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The Effect of Food Commodity Prices on Inflation in Tasikmalaya City

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Abstract: *Economic growth plays a vital role in enhancing social welfare, as it serves as a key driver for improving our standard of living. Over time, Tasikmalaya has developed into a hub of trade and economic activity in the East Priangan region. In Tasikmalaya City, inflation is often influenced by fluctuations in food commodity prices, food commodities have a significant role in determining the inflation rate, because they are the basic needs of the community. This study aims to examine the effect of food commodity prices on inflation in Tasikmalaya City and to determine the magnitude of this influence. The population and sample consist of monthly inflation rates from January 2018 to December 2022, along with the prices of selected food commodities namely rice, red chili, cayenne pepper, shallots, and garlic within the same period in Tasikmalaya City. The research method applied is the Vector Autoregressive (VAR) model using EViews 13 software. The findings reveal that among all variables, only the prices of garlic and shallots temporarily contributed to short-term inflation. In addition, rice had the strongest long-run effect and variance decomposition. Future research should consider including other strategic commodities such as sugar, chicken meat, eggs, and cooking oil, which also significantly contribute to food inflation, and adopt a broader scope of analysis.*
Keywords: *Food Commodity Prices, Inflation, Vector Autoregressive*

1. INTRODUCTION

Economic growth plays a vital role in enhancing social welfare, as it serves as a key driver for improving our standard of living (Kusairi et al., 2023). West Java is among the regions with outstanding productivity in the growth of Indonesia's business sector (Wahyuningtyas et al., 2018). In this context, areas with strong economic activity like West Java often become central hubs for development efforts and the improvement of community welfare. Tasikmalaya City is the economic center of the East Priangan region in West Java Province, covering an area of 183.14 km2 with a population of approximately 757,815 people. The city is administratively divided into 10 sub-districts (Tasikmalaya City Statistics Agency, 2023). Over time, Tasikmalaya has developed into a hub of trade and economic activity in the East Priangan region. The city also holds considerable potential in local food production (KabarPriangan.com, 2023). As a city experiencing rapid economic growth, Tasikmalaya boasts significant local food potential, particularly rice, which also serves as a key element of community resilience (Kompas.com, 2022). One indicator of this economic progress is the presence of Pasar Cikurubuk, the main trading and distribution center for various essential food commodities (Kabar-Priangan.com, 2023). The market is not only recognized as the largest traditional market in Tasikmalaya but also functions as the central reference point for staple food price movements, reflecting the local economic condition. In this regard, the role of local communities becomes equally important. Community development refers to a process that harnesses available resources and empowers local individuals through collective efforts aimed at enhancing both the social and economic conditions within their communities (Wahyuningtyas et al., 2023).In Tasikmalaya City, inflation is often influenced by fluctuations in food commodity prices (DetikJabar.com, 2022). These commodities play a crucial role in determining the inflation rate as they represent the basic needs of the population. Increases in food prices such as rice, eggs, shallots, red chili, and cayenne pepper are key contributors to inflationary pressures (DetikJabar.com, 2022). According to data from the Tasikmalaya City Statistics Agency (2022), the city’s inflation rate showed a downward

trend from 2.30% in 2018 to 1.17% in 2021. However, in 2022, there was a significant surge, with the inflation rate reaching 6.65% (Tasikmalaya City Statistics Agency, 2022). This sharp increase was driven by several key factors. One of the primary contributors was the rise in subsidized fuel prices in September 2022, which directly affected transportation and distribution costs, leading to a substantial increase in the prices of basic necessities (West Java Province Statistics Agency, 2022). In addition, global supply chain disruptions during the post-COVID-19 economic recovery further exacerbated inflation, as prices for raw materials and imported goods rose sharply. A country's economic growth is inevitably influenced by the inflation rate, whether it trends upward or downward (Sarbaini & Nazaruddin, 2023).In addition, extreme weather events have affected crop yields and caused fluctuations in global commodity prices. The depreciation of the rupiah against the US dollar in 2022 further exacerbated the increase in import prices, including industrial raw materials and consumer products (Kompas.id, 2022). The financial sector forms the foundation of an economy and plays a crucial role in influencing a country's wealth and overall development (Kunal et al., 2025). Tasikmalaya City recorded the highest year-on-year (YoY) inflation in October 2022, reaching 6.57%, with a Consumer Price Index (CPI) of 110.99, according to data from West Java Province Statistics Agency (2022). This was the highest inflation rate among all cities in West Java Province. One of the main causes of inflation is the fluctuation in food commodity prices, especially staple goods such as rice, chili, and onions, which hold significant weight in the CPI calculation. Research by Restuna (2022) also indicates that in Tasikmalaya City, factors such as population size, interest rates, and exchange rates significantly influence inflation, and fluctuations in these variables were among the key contributors to the inflation spike in 2022. According to data from the Food Price Information Portal (2022), the prices of various food items in Tasikmalaya City increased significantly compared to previous years. Some commodities experienced sharp price hikes, such as broiler eggs rising from IDR 19,070 in 2021 to IDR 26,500 in 2022, garlic from IDR 24,000 to IDR 37,000, red cayenne pepper from IDR 32,000 to IDR 54,714, red chili from IDR 25,000 to IDR 42,571, and broiler chicken meat from IDR 30,000 to IDR 40,000. Other food items also saw price increases, including medium-quality rice (IDR 10,500 to IDR 12,500), packaged cooking oil (IDR 14,000 to IDR 15,821), local granulated sugar (IDR 12,500 to IDR 17,000), native chicken (IDR 60,000 to IDR 80,000), and salt (IDR 2,000 to IDR 2,500). Some prices remained stable in recent years, such as powdered milk, which has stayed at IDR 43,500 since 2018, while beef, which had remained at IDR 120,000 for four years, finally increased to IDR 130,000 in 2022. In conclusion, Tasikmalaya City experienced a significant surge in food commodity prices in 2022, particularly in garlic, red chili, broiler chicken meat, and broiler eggs, while salt remained the food commodity with the lowest price.There are several reasons behind the increase in food prices. One of the main causes is the disruption in supply and distribution chains, which resulted from extreme weather conditions and the lingering effects of the COVID-19 pandemic that continue to impact global supply systems. As a consequence, governments have implemented a range of strategies to alleviate the financial burden caused by the pandemic (Kannan et al., 2021). In addition, the increase in fuel prices (BBM) in 2022 led to higher transportation and distribution costs, which in turn contributed to the rise in food prices. The surge in food commodity prices is one of the key factors driving inflation in Tasikmalaya City, which reached 6.65% in 2022 (Tasikmalaya City Statistics Agency, 2022). Furthermore, Rahmanta and Maryunianta (2020) found in their study in Medan City that food prices particularly red chili, shallots, rice, cayenne pepper, and garlic have a significant influence on inflation. In the short term, price changes in these commodities directly affect inflation within one to two months, while in the long term, red chili is identified as the main driver of inflation. These findings highlight the importance of food price stabilization policies to preserve purchasing power and control inflation. According to Meiditambua et al. (2023), inflation generally occurs when the money supply exceeds demand. Moreover, food commodity prices play a crucial role in determining the inflation rate, especially in urban areas like Tasikmalaya City. Fluctuations in food prices can impact both overall economic stability and household purchasing power. This is consistent with the view of Novianti (2024), who states that in many cities in West Java, changes in the prices of basic goods such as chicken eggs, cooking oil, and red chili have a substantial effect on inflation. Therefore, to identify the factors influencing food commodity prices and

their impact on inflation particularly in Tasikmalaya City this study aims to provide policy recommendations that ensure the stability of food prices and help control inflation in order to safeguard the well being of the population. Based on the problems described above, the researcher is motivated to conduct a study entitled "The Effect of Food Commodity Prices on Inflation in Tasikmalaya City". In line with this goal, the study seeks to answer two main questions: (1) Is there an effect of food commodity prices on inflation in Tasikmalaya City? and (2) How great is the effect of food commodity prices on inflation in Tasikmalaya City? Consequently, the objectives of this study are to identify the effect of food commodity prices on inflation in Tasikmalaya City and to determine the extent of that effect.

The hypothesis in this study are formulated based on the background, problem statement, and theoretical framework presented earlier:
H_{01}: Food commodity prices do not have a significant effect on inflation in Tasikmalaya City.
H_{a1}: Food commodity prices have a significant effect on inflation in Tasikmalaya City.

Therefore, this study examines the effect of food commodity prices on inflation using the following framework.

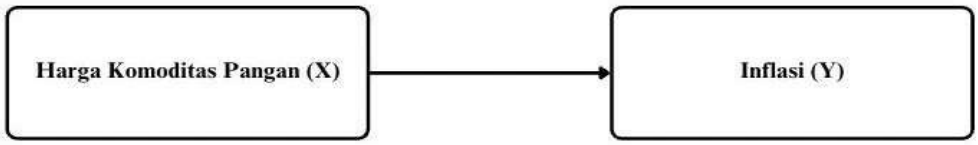

Figure 1 Framework of Thought
Source: Rahmanta & Maryunianta (2020)

2. METHOD

Research Location

This research was conducted in Tasikmalaya City, located in the province of West Java.

Population and Sample

This research uses non-probability sampling method using purposive sampling technique. The sample focus in this study includes the monthly time series inflation rate from January 2018 to December 2022, as well as the prices of selected food commodities, namely rice, garlic, shallots, red chili, and red cayenne pepper in the same period in the Tasikmalaya City area.

Data Collection and Data Analysis Method

The data collection technique in this study uses a type of quantitative research using secondary data. Data were taken from books, publications, scientific journals, Tasikmalaya City Statistics Center Agency (BPS), Tasikmalaya City Food Price Information Portal (Priangan), Previous studies relevant to this topic were collected to support this research. The method used is Vector Autoregressive (VAR). The VAR analysis was conducted using Eviews 13 software. In addition, in the results table and subsequent discussion, the names of food commodities such as rice, garlic, shallots, red chili, and red cayenne pepper will be presented in abbreviated form to maintain consistency and improve data readability.

INF : Inflation

RIC : Rice

GAR : Garlic

SHA : Shallots

RCH : Red Chili

RCP : Red Cayenne Pepper

3. Findings and Discussions

Data Stationarity Test

Table 1 Stationarity Test Result at Level

Variable	T-statistik	Test critical values			Probability
		1% Level	5% Level	10% Level	
Inflation	-5.273396	-3.546099	-2.911730	-2.593551	Stationary
Rice	-2.74E+11	-4.156734	-3.504330	-3.181826	Stationary
Shallots	-1.08E+13	-4.156734	-3.504330	-3.181826	Stationary
Garlic	-3.67E+13	-4.156734	-3.504330	-3.181826	Stationary
Red Chili	-2.52E+12	-4.156734	-3.504330	-3.181826	Stationary
Red Cayenne Pepper	-2.48E+13	-4.156734	-3.504330	-3.181826	Stationary

Source: Author's Processed Data (2025)

Based on the results of the Augmented Dickey-Fuller (ADF) stationarity test at the level form presented in Table 1, the variables of inflation, rice, garlic, shallots, red chili, and red cayenne pepper are all stationary. This is indicated by probability values less than the 0.05 significance level, showing that each variable passes the stationarity test.

Determination of Optimal Lag

Table 2 Optimal Lag Test Result of Rice to Inflation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-405.9713	NA	4412.646	14.06798	14.13903	14.09565
1	-396.9148	17.17615	3707.249	13.89361	14.10676*	13.97664
2	-391.2420	10.36766*	3501.804*	13.83593*	14.19118	13.97431*

Source: Author's Processed Data (2025)

Based on the lag length criteria test used to determine the optimal lag for model estimation, it can be seen that the best model estimation is achieved at lag 2. Referring to the five tested criteria Likelihood Ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ) most indicators point to lag 2 as optimal. At lag 2, the LogL value is -391.2420, with an LR value of 10.36766*, FPE of 3501.804*, AIC of 13.83593*, and HQ of 13.97431*, where the asterisks (*) indicate the minimum values among the options tested. Therefore, lag 2 is selected as the optimal lag for estimating the model between inflation and rice.

Table 3 Optimal Lag Test Result of Garlic to Inflation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-606.1633	NA	4392467.	20.97115	21.04220	20.99882
1	-591.2004	28.37796*	3010292.*	20.59312*	20.80627*	20.67614*
2	-588.7692	4.443301	3179759.	20.64721	21.00246	20.78559

Source: Author's Processed Data (2025)

Based on the lag length criteria test used to determine the optimal lag for model estimation, it can be concluded that the best model estimation is achieved at lag 1. Referring to the five tested criteria Likelihood Ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC),

Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ) all indicators point to lag 1 as the optimal choice. At lag 1, the LogL value is -591.2004, producing an LR value of 28.37796*, an FPE of 3010292., an AIC value of 20.59312, an SC value of 20.80627*, and an HQ value of 20.67614*, with asterisks indicating the minimum or preferred values. Therefore, lag 1 is selected as the optimal lag to estimate the model between inflation and garlic.

Table 4 Optimal Lag Test Result of Shallots to Inflation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-601.8919	NA	3790887.	20.82386	20.89491	20.85153
1	-587.2124	27.84031*	2623532.*	20.45560*	20.66875*	20.53863*
2	-585.0298	3.988942	2795086.	20.51827	20.87352	20.65665

Source: Author's Processed Data (2025)

Based on the lag length criteria test used to determine the optimal lag for estimation, it can be concluded that the best model estimation is at lag 1. Referring to the five tested criteria Likelihood Ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ) all indicators point to lag 1 as the optimal choice. At lag 1, the LogL value is -587.2124, with an LR value of 27.84031*, FPE of 2623532., AIC value of 20.45560, SC value of 20.66875*, and HQ value of 20.53863*, where the asterisks (*) indicate the lowest or most optimal values. Therefore, lag 1 is selected as the optimal lag to estimate the model between inflation and shallots.

Table 5 Optimal Lag Test Result of Red Chili to Inflation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-620.5094	NA	7203619.	21.46584	21.53689*	21.49352
1	-614.1645	12.03340*	6645258.*	21.38498*	21.59813	21.46801*
2	-612.8723	2.361694	7300534.	21.47835	21.83360	21.61673

Source: Author's Processed Data (2025)

Based on the lag length criteria test used to determine the optimal lag for estimation, it can be concluded that the best model estimation is achieved at lag 1. Referring to the five tested criteria Likelihood Ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ) all indicators point to lag 1 as the optimal choice. At lag 1, the LogL value is -614.1645, with an LR value of 12.03340*, FPE of 6645258., AIC value of 21.38498, SC value of 21.59813, and HQ value of 21.46801*, where the asterisks (*) indicate the lowest or most optimal values. Therefore, lag 1 is selected as the optimal lag to estimate the model between inflation and red chili.

Table 6 Optimal Lag Test Result of Red Cayenne Pepper to Inflation

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-617.2523	NA	6438325.	21.35353	21.42458*	21.38120
1	-611.0863	11.69409*	5976037.*	21.27884*	21.49199	21.36186*
2	-608.0487	5.551543	6181840	21.31202	21.66727	21.45040

Source: Author's Processed Data (2025)

Based on the lag length criteria test used to determine the optimal lag for estimation, it can be concluded that the best model estimation is achieved at lag 1. Referring to the five tested criteria Likelihood Ratio (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ all indicators point to lag 1 as the optimal choice. At lag 1, the LogL value is -611.0863, with an LR value of 11.69409*, FPE

of 5976037., AIC value of 21.27884, SC value of 21.49199, and HQ value of 21.36186*, where the asterisks (*) indicate the lowest or most optimal values. Therefore, lag 1 is selected as the optimal lag to estimate the model between inflation and red cayenne pepper.

Var Model Stability Test

Table 7 Result of Tasikmalaya City VAR Stability Test

Root	Modulus
-0.707800	0.707800
0.010231 - 0.514098i	0.514200
0.010231 + 0.514098i	0.514200
0.364141 - 0.234596i	0.433168
0.364141 + 0.234596i	0.433168
0.208987	0.208987

Source: Author's Processed Data (2025)

Based on the results of the VAR roots test, it is known that the modulus of all unit roots is < 1. Therefore, the model is considered stable and valid, with the highest modulus value of 0.707800. These results indicate that the VAR model specification to be used for analyzing the Impulse Response Function (IRF) and the Forecast Error Variance Decomposition (FEVD) is stable and valid, as confirmed by the stability test showing that all modulus values are less than one.

Causality Test

Table 8 Granger Causality Test Result

Null Hypothesis	Obs	F-Statistic	Prob.
RCP does not Granger Cause INF	59	0.17957	0.6734
INF does not Granger Cause RCP		0.51036	0.4780
RCH does not Granger Cause INF	59	0.17065	0.6811
INF does not Granger Cause RCH		0.13587	0.7138
RIC does not Granger Cause INF	59	3.65331	0.0611
INF does not Granger Cause RIC		0.62845	0.4313
GAR does not Granger Cause INF	59	1.57392	0.2149
INF does not Granger Cause GAR		9.22801	0.0036
SHA does not Granger Cause INF	59	5.88584	0.0185
INF does not Granger Cause SHA		5.40699	0.0237
RCH does not Granger Cause RCP	59	8.54644	0.0050
RCP does not Granger Cause RCH		4.28358	0.0431
RIC does not Granger Cause RCP	59	1.92890	0.1704
RCP does not Granger Cause RIC		0.09656	0.7572
GAR does not Granger Cause RCP	59	0.09252	0.7621
RCP does not Granger Cause GAR		1.72158	0.1948
SHA does not Granger Cause RCP	59	2.34755	0.1311
RCP does not Granger Cause SHA		0.12648	0.7235
RIC does not Granger Cause RCH	59	1.95403	0.1677
RCH does not Granger Cause RIC		0.82732	0.3669
GAR does not Granger Cause RCH	59	3.15187	0.0813
RCH does not Granger Cause GAR		0.62940	0.4309
SHA does not Granger Cause RCH	59	5.00475	0.0293
RCH does not Granger Cause SHA		0.04486	0.8330

GAR does not Granger Cause RIC RIC does not Granger Cause GAR	59	0.34807 1.53369	0.5576 0.2207
SHA does not Granger Cause RIC RIC does not Granger Cause SHA	59	0.02670 1.30194	0.8708 0.2587
SHA does not Granger Cause GAR GAR does not Granger Cause SHA	59	0.72814 0.19935	0.3971 0.6570

Source: Author's Processed Data (2025)

Based on the Granger causality test results shown in Table 8, it can be concluded that there is no reciprocal relationship between the dependent and independent variables. This is evident as the probability values are mostly higher than the significance level of 0.05. Therefore, it can be concluded that there is no causal relationship between the dependent and independent variables, and vice versa.

Vector Error Correction Model (VECM) Efficiency

Table 9 Tasikmalaya VECM Estimation Result

	INF	RIC	GAR	SHA	RCH	RCP
INF (-1)	0.383206	29.52001	-5251.901	-4970.769	-155.7343	-4888.443
	(0.12067)	(80.1121)	(2002.33)	(2137.10)	(1982.96)	(1959.17)
	[3.17577]	[0.36848]	[-2.62290]	[-2.32594]	[-0.07854]	[-2.49516]
RIC (-1)	5.51E-05	0.269303	-10.96504	-13.91749	47.91037	39.26213
	(0.00035)	(0.22930)	(5.73104)	(6.11678)	(5.67559)	(5.60752)
	[0.15966]	[1.17448]	[-1.91327]	[-2.27530]	[8.44147]	[7.00170]
GAR (-1)	-1.28E-05	-0.004423	0.243463	0.393731	-0.888313	-1.083653
	(1.4E-05)	(0.00949)	(0.23723)	(0.25320)	(0.23494)	(0.23212)
	[-0.89481]	[-0.46602]	[1.02626]	[1.55502]	[-3.78106]	[-4.66852]
SHA (-1)	2.83E-05	0.006533	-0.119115	-0.343237	2.198860	2.094969
	(1.8E-05)	(0.01211)	(0.30277)	(0.32315)	(0.29984)	(0.29625)
	[1.54929]	[0.53931]	[-0.39341]	[-1.06216]	[7.33338]	[7.07172]
RCH (-1)	7.19E-08	0.006312	-0.320307	0.049191	0.469604	0.520966
	(8.2E-06)	(0.00542)	(0.13539)	(0.14450)	(0.13408)	(0.13247)
	[0.00881]	[1.16522]	[-2.36587]	[0.34042]	[3.50251]	[3.93276]
RCP (-1)	-2.44E-06	-0.007264	0.553023	0.150513	-0.955751	-0.772405
	(9.1E-06)	(0.00603)	(0.15060)	(0.16073)	(0.14914)	(0.14735)
	[-0.26909]	[-1.20564]	[3.67220]	[0.93641]	[-6.40841]	[-5.24193]
C	-0.784411	7583.874	126840.3	164320.6	-474580.6	-373266.8
	(3.59053)	(2383.82)	(59581.3)	(63591.6)	(59004.9)	(58297.2)
	[-0.21847]	[3.18140]	[2.12886]	[2.58400]	[-8.04307]	[-6.40283]

Source: Author's Processed Data (2025)

Based on the VECM estimation results, the relationships between variables can be summarized as follows: Inflation is significantly influenced by its own previous value (0.3832) and the previous price of rice (29.5200). However, the prices of garlic (-5251.901), shallots (-4970.769), red chili (-155.7343), and red cayenne pepper (-4888.443) have a negative impact on inflation. The price of rice is significantly affected by its own past value (0.2693) and positively influenced by the prices of red chili (47.9103) and red cayenne pepper (39.2621), indicating a positive effect on rice prices. Garlic prices are influenced by their own lagged value (0.2434) and the price of red chili (0.3937), showing a positive relationship, while inflation (-1.28E-05) and rice prices (-0.0044) do not have a significant effect. Shallot prices are affected by their own past value (-0.1119), inflation (2.83E-05), and the prices of red chili (2.1988) and red cayenne pepper (2.0949), both of which have a positive impact. Red chili prices are influenced by their own past value (0.0063), red cayenne pepper prices (0.4696), and garlic prices (-0.3203), indicating a negative relationship with garlic. Red cayenne pepper prices are affected by their own past value (-0.0072), inflation (-2.44E-06), rice prices (0.5530), and red chili prices (-0.9557), suggesting a negative substitution effect between the two types of chili. Overall, rice prices have the most significant impact on inflation, while other commodities such as garlic, shallots, red chili, and red cayenne pepper exhibit complex interactions, with both positive and negative relationships influencing one another.

Impulse Response Function (IRF) Analysis

Based on the IRF analysis, in the very short run (period 1), an orthogonal shock to inflation itself raises inflation by +0.2986. By period 2, shocks to individual commodity prices have their largest cross-responses: a one-standard-deviation shock to rice lowers inflation by –0.0687, to garlic raises inflation by +0.0539, to shallots by +0.0374, to red chili lowers it by –0.0062, and to red cayenne pepper by –0.0076. Thus, among the foods considered, garlic and shallots are the only commodities whose shocks actually increase inflation in the early periods. By period 3, the response of inflation to its own shock has already decayed to +0.0346, while shocks to rice, garlic, shallots, red chili, and red cayenne pepper register –0.0549, +0.0134, +0.0124, –0.0108, and –0.0073, respectively. From period 4 through period 10, all impulse responses contract further toward zero (magnitudes < ±0.005). Between period 11 and period 24, they fluctuate very close to zero (|responses| < 0.002). Finally, over the extended horizon from period 25 to period 60, every response line remains essentially flat below ±0.0005 for inflation and under ±5 units for price responses reflecting a stable dynamic adjustment of demand and supply throughout the full 60-period horizon.

Analysis Forecast Error Variance Decomposition (FEVD)

The VECM estimation was performed using Variance Decomposition. To analyze the VD, the forecast was extended for 60 periods beyond the research timeframe. The results are categorized into three time horizons: the short term (months 1 to 15), the medium term (months 16 to 30), and the long term (months 31 to 60).

Table 10 FEVD Test Result of Inflation

Variance Decomposition of Inflation:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	0.298642	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
		(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
15	0.347599	88.94942	6.648354	2.832412	1.285740	0.138804	0.145272
		(9.44242)	(8.03597)	(5.01111)	(2.68422)	(0.76404)	(1.87626)
30	0.347599	88.94937	6.648371	2.832441	1.285740	0.138810	0.145272
		(11.5757)	(6.76141)	(7.16939)	(2.85612)	(1.34927)	(1.87698)
45	0.347599	88.94937	6.648371	2.832441	1.285740	0.138810	0.145272
		(11.5887)	(6.76140)	(7.18649)	(2.85606)	(1.35176)	(1.87695)
60	0.347599	88.94937	6.648371	2.832441	1.285740	0.138810	0.145272
		(11.5887)	(6.76148)	(7.18720)	(2.85603)	(1.35169)	(1.87691)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition of inflation, it shows that in the first period, 100% of the variability in inflation is explained by its own innovations, while the prices of red chili and garlic have no contribution at all, with 0 percent in the first period. However, starting from period 15 to period 60, the contribution of these variables becomes evident. The average contribution of red chili prices is approximately 0.13%, and for garlic, it is around 2.83%. Furthermore, the variance decomposition results indicate that when inflation experiences a shock, the most responsive variable is the price of garlic, as it consistently contributes a larger share to inflation variance compared to other food commodities in the observed periods. This suggests that garlic prices have a more substantial role in influencing inflation than red chili or other food commodities during the analyzed time frame.

Table 11 FEVD Test Result of Rice

Variance Decomposition of Rice:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	198.2740	0.451980	99.54802	0.000000	0.000000	0.000000	0.000000
		(2.64437)	(2.64437)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
15	206.1874	1.483789	94.29441	0.456044	1.572379	0.564817	1.628557
		(4.26636)	(9.51519)	(5.27548)	(2.32195)	(1.32109)	(2.22865)
30	206.1874	1.483789	94.29441	0.456044	1.572379	0.564817	1.628557
		(4.38836)	(11.3351)	(7.22167)	(2.33048)	(1.49340)	(2.21240)
45	206.1874	1.483789	94.29441	0.456044	1.572379	0.564817	1.628557
		(4.40025)	(11.7121)	(7.60548)	(2.32920)	(1.51033)	(2.21246)
60	206.1874	1.483789	94.29441	0.456044	1.572379	0.564817	1.628557
		(4.40778)	(11.9668)	(7.85327)	(2.32834)	(1.52025)	(2.21298)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition of rice, it is shown that in the first period, 99.55% of the variability in rice is explained by its own innovations, while the prices of red chili and garlic contribute nothing, with a value of 0 percent. However, from period 15 to period 60, these variables start to show an effect. The average contribution of red chili price is approximately 0.56%, while garlic contributes around 0.46%. Furthermore, the variance decomposition results indicate that when rice experiences a shock, the most responsive variable among the food commodities is the price of red cayenne pepper, which consistently contributes around 1.63% on average during those periods making it the most significant among the external variables in explaining the forecast error variance of rice.

Table 12 FEVD Test Result of Garlic

Variance Decomposition of Garlic:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	4955.676	0.889137	0.125159	98.98570	0.000000	0.000000	0.000000
		(3.42827)	(2.74461)	(4.36847)	(0.00000)	(0.00000)	(0.00000)
15	6426.388	14.74561	4.004172	70.21931	1.899605	1.329152	7.802147
		(2.21298)	(4.89802)	(9.89043)	(2.75125)	(1.51894)	(3.93594)
30	6426.389	14.74561	4.004178	70.21931	1.899605	1.329155	7.802146
		(7.44504)	(4.91710)	(9.87912)	(2.75434)	(1.57842)	(3.93900)
45	6426.389	14.74561	4.004178	70.21931	1.899605	1.329155	7.802146
		(7.44436)	(4.93364)	(9.87603)	(2.75436)	(1.58635)	(3.93772)
60	6426.389	14.74561	4.004178	70.21931	1.899605	1.329155	7.802146
		(7.44423)	(4.94662)	(9.87601)	(2.75432)	(1.59366)	(3.93659)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition of garlic, it is shown that in the first period, approximately 98.99% of the variability in garlic prices is explained by its own innovations, while the prices of red chili and inflation contribute nothing, with 0% in the first period. However, starting from period 15 to period 60, the contribution of these variables becomes evident. The average contribution of red chili prices is around 1.33%, while inflation contributes approximately 14.75%. Furthermore, the variance decomposition results indicate that when garlic prices experience a shock, the most responsive variable is inflation, as it consistently contributes the largest share compared to other variables over the observed periods. This suggests that inflation has a stronger influence on garlic price variability than red chili or other food commodities within the analyzed timeframe.

Table 13 FEVD Test Result of Shallots

Variance Decomposition of Shallots:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	5289.228	2.289645	26.16499	64.36353	7.181840	0.000000	0.000000
		(3.64230)	(10.0852)	(10.0879)	(1.55428)	(0.00000)	(0.00000)
15	6001.491	11.18174	27.14315	54.61174	5.625161	0.438483	0.999723
		(6.87026)	(9.12641)	(9.27694)	(2.16757)	(1.41361)	(1.84126)
30	6001.498	11.18172	27.14317	54.61173	5.625148	0.438511	0.999722
		(6.87420)	(9.14855)	(9.28454)	(2.18062)	(1.48390)	(1.83619)
45	6001.498	11.18172	27.14317	54.61173	5.625148	0.438511	0.999722
		(6.87497)	(9.15544)	(9.28523)	(2.18421)	(1.50172)	(1.83695)
60	6001.498	14.74561	4.004178	70.21931	1.899605	1.329155	7.802146
		(6.87519)	(9.16000)	(9.28484)	(2.18611)	(1.51206)	(1.83821)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition test, the variability of shallots prices in the first period is predominantly explained by their own innovations, contributing approximately 64.36%, while the prices of red chili and red cayenne pepper have no contribution at all, with 0% in the first period. However, from period 15 to period 60, these variables begin to show a contribution. The average contribution of red chili prices is around 0.44%, while cayenne pepper prices contribute approximately 1.00% on average. Moreover, the decomposition results reveal that when shallot prices experience a shock, the most responsive variable across the observed periods is red cayenne pepper prices, which consistently show a relatively higher average contribution compared to red chili. This suggests that red cayenne pepper prices are more influential in affecting shallot price volatility over time.

Table 14 FEVD Test Result of Red Chili

Variance Decomposition of Red Chili:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	4907.732	2.618411	10.19899	0.180861	62.95593	24.04581	0.000000
		(3.67655)	(7.50918)	(2.29350)	(8.17526)	(4.84262)	(0.00000)
15	8630.500	2.767639	14.19306	16.44900	40.28446	12.21133	14.09451
		(4.33724)	(7.89200)	(8.14258)	(8.69383)	(3.26831)	(4.87457)
30	8630.585	2.767659	14.19346	16.44965	40.28368	12.21131	14.09425
		(4.41619)	(7.93203)	(8.60736)	(9.01933)	(3.27975)	(4.95225)
45	8630.585	2.767659	14.19346	16.44965	40.28368	12.21131	14.09425
		(4.43257)	(7.93956)	(8.70556)	(9.09317)	(3.28264)	(4.97147)
60	8630.585	2.767659	14.19346	16.44965	40.28368	12.21131	14.09425
		(4.43826)	(7.94189)	(8.74688)	(9.12237)	(3.28392)	(4.97958)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition test, in the first period, approximately 24.05% of the variability in red chili prices is explained by their own innovations. Meanwhile, the prices of red cayenne pepper and garlic show 0% and 0.18% contributions, respectively, in the same period, indicating no significant influence initially. However, from period 15 to period 60, both variables begin to contribute more consistently. The average contribution of red cayenne pepper prices is around 14.09%, while the contribution of garlic prices is approximately 16.45%. Additionally, the results show that when red chili prices experience a shock, the most responsive variable is garlic prices, given their consistently higher contribution across these periods. This indicates that fluctuations in garlic prices have a notable influence on the variability of red chili prices over time.

Table 15 FEVD Test Result of Red Cayenne Pepper

Variance Decomposition of Red Cayenne Pepper:							
Period	S.E.	INF	RIC	GAR	SHA	RCH	RCP
1	4848.864	0.031030	21.69402	30.15144	6.403461	0.104062	41.61599
		(2.95369)	(9.61157)	(8.95856)	(4.25422)	(1.13542)	(8.77148)
15	7965.827	1.056082	13.33401	21.63494	29.19908	5.746230	29.02966
		(3.00438)	(6.69423)	(7.31307)	(6.20053)	(2.54173)	(6.48087)
30	7965.876	1.056116	13.33427	21.63528	29.19873	5.746297	29.02931
		(3.08724)	(6.70984)	(7.63781)	(6.33710)	(2.54258)	(6.57471)
45	7965.876	1.056116	13.33427	21.63528	29.19873	5.746297	29.02931
		(3.39527)	(6.75694)	(8.51481)	(6.78135)	(2.57857)	(6.96201)
60	7965.876	1.056116	13.33427	21.63528	29.19873	5.746297	29.02931
		(3.43660)	(6.76281)	(8.67304)	(6.84777)	(2.58247)	(7.06251)

Source: Author's Processed Data (2025)

Based on the results of the Variance Decomposition test, in the first period, approximately 41.62% of the variability in red cayenne pepper prices is explained by their own innovations. In contrast, red chili prices and garlic prices contribute only 0.10% and 30.15%, respectively, in the same period. However, from period 15 to period 60, the contributions of red chili and garlic prices become more significant and stable. The average contribution of red chili prices during these periods is around 5.75%, while garlic prices contribute approximately 21.63%. The results also indicate that when red cayenne pepper prices experience a shock, the most responsive variable over time is garlic prices, due to their consistently high and stable contribution across periods. This suggests that garlic price fluctuations play a significant role in influencing red cayenne pepper price variability in the long run.

4. CONCLUSION

Impulse-response analysis shows that, in the very short run (t = 1), an orthogonal shock to inflation itself produces the largest immediate response (0.2986). By t = 2, only shocks to garlic and shallots generate positive cross-responses on inflation (+0.0539 and +0.0374, respectively), while rice, red chili, and red cayenne pepper shocks yield small negative responses. All responses decay toward zero by period 10, with negligible oscillations thereafter up to period 60. Long-run VECM estimates further reveal that rice prices exert a strong positive equilibrium effect on inflation (coefficient +29.5200), whereas garlic, shallots, red chili, and red cayenne pepper enter with significant negative long-run coefficients (–5251.901; –4970.769; –155.7343; –4888.443). Forecast-error variance decomposition confirms that by period 15, inflation's own innovations explain roughly 88.95% of its forecast variance, with rice contributing 6.65%, garlic 2.83%, shallots 1.29%, and both chilies together under 0.3%. Taken together, these results highlight that while inflation is largely driven by its own past price shocks, garlic and shallots give a lot of contribution to the transiently on raising the inflation in the short run, meanwhile rice lead the strongest long-run and variance decomposition influence. Future research should consider including other strategic commodities

such as sugar, chicken meat, eggs, and cooking oil, which also significantly contribute to food inflation, and adopt a broader scope of analysis.

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