price declines immediately and significantly affect oil palm farmers.

Under these circumstances, farmers become increasingly marginalised due to limited government support and inadequate access to markets and information. Consequently, production

efficiency, optimal income generation and overall welfare cannot be achieved effectively. Farmers therefore need to be equipped with knowledge and skills related to production management and collective marketing to strengthen their bargaining power and enhance their capacity to fulfil their socio-economic functions.

Riau Province possesses the largest oil palm plantation area in Indonesia. Nevertheless, farmers continue to face geographical challenges arising from diverse land typologies that include both wetland and dryland areas. Moreover, agricultural development policies have not been sufficiently inclusive to address the needs of all categories of oil palm farmers because the government remains primarily focused on achieving food self-sufficiency targets. Farmers expect that such initiatives will be accompanied by comprehensive improvements in their welfare, including higher incomes, better access to education and healthcare, adequate housing conditions, socio-cultural security and legal certainty regarding land ownership (Hendraloka et al., 2022).

These geographical constraints and the uneven implementation of agricultural policies have the potential to increase production costs while simultaneously reducing productivity and farmers' income, ultimately lowering their overall welfare.

Despite the growing body of literature on palm oil price transmission, trade policies and smallholder welfare, limited empirical evidence exists regarding the sensitivity of Fresh Fruit Bunch (FFB) prices to the proposed single-gate export policy for Indonesia's strategic natural resource commodities. Furthermore, little attention has been given to the different responses of scheme and independent smallholders, particularly non-partnered independent farmers, to policy-induced market volatility. This study addresses this gap by examining short-term FFB price dynamics and assessing the role of farmer institutions in mitigating the adverse effects of policy uncertainty on price stability and farmer welfare.

Therefore, the objective of this study is to examine the sustainability of smallholder oil palm plantations by analysing the price trends of Fresh Fruit Bunches (FFB) over the nine most recent pricing periods and to evaluate the socio-economic impacts on farmers as well as the sensitivity of these impacts to government policies (BPS Riau Province, 2025).

LITERATURE REVIEW

Oil Palm

Oil palm (*Elaeis guineensis*) is cultivated primarily to produce derivative products for downstream industries through the extraction of Crude Palm Oil (CPO) and Palm Kernel Oil (PKO), which serve as raw materials for vegetable oil industries, processed food products, cosmetics and biodiesel production (Faizal et al., 2018). Communities tend to prefer oil palm as a leading commodity compared with other crops because the oil palm industry generates a multiplier effect of 2.44, which is substantially higher than that of other agricultural commodities (Syahza & Nasrul,

2013). Most areas in Riau Province possess suitable conditions for the growth and development of oil palm. This crop can be successfully cultivated on various land typologies including both dryland and wetland areas (Mustofa, 2017).

Oil palm cultivation is a land-based farming system in which land functions as a critical production input. The quality and characteristics of the land must correspond to the requirements of the crop to facilitate the implementation of Good Agricultural Practices (GAP) by farmers (Ratmini, 2012). Land performs multiple functions including: (1) production functions; (2) biotic environmental functions; (3) climate regulation functions; (4) hydrological functions; (5) storage functions; (6) waste and pollution control functions; (7) living space functions; (8) heritage and conservation functions; and (9) spatial connectivity functions (Fabrikant et al., 2010).

From an economic perspective, land productivity depends largely on the characteristics of local agroecosystems and location-specific conditions (Bareille et al., 2020). Land area also determines the scale of operations, work organisation, technology utilisation, use of production factors and licensing requirements in oil palm farming (Pahan, 2012). Larger plantation areas influence the technical aspects of land clearing, planting, maintenance, harvesting, transportation and marketing systems, as well as output prices and productivity levels (Agustira et al., 2018). Consequently, land size plays an important role in determining output prices, which ultimately contribute to farmers' income and welfare (Syahza et al., 2020).

Sustainable Development

Sustainable development is defined as development that meets present needs without compromising the ability of future generations to meet their own needs (Brundtland Report, 1987). This principle requires a balance between economic growth, environmental protection and social justice. Within the context of the oil palm industry, sustainable development is implemented through the Indonesian Sustainable Palm Oil (ISPO) and the Roundtable on Sustainable Palm Oil (RSPO) certification systems, both of which require companies to comply with environmental, social and governance standards.

According to Rusianti and Sinaga (2025), the presence of oil palm companies can generate socio-economic benefits, including increased household income and infrastructure development. However, these benefits can only be sustained when accompanied by strong commitments to environmental protection. The implementation of sustainability principles in the oil palm sector also contributes to the achievement of the Sustainable Development Goals (SDGs), particularly Goal 12 on responsible consumption and production and Goal 13 on climate action (Honegger & Reiner, 2018).

Theoretical Framework

Price Transmission Theory

Price Transmission Theory explains how changes in prices at one level of the supply chain are transmitted to other market participants. In the palm oil industry, fluctuations in global Crude Palm Oil (CPO) prices and government policy interventions are eventually transmitted to Fresh Fruit Bunch (FFB) prices at the farm level. However, the transmission process is often asymmetric because farmers do not possess equal market power and access to market information. Consequently, independent smallholders are generally more vulnerable to adverse price movements than scheme smallholders who benefit from institutional support and contractual arrangements.

Institutional Economics Theory

Institutional Economics Theory emphasises the importance of institutions, rules and organisational arrangements in reducing market imperfections and transaction costs. In the context of the oil palm industry, farmer institutions and partnership arrangements play a significant role in strengthening bargaining power, improving market access and reducing farmers' exposure to price volatility. Strong institutional arrangements therefore contribute to greater income stability and improved welfare among smallholders.

Market Integration Theory

Market Integration Theory suggests that local and global markets are interconnected and that changes in international commodity prices and government policies may significantly influence domestic prices. Since Indonesia is one of the world's largest palm oil producers and exporters, policy changes affecting exports are expected to have direct implications for domestic FFB prices and smallholder incomes.

Land

Land is defined as a planting medium that encompasses all components above the earth's surface, including the biosphere, which supports human life (Ritohardoyo & Sadali, 2017) and other living organisms within ecological cycles (Muta' Ali et al., 2012). Land serves as a vital input in agricultural production and requires specific quality and land characteristics that are suitable for particular crops to facilitate the implementation of Good Agricultural Practices by farmers (Ratmini, 2012). Land performs multiple functions, namely: (1) production functions; (2) biotic environmental functions; (3) climate regulation functions; (4) hydrological functions; (5) storage functions; (6) waste and pollution control functions; (7) living space functions; (8) heritage and conservation functions; and (9) spatial connectivity functions (Mishra et al., 2020).

Land is generally classified into two major categories, namely dryland and wetland. Dryland is utilised for agricultural activities with limited water availability, whereas wetland possesses sufficient water resources and includes lowland and swamp ecosystems (Mustofa, 2017).

Oil palm is capable of adapting to various land typologies. Land typology significantly influences production factors, labour utilisation, capital requirements and management practices. In Riau Province, most dryland areas are classified as moderately suitable land (S2) with potential productivity ranging from 20 to 26 tonnes of FFB per hectare per year. In contrast, wetlands, particularly peatlands, are generally classified as marginally suitable (S3), depending on soil characteristics such as peat maturity, peat depth, drainage conditions, inundation levels and the presence of sulphidic or sandy substrates.

During the early development of the oil palm industry, plantations were generally established on dryland areas. However, as the industry expanded, oil palm cultivation gradually adapted to wetland conditions (Hamdan et al., 2000).

Dryland can be utilised either permanently or seasonally with water supplied through rainfall or irrigation systems. These areas are distributed across lowland regions ranging from 0 to 700 metres above sea level and highland regions exceeding 700 metres above sea level (Reibelt et al., 2019). Wetlands include swamps, brackish areas, peatlands and other natural or artificial water bodies where water may be flowing or stagnant and may be fresh, brackish or saline, including marine areas with depths not exceeding six metres during the lowest tidal conditions.

Price

Price refers to the amount of value that consumers are required to pay in a buying and selling transaction in exchange for the benefits derived from the products they choose and utilise (Maulida, 2021). Price is an important element in marketing strategy and must continuously interact with other components of the marketing mix to determine the effectiveness of each element and the overall marketing strategy (Purwanto & Watini, 2020).

The price of Fresh Fruit Bunches (FFB) is not determined by production costs. Instead, it depends primarily on the prices of Crude Palm Oil (CPO), Palm Kernel (PK) and Palm Kernel Shell (PKS). The purchase price of FFB for scheme smallholders is determined by the Head of the Provincial Plantation Office on behalf of the governor based on the calculation of the K-index, CPO extraction rate, PK extraction rate and the selling prices of CPO and PK (Ministry of Agriculture, 2024).

The determination of FFB prices aims to protect scheme smallholders by ensuring mutually beneficial prices, preventing unfair business competition and supporting the sustainability of the oil palm plantation industry (Mustofa & Bakce, 2024). The prices of CPO, PK and PKS are highly dependent on global market supply and demand as well as government policies.

Price Trend

In economics, a trend refers to the pattern of changes in the economic condition of a region, indicating whether the economy is moving towards growth, decline or stagnation. Such movements

are measured through medium-term and long-term fluctuations. Statistically, a trend is defined as a long-term movement pattern or directional tendency within a series of events based on time-series data after separating short-term fluctuations and seasonal variations (Syahza, 2021).

Price trends can be used to identify the support and resistance levels of a commodity before and after a particular event occurs. Support refers to a price level at which a downward trend tends to stop, pause or reverse into an upward movement. Resistance refers to a price level at which an upward trend tends to weaken and becomes difficult to surpass, causing prices to reverse downward (Salami & Haron, 2018).

Income

Income is defined as the difference between total revenue and total costs (Pahan, 2008, 2015). Income is influenced by productivity, namely the volume of Fresh Fruit Bunch (FFB) production, FFB prices and production costs. Productivity itself is influenced by land area, fruit quality, plantation location and supporting facilities and infrastructure. The production process requires careful cost allocation to ensure efficiency and to maximise profitability and economic welfare (Mustofa et al., 2022). The FFB market does not operate under conditions of perfect competition. The formation of international palm oil prices is influenced by several factors, particularly supply and demand conditions, substitute products and complementary products (Mustofa & Bakce, 2024).

According to the Minister of Agriculture Regulation No. 13 of 2025, FFB prices are determined based on the K-index, CPO extraction rate, PK extraction rate and the selling prices of CPO and PK. The prices of CPO and PK are highly dependent on three main factors, namely global market conditions, quality and technical considerations used to determine the K-index and government regulations or policies. Consequently, FFB prices are highly sensitive to increases in Export Levies (PE) and Export Duties (BK), as all associated costs, including commodity tax burdens, are transmitted regressively upstream to FFB producers.

Conceptual Framework

This study is based on the assumption that government policies affecting the palm oil industry influence global and domestic market conditions, which subsequently affect Fresh Fruit Bunch (FFB) prices at the farm level. The impacts of these price changes are transmitted to farmers' income and welfare. However, the extent of these effects differs according to the institutional arrangements of farmers. Scheme smallholders generally benefit from stronger institutional support and partnership mechanisms, whereas independent smallholders are more vulnerable to market fluctuations and policy uncertainty.

Accordingly, this study proposes that government policy serves as the primary external driver influencing FFB price movements, while farmer institutions function as a moderating mechanism that

reduces farmers' exposure to price volatility and contributes to the sustainability of smallholder oil palm plantations.

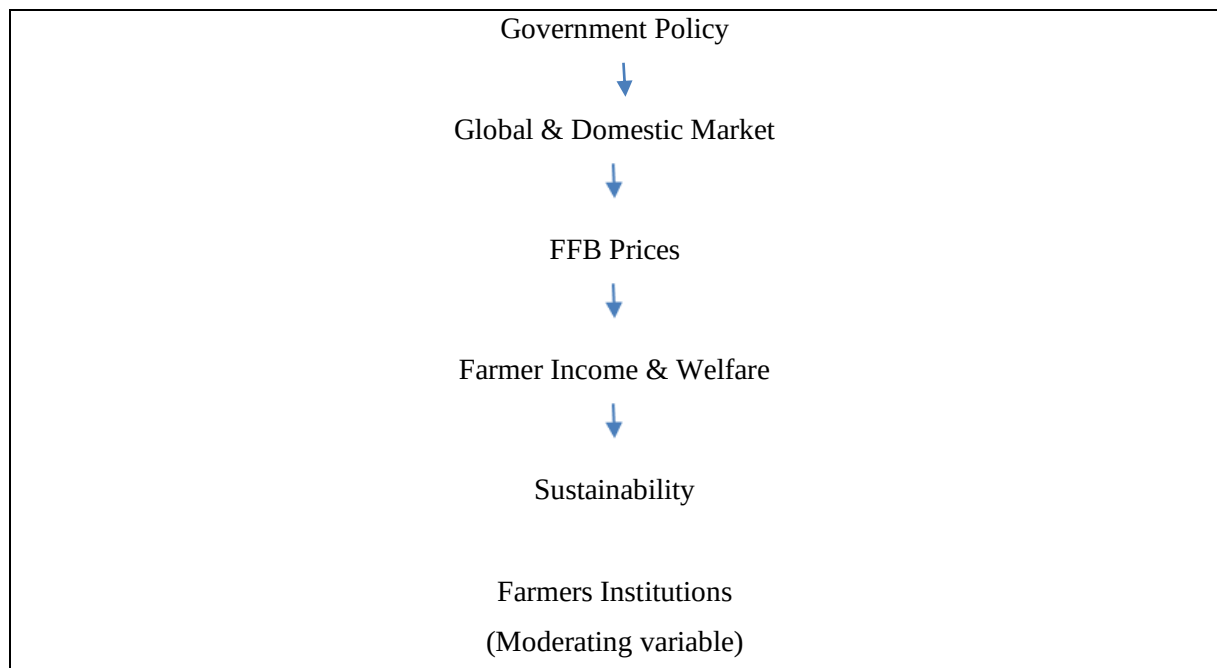


Figure 1. Conceptual Framework of the Study

METHODS

This study utilised both primary and secondary data sources. Primary data were collected directly by the researchers from all regions with oil palm plantation distributions through the Secretariat of the Indonesian Oil Palm Farmers Association (*Asosiasi Petani Kelapa Sawit Indonesia*). Secondary data were obtained from various sources accessed throughout the research period. The forecasting analysis employed time-series data covering the most recent two-month period during which Fresh Fruit Bunch (FFB) prices were determined on a weekly basis to identify the magnitude of price fluctuations resulting from the proposed policy intervention (Ministry of Agriculture, 2024).

This study employed a linear trend analysis using the Least Squares Method to model the relationship between the independent and dependent variables. A trend refers to a long-term upward or downward movement derived from the average changes observed over time. The data comprised five pricing periods in May and four pricing periods in June, resulting in a total of nine observation periods.

Trend analysis is a method used to identify patterns, movements and the direction of changes in data over time. In this study, trend analysis was applied to determine whether FFB prices experienced increases or decreases before and after the proposed implementation of a single-gate export policy for three strategic national natural resource commodities.

The determination of the trend using the Least Squares Method is represented by the following equation:

$$a = \frac{\sum Y}{n} \text{ and } b = \frac{\sum XY}{\sum X^2}$$

Where:

Y = observed time-series value

n = number of observation periods

X = coded time variable

RESULTS AND DISCUSSION

Government Policies

The oil palm industry has become one of Indonesia's strategic national commodities, directly employing approximately 2.4 million independent smallholders and indirectly supporting around 16 million workers. Consequently, any government initiative or policy intervention related to the governance of the sustainable oil palm industry has significant implications for the stability of Crude Palm Oil (CPO) prices in both global and domestic markets. Such policies may influence domestic supply availability and disrupt global supply chains. These changes directly affect Fresh Fruit Bunch (FFB) prices at the farm level, particularly among independent and non-partnered smallholders.

For farmers, any depreciation in FFB prices creates a domino effect on the allocation of expenditures for fertilisers, plantation maintenance and daily household expenses while simultaneously reducing farm profitability. Several government policies have demonstrated significant effects on FFB prices and the overall governance of the oil palm industry.

1. The implementation of Export Levies (PE) has been found to reduce Gross Domestic Product (GDP) across all oil palm agribusiness activities. An increase of 3% in export levies further depresses FFB prices, thereby reducing farmers' profits (Maswadi, 2012; Sirajudin, 2015).
2. The B20 biodiesel policy has contributed to higher FFB and domestic palm oil prices, resulting in improved welfare among oil palm farmers and plantation workers (Mustofa et al., 2018; Pangaribowo et al., 2021).
3. The implementation of the B30 biodiesel programme has generated savings of approximately IDR 30 trillion through reductions in diesel imports. However, both partnered and non-partnered farmers remain vulnerable to fluctuations in FFB prices (Hendraloka et al., 2022).
4. Tariff and non-tariff policies significantly influence Indonesia's palm oil exports. Tariffs, sanitary and phytosanitary (SPS) measures and economic distance exhibit negative relationships with export performance, whereas technical barriers to trade (TBT), gross domestic product, population size and prices show positive relationships. Therefore, Indonesian palm oil exports are strongly influenced by trade policies, the economic conditions of importing countries and cross-border trade barriers.

5. The proposed implementation of a single-gate export system for three strategic national natural resource commodities is expected to have important implications for the governance and pricing dynamics of the oil palm industry.

Fresh Fruit Bunch (FFB) Prices

The determination of FFB prices differs across oil palm-producing provinces and is generally conducted either on a weekly basis or every two weeks. Major oil palm-producing provinces with intensive trading activities, particularly those located within the RIMBA corridor (Riau, Jambi and West Sumatra) and North Sumatra, determine FFB prices on a weekly basis. In other provinces, prices are established in two periods each month, namely Period I (1–15) and Period II (16–30 or 31).

In this study, FFB prices were calculated using weekly observations. The average and comparative prices of scheme and independent smallholders during May and June 2026 were analysed to determine the prevailing price trends.

FFB prices across oil palm-producing provinces vary considerably depending on the determination of the K-index and the reference prices of CPO and Palm Kernel (PK). Several indicators are considered in the pricing process, including processing costs, marketing expenses, transportation costs to ports, factory depreciation and indirect operational costs.

Initially, Indonesia had 22 oil palm-producing provinces. This number has increased to 25 provinces following regional administrative expansion, particularly in Papua and West Papua. However, only eight provinces have enacted Governor Regulations (*Peraturan Gubernur* or *Pergub*) concerning FFB pricing mechanisms, namely North Sumatra, Riau, West Sumatra, Jambi, South Sumatra, Bengkulu, West Kalimantan and South Kalimantan.

FFB prices significantly influence farmers' purchasing capacity for production inputs. In most provinces, farm-gate FFB prices are generally lower than the official prices determined by provincial plantation agencies, although several provinces record farm-gate prices that exceed the official benchmark prices.

For partnered farmers, including both scheme and independent smallholders, the prices received generally correspond to those established by the Provincial Plantation Offices. The highest FFB price received by scheme smallholders was recorded in West Sumatra Province at IDR 4,015.40 per kilogram while the lowest price was recorded in Banten Province at IDR 2,400.00 per kilogram. Similarly, the highest FFB price received by partnered independent smallholders was recorded in West Sumatra at IDR 3,935.09 per kilogram and the lowest price was also recorded in Banten at IDR 2,400.00 per kilogram. These figures indicate a substantial price disparity between the two provinces.

In June 2026, the highest FFB price was recorded in North Sumatra Province at IDR 3,827.00 per kilogram while the lowest price remained in Banten Province at IDR 2,550.33 per kilogram. These findings indicate that scheme smallholders generally received higher prices than partnered

independent farmers. In contrast, non-partnered independent smallholders had not yet received the government-determined prices established through the provincial plantation agencies.

Based on the national aggregate averages, a deflationary trend or general decline in FFB prices occurred between May and June 2026 for both categories of farmers. The average price declined by IDR 134.17 per kilogram for scheme smallholders and by IDR 241.40 per kilogram for independent smallholders.

The sharper decline experienced by independent smallholders suggests that this group is more vulnerable to market uncertainty and policy-induced price volatility. Unlike scheme smallholders who benefit from institutional support and formal marketing arrangements, independent smallholders generally have limited bargaining power and weaker access to market information. This finding supports Institutional Economics Theory, which posits that strong institutional arrangements play a critical role in reducing market imperfections and enhancing farmers' resilience to external shocks.

Table 1
Comparison of Average Fresh Fruit Bunch (FFB) Prices in May and June 2026 across Oil Palm-
Producing Provinces in Indonesia

No	Province	Everage May			Everage June			Increase/ Decrease	
		Scheme	Independent	Difference	Scheme	Independent	Difference	Scheme	Independent
1	North Sumatra	3.777,40	3.701,48	75,92	3.827,00	3.786,18	40,82	49,60	84,70
2	West Sumatra	4.015,40	3.935,09	80,31	3.776,00	3.643,65	132,35	-239,40	-291,44
3	Riau	3.895,60	3.817,66	77,94	3.795,00	3.453,45	341,55	-100,60	-364,21
4	Jambi	3.755,60	3.680,48	75,12	3.738,00	3.438,72	299,28	-17,60	-241,76
5	Papua	3.577,20	-	3.577,20	3.691,67	-	3.691,67	114,47	-
6	South Sumatera	3.949,60	3.898,22	51,38	3.615,67	3.597,22	18,45	-333,93	-301,00
7	Kalimantan Tengah	3.742,40	3.667,35	75,05	3.566,67	3.245,62	321,05	-175,73	-421,73
8	Bangka Belitung	3.844,00	3.824,40	19,60	3.571,67	3.168,60	403,07	-272,33	-655,80
9	Aceh	3.739,20	3.664,40	74,80	3.473,67	3.191,56	282,11	-265,53	-472,84
10	South Kalimantan	3.833,20	3.829,37	3,83	3.521,00	3.278,70	242,30	-312,20	-550,67
11	West Kalimantan	3.607,80	3.535,24	72,56	3.359,67	3.278,48	81,19	-248,13	-256,76
12	East Kalimantan	3.599,40	3.534,42	64,98	3.486,67	3.382,06	104,61	-112,73	-152,36
13	North Kalimantan	3.489,40	3.419,44	69,96	3.360,33	3.259,40	100,93	-129,07	-160,04
14	Bengkulu	3.473,00	3.438,27	34,73	3.342,67	3.295,30	47,37	-130,33	-142,97
15	Sulawesi Tengah	3.474,00	3.435,42	38,58	3.284,33	3.255,20	29,13	-189,67	-180,22
16	Lampung	3.448,60	3.445,15	3,45	3.236,67	3.165,80	70,87	-211,93	-279,35
17	West Papua	3.120,60	-	3.120,60	3.228,00	-	3.228,00	107,40	-
18	Southeast Sulawesi	3.182,00	3.118,36	63,64	3.182,00	3.086,52	95,48	-	- 31,84
19	West Sulawesi	3.443,80	3.374,46	69,34	3.164,00	3.069,04	94,96	-279,80	- 305,42
20	Gorontalo	3.138,60	-	3.138,60	3.145,00	-	3.145,00	6,40	-
21	South Sulawesi	2.837,80	2.807,42	30,38	2.879,33	2.794,45	84,88	41,53	- 12,97
22	Banten	2.400,00	2.400,00	-	2.550,33	2.550,00	0,33	150,33	150,00
Everage		3.515,66	3.501,40	14,26	3.399,79	3.260,00	139,79	-134,17	-241,40

The proposed single-gate export policy for three strategic national natural resource commodities, namely coal, palm oil (CPO and its derivative products) and ferroalloys, has widened the price gap between scheme smallholders and partnered independent smallholders. In May, the price differential between the two groups was IDR 14.26 per kilogram, which subsequently increased substantially to IDR 139.79 per kilogram in June. Although the national trend indicates an overall decline in FFB prices, several provinces experienced anomalous price increases, particularly North Sumatra, Papua, West Papua, Gorontalo, South Sulawesi and Banten Province. These findings suggest that partnership arrangements involving scheme smallholders and partnered independent smallholders are relatively effective in mitigating extreme price declines compared with non-partnered independent smallholders (Martel et al., 2019).

Global market dynamics further indicate that the major production regions, particularly the Riau-Jambi-West Sumatra Corridor, play a crucial role in domestic price formation. West Sumatra emerged as the leading province in establishing the highest partnership-based FFB price in the country at IDR 4,015.40 per kilogram, reflecting efficient marketing systems and a high level of industry compliance with provincial pricing regulations. Government policies affect scheme and independent smallholders differently. Scheme smallholders, who maintain formal contractual relationships with plantation companies, are relatively more protected because the prices they receive are regulated by the respective Provincial Plantation Offices. In addition, palm oil mills are required to prioritise the purchase of FFB produced by their partner farmers. In contrast, independent smallholders are directly exposed to free-market mechanisms and intermediary traders or first-level collectors (Salami & Haron, 2018). Consequently, they are often compelled to sell their FFB at prices substantially below the government-determined benchmark prices to ensure that their produce remains marketable (Mustofa et al., 2024).

Trend of FFB Prices among Scheme Smallholders

The estimation of the linear price trend using the Ordinary Least Squares (OLS) method for scheme smallholders' FFB prices over the nine-week observation period from 27 April to 28 June 2026 produced an intercept value ((a)) of 3,465.85 and a trend slope coefficient ((b)) of -338.89. These findings indicate a negative relationship between the observed prices (Y) and the projected trend values (Y). The resulting market dynamics can be divided into two distinct clusters or periods.

During the first four weeks, spanning late April to mid-May, actual prices fluctuated within a narrow range of 3,525.09 to 3,537.73 and remained below the projected trend line, indicating a degree of resilience or apparent price stability in the market. However, a substantial deviation emerged during the fifth week (25-31 May), when the equilibrium point shifted and the downward momentum accelerated sharply in accordance with the negative trend slope.

This condition was primarily driven by price fluctuations associated with a market shock that occurred during the middle of the observation period. Such shocks proved difficult to manage by both

government authorities and market participants and subsequently triggered a structural weakening of prices during the following weeks and pricing periods.

The observed market response indicates that policy announcements and external market shocks are rapidly transmitted to farm-gate prices. This finding is consistent with Price Transmission Theory, which suggests that changes in market conditions and policy interventions are often transmitted asymmetrically across the supply chain. Consequently, even policy proposals that have not yet been fully implemented may generate uncertainty and trigger immediate adjustments in commodity prices.

Table 2

Predicted Trend of Fresh Fruit Bunch (FFB) Prices for Scheme Smallholders during the Period of 27 April–28 June 2026

No	Period	Price (Y)	Th Code (X)	YX	X2	Trend
1	27 Apr-03 May	3.525,09	-4	- 14.100,36	16,00	4.821,40
2	04-10 May	3.532,82	-3	- 10.598,45	9,00	4.482,52
3	11-17 May	3.537,73	-2	- 7.075,45	4,00	4.143,63
4	18-24 May	3.527,64	-1	- 3.527,64	1,00	3.804,74
5	25-31 May	3.455,05	0	-	-	3.465,85
6	01-07 June	3.415,91	1	3.415,91	1,00	3.126,97
7	08-14 June	3.375,41	2	6.750,82	4,00	2.788,08
8	15-21 June	3.408,05	3	10.224,14	9,00	2.449,19
9	22-28 June	3.415,00	4	13.660,00	16,00	2.110,30
		3.465,85		- 14.911,05	44,00	

Statistically, the estimated trend equation for scheme smallholders' FFB prices, ($Y = 3,465.85 - 338.89X$), demonstrates a negative correlation or an inverse relationship between the independent variable ((X)) and the dependent variable ((Y)). The intercept value (($a = 3,465.85$)) represents the equilibrium point under the initial condition (($X = 0$)), at which the expected FFB price is estimated at IDR 3,465.85 per kilogram.

Empirically, this equilibrium point corresponds to the fifth observation period (25-31 May 2026), which coincided with the government's proposal to implement a single-gate export policy for three strategic national natural resource commodities. The policy announcement triggered fluctuations in FFB prices during the subsequent periods. Under the *ceteris paribus* assumption, FFB prices are projected to continue following a downward trend, as indicated by the negative slope coefficient ($b = - 338.89$).

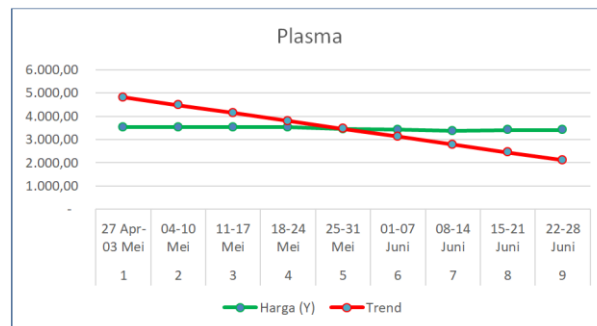


Figure 1. Factual and Predicted Trends in FFB process for scheme smallholders.

The figure above shows that the movement of FFB prices among scheme smallholders was relatively stable, where the trend line and the actual price curve intersected precisely at approximately IDR 3,465.85 per kilogram, indicating the attainment of an equilibrium point between the mathematical predictive model and actual market prices. Entering June, the trend line declined sharply and reached its lowest point of IDR 2,110.29 per kilogram during the ninth period (22-28 June). In contrast, actual market prices exhibited strong resistance or price rigidity and remained consistently at approximately IDR 3,400.00 per kilogram. This suggests that real price stability would be maintained at the end of the observation period and indicates the presence of dominant external factors affecting market prices, particularly government regulations governing domestic and global markets (Pangaribowo et al., 2021).

Trend of FFB Process among independent Smallholders

The estimation of price movements using the Ordinary Least Squares (OLS) approach over the nine-week observation period (27 April-28 June 2026) was formulated by the equation ($Y = 3,394.11 - 36.42X$). The model indicates a negative correlation between the observed prices (Y) and the projected trend values (Y). The intercept value ($a = 3,394.11$) represents the estimated price of IDR 3,394.11 per kilogram during the base period ($(X = 0)$), which corresponds to the period of 25-31 May. Meanwhile, the negative slope coefficient ($(b = -36.42)$) confirms the existence of a downward trend throughout the observation period. This finding implies that each additional week is associated with an average price decline of IDR 36.42 per kilogram.

Table 3

Predicted Trend of Fresh fruit Bunch (FFB) Prices for Independent Smallholders during the Period of 27 April- 28June 2026

No	Period	Price (Y)	Th Code (X)	YX	X2	Trend
1	27 Apr-03 May	3.529,00	-4	- 14.116,00	16,00	3.539,78
2	04-10 May	3.555,00	-3	- 10.665,00	9,00	3.503,36
3	11-17 May	3.507,00	-2	- 7.014,00	4,00	3.466,94
4	18-24 May	3.532,00	-1	- 3.532,00	1,00	3.430,53
5	25-31 May	3.384,00	0	-	-	3.394,11
6	01-07 June	2.983,00	1	2.983,00	1,00	3.357,69

No	Period	Price (Y)	Th Code (X)	YX	X2	Trend
7	08-14 June	3.349,00	2	6.698,00	4,00	3.321,28
8	15-21 June	3.371,00	3	10.113,00	9,00	3.284,86
9	22-28 June	3.337,00	4	13.348,00	16,00	3.248,44
		3.394,11		- 2.185,00	60,00	

Based on the comparison between the actual prices ((Y)) and the predicted trend values, FFB prices during the first four observation periods fluctuated within the range of IDR 3,507.00 to IDR 3,555.00 per kilogram, with values that were close to or slightly below the trend line. The most substantial price decline was recorded during Period 6 (1-7 June), when prices fell sharply to their lowest level of IDR 2,983.00 per kilogram, deviating considerably from the predicted trend value of IDR 3,357.69 per kilogram.

This condition is presumed to be the result of a market shock or external pressures that occurred during the first week of June. Although a price recovery or rebound was observed during Periods 7 to 9, with prices ranging from IDR 3,337.00 to IDR 3,371.00 per kilogram, the overall linear model still projects a long-term contraction. Under the *ceteris paribus* assumption, the price trend continued to decline from IDR 3,539.78 per kilogram at the beginning of the observation period to IDR 3,248.44 per kilogram at the end of the study period.

The relatively larger fluctuations observed among independent smallholders indicate their greater exposure to market risks and policy uncertainty. The absence of formal contractual arrangements and limited institutional support reduce their ability to withstand adverse price movements. This evidence further reinforces the argument that farmer institutions and partnership schemes play a crucial role in enhancing market resilience and stabilising smallholder incomes.

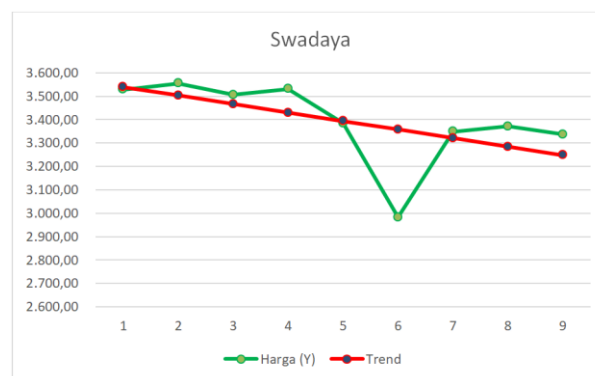


Figure 2. Factual and Predicted Trends in Fresh Fruit Bunch (FFB) Prices for Independent Smallholders.

Price Sensitivity to the Proposed Government Policy

The results demonstrate that FFB prices are highly sensitive to the proposed single-gate export policy. This is evidenced by the equilibrium point (the initial condition where $(X = 0)$) in both regression models for scheme and independent smallholders, which precisely corresponds to the

period of 25-31 May. This point represents a turning point or the onset of market turbulence that coincided directly with the announcement of the proposed single-gate export policy for strategic natural resource commodities.

These findings indicate that the market and FFB prices are highly sensitive to such macroeconomic policy issues. The price trends for both scheme and independent smallholders reveal that the Ordinary Least Squares (OLS) models consistently demonstrate a downward trend following the policy announcement, as reflected by the negative correlations observed in both groups of farmers.

1. Scheme smallholders experienced a substantial projected price decline of IDR 338.89 per kilogram, as indicated by the slope coefficient of ($b = -338.89$).
2. Independent smallholders experienced a more gradual but persistent projected decline, averaging IDR 36.42 per kilogram per week, as indicated by the slope coefficient of ($b = -36.42$).

The projected decline in FFB prices is expected to affect the sustainability of farmers' welfare. The continuing negative trends under the *ceteris paribus* assumption indicate a significant reduction in farmers' income margins. A decline in farmers' purchasing power has the potential to disrupt household economic welfare among oil palm producers. The persistent downward price trend from the equilibrium points of IDR 3,465.85 for scheme smallholders and IDR 3,394.11 for independent smallholders poses a direct threat to the operational sustainability of oil palm plantations. Reduced revenues will make it increasingly difficult for farmers to finance plantation maintenance activities such as fertiliser application and field management, which may ultimately reduce the long-term productivity of smallholder oil palm plantations.

Policy Implications

The results from both models indicate that institutional arrangements among scheme and partnered farmers provide greater resilience against fluctuations in global CPO prices. In contrast, the absence of institutional support places independent smallholders in a vulnerable position with respect to global market volatility and exploitative practices within the supply chain.

Therefore, strategic policy interventions are required to strengthen farmers' bargaining power. These interventions may include farmer corporatisation, the strengthening of cooperative-based economic institutions and the acceleration of strategic partnerships between independent smallholders and palm oil mills.

Agronomic conditions, particularly productivity and FFB quality, are major determinants of price disparities. Scheme smallholders who implement Good Agricultural Practices (GAP) through the support of nucleus companies, the use of certified planting materials and standardised harvesting management are better able to ensure stable oil extraction rates. Conversely, palm oil mills tend to adopt risk-averse pricing strategies toward independent smallholders by offering lower base prices and imposing stricter grading deductions (Koczberski & Curry, 2003). Such practices are

implemented as compensation for uncertainties related to fruit quality, the use of uncertified planting materials and inadequate standards of fruit maturity.

CONCLUSION

This study concludes that government policies are highly sensitive and have significant implications for disparities in Fresh Fruit Bunch (FFB) prices, particularly among non-partnered independent smallholders who lack institutional support and bargaining power. Farmer institutions and partnership arrangements serve as important protective mechanisms for maintaining price stability.

The observed market prices reveal substantial fluctuations among independent smallholders, while the predicted price trends indicate a negative response to policy interventions. These findings suggest that independent smallholders are more vulnerable to policy uncertainty and market shocks than scheme smallholders, thereby highlighting the importance of strengthening farmer institutions and promoting inclusive partnership mechanisms to enhance the sustainability and welfare of oil palm smallholders.

This study contributes to the literature on agricultural price transmission by demonstrating that farmer institutions serve as an important mechanism for mitigating policy-induced market volatility. Future studies should employ longer time-series data and more advanced econometric approaches to provide a more comprehensive understanding of the long-term effects of government policies on smallholder welfare.

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