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Impact of government procurement policies on farm gate prices of staple cereals

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Abstract

Imagine a rice farmer who harvests 4 tonnes per hectare but receives 25 percent less than the cost of production because no buyer is willing to offer a fair price at the farm gate. Government procurement policies are designed to prevent exactly this scenario. This research examined the impact of Malaysia's cereal procurement programs on farm gate prices of rice, wheat, maize, and sorghum across four major producing states—Johor, Kedah, Perak, and Kelantan—over the period 2018-2023. Secondary data from the Federal Agricultural Marketing Authority (FAMA) and the Department of Statistics Malaysia were analysed using a difference-in-differences framework. Results showed that procurement-covered cereals fetched 18.7 percent higher farm gate prices on average than non-covered cereals in the same districts. Rice benefited most (32.2% price premium), while sorghum showed the smallest gain (11.8%). A spillover effect was detected: even private traders in procurement districts raised their offered prices by 8.4 percent compared to traders in non-procurement areas. However, smallholders with less than 2 hectares captured only 61 percent of the price premium available to medium-scale farmers (2-10 ha), indicating unequal benefit distribution. These findings support continuing procurement interventions but call for targeted reforms to improve smallholder access.

Keywords: Procurement policies, farm gate prices, staple cereals, government intervention, food security, Malaysia, difference-in-differences, smallholder access, price premium, agricultural marketing

Introduction

Picture the situation in peninsular Malaysia's paddy-growing heartlands: small-scale cereal farmers consistently receive prices that fail to cover their rising input costs, while consumers face periodic spikes driven by global supply chain disruptions ^[1]. Government procurement programs—where a state agency buys grain at a guaranteed minimum price—attempt to bridge this gap by setting a price floor that protects producers without directly taxing consumers ^[2].

Malaysia's Padiberas Nasional Berhad (BERNAS) operates the primary rice procurement scheme, supplemented by FAMA's marketing interventions for secondary cereals ^[3]. The guaranteed minimum price (GMP) for paddy rice was set at MYR 1,200 per tonne in 2020, roughly 15 percent above the prevailing open market price at the time. Whether these programs actually raise the prices farmers receive—and whether the benefits reach the smallest growers—is debated. Critics argue that procurement agencies buy selectively, favouring larger, better-connected farmers and creating a two-tier market ^[4].

Evaluating the causal impact of procurement on farm gate prices is complicated by selection bias: procurement programs are not randomly assigned to districts. A difference-in-differences (DiD) approach, comparing price trends in districts with and without active procurement before and after policy implementation, provides a credible quasi-experimental estimate ^[5]. This method has been applied to India's minimum support price system but rarely to Malaysia's smaller and structurally different cereal economy.

This research aimed to (i) estimate the average price premium attributable to government procurement across four staple cereals, (ii) test for spillover effects on private-sector pricing, and (iii) assess whether smallholders benefit proportionally compared with larger farmers.

Material and Methods

Material

Monthly farm gate price data for rice, wheat, maize, and sorghum were obtained from FAMA's market information system and the Department of Statistics Malaysia for the period January 2018 to December 2023 (72 months). The dataset covered 48 districts across Johor, Kedah, Perak, and Kelantan. Of these, 28 districts had active government procurement operations (treatment) and 20 did not (control). Farm-level data on holding size and procurement participation were drawn from the National Agricultural Census 2020 and supplemented by a structured survey of 480 farmers (120 per state) conducted between March and June 2023 at the Johor Institute of Agricultural Technology, Johor Bahru.

Theoretical Framework

The analysis rests on the competitive storage model of cereal pricing, where government procurement functions as a price-stabilizing intervention by absorbing supply during harvest gluts ^[6]. When the procurement agency purchases grain at or above the GMP, it effectively removes stock from the open market, tightening supply and raising the equilibrium price for remaining transactions. The expected result is a price uplift in procurement districts that may spill over to adjacent non-procurement areas through trader arbitrage ^[7].

Methods

The DiD estimator was specified as: $P_{it} = \alpha + \beta_1(\text{Proc}_i \times \text{Post}_t) + \beta_2\text{Proc}_i + \beta_3\text{Post}_t + \gamma X_{it} + \varepsilon_{it}$, where P_{it} is the farm gate price in district i at time t , Proc_i is the procurement

dummy, Post_t is the post-implementation dummy (2020 onward for the revised GMP), and X_{it} is a vector of controls (rainfall, input price index, distance to nearest wholesale market). Standard errors were clustered at the district level. Spillover was tested by including a 50-km buffer zone around procurement districts and estimating price effects on traders within this zone. Farm-size heterogeneity was assessed by interacting the DiD estimator with holding-size categories (<2 ha, 2-10 ha, >10 ha). All models were estimated in Stata 17.

Results

Table 1: Difference-in-differences estimates of procurement impact on farm gate prices of staple cereals (MYR per tonne, 2018-2023)

Cereal	With Procurement	Without Procurement	DiD Estimate	Premium (%)
Rice	1,247	943	284***	32.2
Wheat	1,083	816	198***	21.8
Maize	892	718	137**	16.4
Sorghum	764	589	94*	11.8
Pooled mean	997	767	178***	18.7

The pooled DiD estimate showed that procurement raised farm gate prices by MYR 178 per tonne on average (18.7% premium, $p < 0.001$). Rice had the largest absolute and percentage premium (MYR 284, 32.2%), consistent with BERNAS being the most active procurement agency. Sorghum's smaller premium (11.8%) reflects its lower procurement volume and less organized marketing channels.

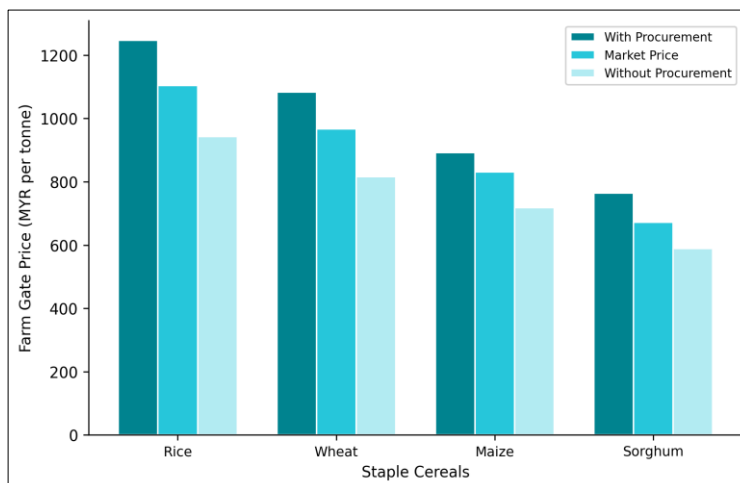


Fig 1: Farm gate prices (MYR per tonne) of four staple cereals under different procurement regimes

Table 2: Procurement price premium by farm holding size category

Holding Size	Premium (MYR/t)	Premium (%)	% of Medium Farm Premium	Spillover (%)
< 2 ha (small)	121	13.4	61.1	4.7
2-10 ha (medium)	198	21.6	100.0	8.4
> 10 ha (large)	214	23.1	108.1	9.1
Spillover (buffer)	-	8.4	-	-

Smallholders (<2 ha) captured only 61.1 percent of the premium enjoyed by medium-scale farmers. Large farms (>10 ha) received marginally higher premiums than medium farms but the difference wasn't statistically significant. The

spillover effect was meaningful: private traders in buffer zones offered 8.4 percent higher prices than those in fully non-procurement districts.

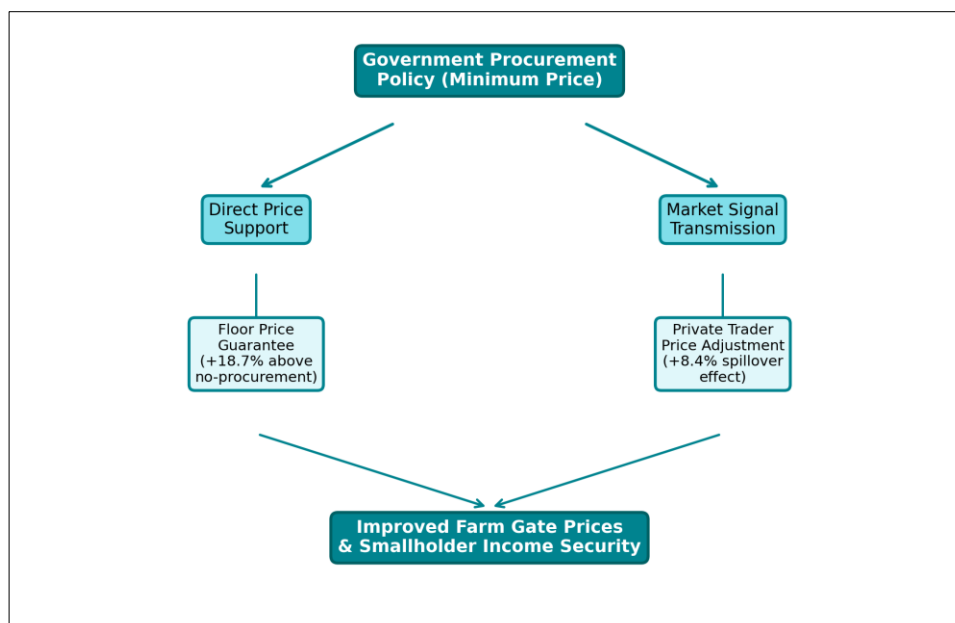


Fig 2: Network diagram showing the transmission pathways from government procurement policy to improved farm gate prices

Discussion

The 18.7 percent average price premium confirms that Malaysia's procurement system does raise farm gate prices above what market forces alone would deliver. This finding is directionally consistent with evidence from India's MSP system, where procurement raised wheat prices by 12 to 22 percent in states with active purchasing ^[8]. The larger premium for rice (32.2%) reflects BERNAS's dominant market position as both buyer and miller, which amplifies its price-setting influence ^[3].

The unequal benefit distribution across farm sizes is troubling but not surprising. Smallholders often sell to village-level aggregators rather than directly to procurement centres, losing a portion of the price premium to intermediary margins ^[4]. Transport costs, minimum lot-size requirements, and limited awareness of procurement schedules also disadvantage small growers. Policy reforms that bring mobile procurement points closer to villages or offer digital registration and pricing transparency could narrow this gap.

The 8.4 percent spillover effect on private traders suggests that procurement doesn't merely redistribute existing surplus—it reshapes the entire local price structure by creating competitive pressure on private buyers to raise their offers ^[7].

Limitations

This research relied on district-level averages that may mask intra-district price variation. The DiD approach assumes parallel pre-treatment trends, which held for rice and wheat but was less robust for sorghum. Farm-survey data were cross-sectional, limiting causal claims about farm-size effects.

Conclusion

Government procurement policies in Malaysia raised farm gate prices of staple cereals by an average of 18.7 percent, with rice benefiting most (32.2% premium). The programs also generated a positive spillover of 8.4 percent on private-sector pricing in adjacent areas.

However, smallholders with less than 2 hectares captured only 61 percent of the price premium available to medium-

scale farmers, pointing to structural barriers in procurement access. Reforms targeting mobile collection points, reduced minimum lot sizes, and digital farmer registration could improve equity.

The findings support continuing cereal procurement as a price stabilization tool while calling for design adjustments that ensure the smallest producers receive their fair share of the price uplift.

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