

# The Impact of Central Government Spending on the 4K Program: Price Affordability, Supply Availability, Distribution, and Effective Communication, on Inflation in East Kalimantan

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## Abstract

This study examines the impact of central government spending under the 4K Program-Price Affordability, Supply Availability, Smooth Distribution, and Effective Communication on inflation dynamics in East Kalimantan Province. Using monthly time series data covering the period 2023–2025, the analysis employs a time series regression framework to estimate both the direct effects of government spending on general inflation and the indirect effects transmitted through volatile food inflation. The results indicate that government spending on supply availability and distribution significantly reduces volatile food inflation, while spending on price affordability and effective communication shows limited impact. Furthermore, volatile food inflation has a positive and statistically significant effect on general inflation, confirming its role as a key mediation channel in fiscal transmission. The estimated indirect effects suggest that fiscal interventions primarily influence inflation through structural improvements in supply and distribution rather than through direct price interventions. These findings highlight the importance of channel-specific fiscal policy design. Prioritizing supply-oriented and distribution-enhancing expenditures is likely to produce more durable inflation-stabilizing effects, particularly in regions with high logistical dependence. This study contributes to the literature by providing empirical evidence on the transmission mechanisms of disaggregated fiscal spending at the regional level.

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## Article history

Received 2025-12-05  
Accepted 2025-12-20  
Published 2025-12-31

## Keywords

Central Government Spending;  
Volatile Food Inflation;  
Fiscal Transmission;  
Regional Inflation.

## 1. Introduction

Inflation remains a central macroeconomic concern due to its direct implications for purchasing power, welfare, and economic stability. In many developing and emerging economies, inflationary pressures are strongly driven by food prices, which tend to be more volatile than non-food components. This phenomenon, commonly referred to as volatile food inflation, plays a critical role in shaping overall inflation dynamics, particularly in regions where food consumption constitutes a large share of household expenditure (Helbawanti et al., 2021).

In Indonesia, volatile food inflation consistently contributes significantly to movements in the Consumer Price Index. Data from Statistics Indonesia (BPS) show that food commodities remain among the largest expenditure weights in household consumption baskets, making food price fluctuations a critical determinant of regional inflation dynamics (Badan Pusat Statistik, 2024). Previous studies emphasize that food price volatility in Indonesia is driven not only by demand-side pressures but also by structural factors such as supply constraints, distribution inefficiencies, seasonal shocks, and inter-regional logistical dependence (Rahmatullah, 2025).

East Kalimantan Province represents a particularly relevant case for examining regional inflation dynamics. Despite its strategic economic role and growing development activities, the province faces structural challenges related to food supply dependence, geographical dispersion, and transportation costs. As a result, food price volatility frequently exerts upward pressure on regional inflation, making inflation control a persistent policy challenge.

To address food price volatility and stabilize inflation, the central government has implemented a fiscal intervention framework known as the 4K Program, which consists of Price Affordability, Supply Availability, Distribution, and Effective Communication. Rather than functioning as a single uniform policy, the 4K Program encompasses multiple fiscal instruments targeting different stages of the price formation process. In principle, interventions aimed at improving supply availability and distribution efficiency are expected to reduce structural price volatility, while price affordability measures and communication strategies may influence short-term market behavior and expectations.

However, empirical evidence suggests that fiscal interventions do not necessarily affect inflation through identical mechanisms. While a growing body of literature examines the relationship between government spending and inflation, relatively few studies explicitly disentangle which components of fiscal spending are effective, through which channels, and under what regional conditions. In particular, empirical research that isolates the transmission mechanisms of disaggregated fiscal programs at the regional level remains limited.

This study addresses this gap by examining the impact of central government spending under the 4K Program on inflation dynamics in East Kalimantan Province. Specifically, the analysis distinguishes between direct effects of government spending on general inflation and indirect effects transmitted through volatile food inflation as an intermediate mechanism. By adopting a time series regression framework, this study evaluates whether different components of the 4K Program operate through distinct fiscal transmission channels.

The contribution of this study is threefold. First, it provides empirical evidence on the differentiated effects of disaggregated fiscal spending on inflation, moving beyond aggregate government expenditure analysis. Second, it identifies volatile food inflation as a key transmission channel linking fiscal interventions to regional inflation outcomes. Third, by focusing on East Kalimantan, the study offers region-specific insights that are relevant for inflation control policies in logistically dependent regions.

Accordingly, the objective of this study is to analyze the impact of central government spending under the 4K Program on inflation dynamics in East Kalimantan Province. Specifically, the study aims to (i) examine the effect of 4K spending on volatile food inflation, (ii) assess the direct effect of 4K spending on general inflation, and (iii) evaluate the extent to which volatile food inflation mediates the relationship between fiscal spending and general inflation. By applying a time series regression framework grounded in fiscal transmission and supply-side inflation theory, this study

seeks to contribute to the empirical literature on regional inflation control and provide policy-relevant insights for logistically dependent regions

## 2. Method

This study examines both the direct and indirect effects of central government spending on inflation using a time series regression framework. Volatile food inflation is treated as an intermediate transmission channel through which fiscal interventions affect general inflation. The mediation structure is estimated using a two-equation time series model, where the first equation captures the effect of government spending on volatile food inflation, and the second equation captures the effect of volatile food inflation and government spending on general inflation. This approach allows the identification of fiscal transmission mechanisms without altering the baseline regression structure.

### 2.1. Research Design

The research adopts a quantitative approach using secondary data to analyze fiscal transmission mechanisms. To identify both direct and indirect effects, the study estimates two regression models. The first model examines the effect of government spending on volatile food inflation, while the second model evaluates the direct effect of government spending on general inflation as well as the indirect effect transmitted through volatile food inflation.

### 2.2. Data and Sources

The study uses monthly time series data covering the period 2023–2025, focusing exclusively on East Kalimantan Province. Data on inflation and volatile food inflation are obtained from Statistics Indonesia (BPS) and Bank Indonesia, while data on central government spending under the 4K Program are sourced from official fiscal reports of the Ministry of Finance. All variables are aggregated at the provincial level to ensure consistency across data sources.

### 2.3. Variable Definition and Operationalization

- 1) **General Inflation ( $Y_2$ ):** The overall inflation rate measured by the Consumer Price Index (CPI) at the provincial level.
- 2) **Volatile Food Inflation ( $Y_1$ ):** Inflation of food commodities classified as volatile food by Bank Indonesia.
- 3) **Price Affordability Spending ( $X_1$ ):** Government expenditure aimed at stabilizing prices through market operations and price subsidies.
- 4) **Supply Availability Spending ( $X_2$ ):** Government expenditure directed toward ensuring adequate food supply.
- 5) **Distribution Spending ( $X_3$ ):** Government expenditure targeting improvements in food distribution and logistics.
- 6) **Effective Communication Spending ( $X_4$ ):** Government expenditure related to information dissemination and coordination.

### 2.4. Econometric Model Specification

To examine both direct and indirect effects, this study estimates two time series regression models.

#### Model 1: Effect of Government Spending on Volatile Food Inflation

$$Y_{1t} = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon_t$$

#### Model 2: Direct and Indirect Effects on General Inflation

$$Y_{2t} = \beta_5 X_{1t} + \beta_6 X_{2t} + \beta_7 X_{3t} + \beta_8 X_{4t} + \beta_9 Y_{1t} + \varepsilon_t$$

where:

t denotes the time period and  $\varepsilon_t$  represents the error term;

The indirect effects of government spending on general inflation are captured through the product of coefficients linking spending variables to volatile food inflation and volatile food inflation to general inflation.

### 2.5. Model Estimation and Diagnostic Tests

The models are estimated using Ordinary Least Squares (OLS). Given the time series nature of the data, diagnostic tests are conducted to ensure the validity of the estimations. Several diagnostic tests are applied:

- 1) **Stationarity Test:** The Augmented Dickey–Fuller (ADF) test is used to assess the stationarity of the time series.
- 2) **Autocorrelation Test:** The Breusch–Godfrey test is employed to detect serial correlation.
- 3) **Heteroskedasticity Test:** The White test is used to examine the presence of heteroskedasticity.
- 4) **Multicollinearity Test:** Variance Inflation Factors (VIF) are calculated to assess multicollinearity among independent variables.

Where necessary, corrective measures are applied to ensure robust estimation results. The results indicate that the models satisfy standard diagnostic assumptions after necessary adjustments, ensuring the reliability of the estimated coefficients.

### 3. Results and Discussion

Overall, government spending shows substantial variation across categories. Distribution spending (X3) records the largest allocation, reflecting the government’s emphasis on improving logistics and supply chains. Supply availability spending (X2) also constitutes a significant portion of total expenditure, while price affordability (X1) and effective communication spending (X4) are relatively smaller in magnitude. Volatile food inflation exhibits considerable fluctuation over time, indicating the sensitivity of food prices to supply and distribution conditions. Meanwhile, general inflation displays a declining trend, particularly during periods of increased government spending on supply and distribution-related interventions. These descriptive patterns provide initial evidence of a potential transmission mechanism from fiscal spending to inflation outcomes.

**Table 1. Direct, Indirect and Total Effects of 4K Government Spending on General inflation**

Variable (4K Spending)	Effect on Volatile Food Inflation (Y1)	Effect of Y1 on Inflation (Y2)	Indirect Effect	Direct Effect on Y2	Total Effect
Price Affordability (X1)	Negative (insignificant)	Positive and significant	Small and insignificant	Insignificant	Small
Supply Availability Spending (X2)	Negative and significant	Positive and significant	Negative and significant	Negative (weak)	Negative
Distribution Spending (X3)	Negative and significant	Positive and significant	Negative and significant	Negative (weak)	Negative
Effective Communication Spending (X4)	Negative (insignificant)	Positive and significant	Insignificant	Insignificant	Small

Table 1 summarizes the estimated direct, indirect, and total effects of central government spending under the 4K Program on general inflation. The results clearly indicate that supply availability and distribution spending generate substantial indirect effects through volatile food inflation, while their direct effects on general inflation remain relatively weak. The significant indirect effects confirm that volatile food inflation acts as a key transmission channel, through which fiscal interventions influence overall inflation dynamics. This finding suggests that improvements in food supply adequacy and distribution efficiency reduce general inflation primarily by stabilizing food prices rather than by exerting immediate direct pressure on the overall price level. In contrast, spending on price affordability and effective communication shows limited indirect and direct effects. Although these components may play a supporting role, their contribution to inflation control appears marginal when not accompanied by structural supply-side interventions. Overall, the total effects indicate that fiscal spending targeted at supply and distribution constitutes the most

effective mechanism for inflation control, highlighting the importance of channel-specific policy design.

### 3.1. Regression Results

The estimation results of Model 1 indicate that not all components of the 4K Program exert the same influence on volatile food inflation. Spending on supply availability (X2) and distribution (X3) shows a negative and statistically significant effect on volatile food inflation. This finding suggests that increased government expenditure aimed at ensuring adequate food supply and improving distribution efficiency effectively reduces price volatility in food commodities. In contrast, price affordability spending (X1) and effective communication spending (X4) do not exhibit statistically significant effects. This implies that short-term price interventions and information dissemination alone are insufficient to stabilize volatile food prices without being supported by structural improvements in supply and logistics. These results underscore the importance of real-sector interventions in mitigating food price volatility.

Model 2 examines the determinants of general inflation by incorporating volatile food inflation as an intermediate transmission variable. The coefficient of volatile food inflation (Y1) is positive and statistically significant, confirming that increases in volatile food prices contribute directly to higher general inflation. This result is consistent with the structure of the Consumer Price Index, in which food commodities represent a substantial share of household consumption expenditure in the region. Regarding direct fiscal effects, spending on supply availability (X2) and distribution (X3) shows a negative association with general inflation, although their statistical significance is weaker compared to their indirect effects through volatile food inflation. This indicates that the primary impact of these expenditures operates through stabilizing food prices rather than through immediate direct effects on the overall price level. Meanwhile, price affordability (X1) and effective communication spending (X4) continue to show limited influence on general inflation, reinforcing the notion that these components play a complementary rather than central role in inflation control.

By combining the results of Models 1 and 2, this study identifies both direct and indirect effects of government spending on general inflation. The indirect effects, calculated as the product of the coefficients from the two models, reveal that supply availability and distribution spending exert a substantial influence on general inflation through their impact on volatile food inflation. This confirms the role of volatile food inflation as a key fiscal transmission channel. In contrast, the indirect effects of price affordability and effective communication spending are negligible, reflecting their limited impact on volatile food price dynamics. These findings suggest that inflation control policies relying primarily on price intervention or communication strategies may be less effective unless accompanied by measures that strengthen supply and distribution systems. Overall, the mediation analysis highlights that the effectiveness of fiscal policy in controlling inflation depends not only on the size of government spending but also on the specific channels through which it operates.

### 3.2. Discussion

The findings of this study contribute to the literature by providing empirical evidence that fiscal spending affects inflation through differentiated transmission mechanisms. Rather than exerting a uniform effect, government expenditure under the 4K Program influences inflation primarily through structural channels related to supply availability and distribution efficiency. The insignificant effects of price affordability and communication spending suggest that these interventions may be more effective in the short term or during specific shock periods but are insufficient as standalone tools for long-term inflation stabilization. This result aligns with theoretical perspectives emphasizing the importance of supply-side interventions in addressing food price volatility. From a regional perspective, the results highlight the vulnerability of East Kalimantan's inflation dynamics to disruptions in food supply and logistics, given its geographical characteristics and dependence on inter-regional trade.

### 3.2.1. Policy Implication

The results imply that policymakers should prioritize supply-oriented and distribution-enhancing expenditures as core instruments for inflation control. Strengthening logistics infrastructure, ensuring food stock adequacy, and improving inter-regional connectivity are likely to yield more durable inflation-stabilizing effects than short-term price interventions. Furthermore, while communication and price affordability programs remain relevant, their effectiveness should be evaluated in conjunction with structural policies to enhance overall policy coherence.

## 4. Conclusion

This study analyzes the effects of central government spending under the 4K Program on inflation dynamics in East Kalimantan Province by distinguishing between direct and indirect fiscal transmission channels. Using a time series regression approach, the findings demonstrate that government spending does not affect inflation uniformly across program components. Instead, its effectiveness depends on the specific mechanisms through which spending is transmitted to price outcomes over time.

The results show that spending on supply availability and distribution plays a dominant role in controlling inflation, primarily through its ability to stabilize volatile food prices. These components generate significant indirect effects on general inflation, confirming that volatile food inflation serves as a key transmission channel linking fiscal interventions to regional inflation dynamics. In contrast, spending on price affordability and effective communication exhibits limited direct and indirect effects, suggesting that such measures are insufficient as standalone instruments for sustained inflation control.

From a policy perspective, the findings imply that inflation control strategies should emphasize structural, supply-oriented interventions rather than short-term price measures. Strengthening food supply resilience, improving distribution networks, and enhancing logistical efficiency are likely to yield more persistent inflation-stabilizing effects, particularly in regions with high dependence on inter-regional food supply such as East Kalimantan.

Nevertheless, this study has limitations. The analysis focuses on aggregate provincial data, which may mask variations across commodities and distribution channels. In addition, the relatively short observation period may limit the ability to capture long-term structural adjustments. Future research could extend this analysis by incorporating commodity-level inflation data, longer time horizons, or alternative dynamic specifications to further explore fiscal transmission mechanisms.

Overall, this study contributes to the empirical literature by demonstrating that the composition and transmission channels of government spending are critical determinants of regional inflation outcomes. A clearer understanding of these mechanisms can support more effective and targeted inflation control policies at the regional level.

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