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The Effect of Food Commodity Price Fluctuations on Inflation in Bali Province

Ni Putu Depi Indah Sari[1] I Gusti Agung Ayu Apsari Anandari[2] I Wayan Sukadana[3]
Department of Development Economics, Faculty of Economics and Business, Udayana University, Denpasar, Bali, Indonesia[1,2,3]
Email: depi.indah007@student.unud.ac.id[1] apsarianandari@unud.ac.id[2] wsuka@unud.ac.id[3]

Abstract
This research investigates how fluctuations in food commodity prices affect the inflation rate in Bali Province. The study aims to examine the impact of food commodity prices on inflation in Bali both the short and long term. This research uses the VAR and VECM methods to analyze the contribution 6 food commodity prices to inflation in Bali Province. The data used in this research covers the period from January 2019 to December 2023. The findings show that in the long term, rice prices have a significant influence on inflation. However, in the short term, there is no significant influence between food commodity prices on inflation in Bali. The study also finds that Bali still depends on food supply from other regions, especially East Java Province. Therefore, it is important to strengthen regional food security as a main instrument to control inflation, so that Bali does not always rely on food commodities from other areas.
Keywords: Food Price Fluctuations, Inflation, Vector Error Correction Model, Commodity Strategy.

Abstrak
Kajian ini menganalisis pengaruh fluktuasi harga komoditas pangan pada laju inflasi di Provinsi Bali. Kajian ini bertujuan mengetahui pengaruh harga komoditas pangan pada inflasi di Bali baik pada jangka pendek maupun jangka panjang. Kajian ini memakai metode VAR dan VECM dalam melakukan analisis kontribusi harga komoditas pangan pada inflasi di Provinsi Bali. Data yang dipakai pada kajian ini meliputi periode Januari 2019 hingga Desember 2023. Dalam hasil kajian memperlihatkan jika untuk jangka panjang, harga beras punya pengaruh signifikan pada inflasi. Tetapi, pada jangka pendek, tidak ada hubungan signifikan antar harga komoditas pangan dengan inflasi di Bali. Penelitian ini juga menemukan bahwa Bali masih bergantung pada pasokan pangan dari daerah lain, khususnya Provinsi Jawa Timur. Oleh sebab itu, perlu memperkuat ketahanan pangan daerah sebagai instrumen utama pengendalian inflasi, agar Bali tidak selalu bergantung pada komoditas pangan dari daerah lain.
Kata Kunci: *Fluktuasi Harga Pangan, Inflasi, Model Koreksi Kesalahan Vektor, Strategi Komoditas*

INTRODUCTION

Inflation at different levels and over different periods has been a problem in many economies, especially when it becomes uncontrollable. This situation can make economic conditions worse, particularly in developing countries (Kuma & Gata, 2023). In the past, inflation has typically remained low and stable, supported by firmly anchored expectations regarding future price levels is linked to better short-term output and employment stability, as well as higher long-term economic growth (Ha et al., 2019). One of the most important macroeconomic variables is inflation, because it is often used as a base for fiscal and monetary policy planning (Banerjee et al., 2020). Indonesia is one among the nations with the largest populations globally, ranking fourth globally. As the population continues to grow, there will be more spending on food and beverages. The agricultural sector plays an important role, especially when food prices become unstable, as it can affect the nation's economic well-being. Inflation remains a key issue because, although disaggregated inflation tends to decline, it is still relatively high (Marpaung et al., 2019). The main source of shocks affecting the economy is

global commodity prices. These shocks influence inflation both directly and indirectly (Inogamov & Leon Gonzalez, 2024). Poorly managed inflation expectations can lead to higher inflation (Dao et al., 2024).

In Indonesia, inflation is made up of three components: volatile food, core inflation, and administered prices. Food prices, which fall under volatile food, contribute significantly to inflation levels. Changes in food prices impact the broader Indonesian economy. In this case, food is seen as a basic, essential, and critical need. After food as a basic need of society is fulfilled, there will be progress which is an important indicator in the economy (Ulussever et al., 2023). Price fluctuations are one of the main characteristics of economic dynamics, reflecting an imbalance between supply and demand over a certain period of time. From a regional macroeconomic perspective, price fluctuations are not only a market phenomenon but also indicate inflationary pressure, supply stability, and the effectiveness of policies implemented by fiscal and monetary authorities. In Bali Province, where the consumption structure is tourism-based and highly dependent on interregional supply, the fluctuation of strategic food prices becomes a highly relevant issue to explore. Food is a basic human need that cannot be treated as a regular commodity and does not have a true substitute. Humans need food to survive and obtain energy for their activities. Therefore, it is important to ensure continuous food availability. Other needs can sometimes be postponed, but food consumption cannot. Every region in Indonesia experiences inflation, but the levels can differ. Some areas may experience high, low, stable, or fluctuating inflation. This variation happens because each region has different factors that contribute to inflation.

One province where inflation tends to fluctuate is Bali. Known as the Island of the Gods, Bali had a population of 4.34 million in 2023. Because of this, changes in food commodity prices in Bali must be closely monitored. This is important because food prices represent the food security of a region. The fluctuation in food prices is often caused by changes in demand and supply. As population increases, so does demand for food. To meet demand, often this supply is insufficient, which causes price fluctuations (Sri Ardiyanti & Juli Prijanto, 2020). The fluctuation of food prices in Bali is not only caused by domestic factors such as weather and harvests but also by global factors like international commodity prices and trade policies. For example, when a major rice-producing country restricts its exports, rice prices in Bali may increase sharply. This directly affects volatile inflation. It shows that Bali faces special challenges in managing inflation compared to other provinces with better food production capacity. Limited local resources for production also impact other regions. To overcome this limitation, inter-regional trade is important to allow the movement of goods and services. Based on input-output analysis between Bali and East Java, research by (Fadli, 2022) shows that East Java has a trade surplus with almost all provinces in Eastern Indonesia. East Java's exports to Bali reached IDR 29.4 trillion, while imports were only IDR 4.4 trillion. According to the IRIO table, East Java's transactions with eastern regions of Indonesia are the second highest after DKI Jakarta's transactions with Bali and Nusa Tenggara, reaching IDR 23.37 trillion. This high transaction volume is partly because the two areas are geographically close (Meilaningsih & Yuniastuti, 2022).

According to the 2021 budget year publication of the 2016 Input-Output Table of Bali Province, Bali still depends on products from other regions to meet its consumption needs. In 2016, Bali imported goods and services worth IDR 132.267 trillion from other regions. More than 85 percent of Bali's imports come from other provinces, while only 14.89 percent come from abroad. The top four regions contributing to Bali's imports are East Java (22.21%), DKI Jakarta (13.51%), Banten (8.71%), and Central Java (7.98%). This condition highlights the need to strengthen logistics infrastructure, stabilize distribution, and increase local production in

Bali. The government is expected to manage this issue holistically, not only to keep consumer prices stable but also to reduce inflation's negative impact on people's purchasing power. The purpose of this study is to analyze the short-term and long-term impacts of food commodity prices on inflation in Bali Province.

RESEARCH METHODS

This study uses monthly time series data consisting of 60 observations, from January 2019 to December 2023. The samples are based on selected strategic food commodities that are generally consumed by the community on a daily by people in Bali Province. Consumption patterns in Bali have unique characteristics because they are influenced by local culture and traditions, such as traditional ceremonies and religious celebrations that require large amounts of food at certain times. This condition can create seasonal demand spikes, which may lead to unusual inflation compared to other regions in Indonesia.

This study uses one dependent variable, which is inflation, and eight independent variables, which are the prices of rice, broiler chicken meat, pork, chicken eggs, red chili pepper, shallots, garlic, and cayenne pepper.

Table 1. Decription of Variable

Variable	Unit	Sources
Inflation	Percent	BPS
Price of rice	The Indonesian rupiah (IDR)	PIHPS
Price of broiler chicken meat	The Indonesian rupiah (IDR)	PIHPS
Price of Pork	The Indonesian rupiah (IDR)	SiGapura Bali Province
Price of chicken eggs	The Indonesian rupiah (IDR)	PIHPS
Price of shallot	The Indonesian rupiah (IDR)	PIHPS
Price of garlic	The Indonesian rupiah (IDR)	PIHPS
Price of red chili pepper	The Indonesian rupiah (IDR)	PIHPS
Price of cayenne pepper	The Indonesian rupiah (IDR)	PIHPS

In this study, the data were obtained from official publications of relevant institutions, including the National Strategic Food Price Information Center (PIHPS), the Bali Province Food Price and Strategic Commodity Information System (SiGapura), Statistics Indonesia (BPS), and Bank Indonesia (BI). Data was collected in this study using non-participant observation methods. Observation is a technique in which the researcher does not engage directly but acts solely as an independent observer. In this study, data were collected by observing, recording, and reviewing descriptions and publications from BPS and BI. The aim of this study is to analyze the influence of food commodity price fluctuations on the inflation rate in Bali Province. The methods used in this research are Vector Autoregressive (VAR) and Vector Error Correction Model (VECM). The purpose of using the VAR model is to examine the reciprocal relationship between economic variables without emphasizing too much on the issue of exogeneity (Apriyadi & Hutajulu, 2020). This model is considered simpler because it only involves a number of variables that are all endogenous, where the independent variables come from the lag values (time delays) of these variables.

To produce valid and effective results, several steps are needed. These steps include the stationarity test, lag length selection, and the VAR stability test where the model is considered valid if the modulus value is less than one (< 1). To observe the long-term relationship between variables, a cointegration test is carried out. After that, the analysis continues with the estimation of the VECM, Impulse Response Function (IRF) analysis, and Forecast Error Variance Decomposition (FEVD) to observe the contribution of each variable. To understand the influence between regions, particularly the relationship between inflation in Bali and East Java, the Granger causality test is conducted to examine causal relationships between variables in the model. This study hypothesizes that there is a causal relationship between the Consumer Price Index (CPI) of East Java Province and that of Bali Province. The decision-making criteria rely on the probability value: if the p-values for both directions are below 5%, the null hypothesis (Ho) is rejected, indicating the existence of bidirectional causality between the variables. However, if only one p-value is below 5%, it suggests a unidirectional causal relationship. On the other hand, if the p-value exceeds 5%, the null hypothesis is accepted, meaning no causal link is found between the two variables.

RESEARCH RESULTS AND DISCUSSION

In this study, there are several testing steps that need to be carried out. The first step is the stationarity test. Stationarity test is very important in time series data analysis because using non-stationary data can cause a problem called spurious regression, where the data may show significant results but do not have a clear causal meaning. The stationarity test is used to make sure that the variables in the study do not contain a unit root. The next step is determining the optimal lag. This is important to identify the relationship between variables in the VAR model used. Setting a lag that is too long results in a larger number of parameters to estimate and fewer degrees of freedom. On the other hand, setting the lag too short will lead to improper estimation of the standard errors, thus resulting in an incorrect model specification. Next, a stability test of the VAR model was conducted. The previously determined optimal lag is then tested for stability. The stability of the VAR model is tested by examining the roots of the characteristic polynomial. Following this, a cointegration test will be conducted. This is done to determine whether non-stationary variables are cointegrated or not. The result of the cointegration test helps to identify the existence of long-term relationships between variables.

After these tests, VECM estimation is carried out. VECM is a restricted form of VAR. The VECM specification restricts the long-term behavioral relationships between the variables, ensuring convergence to their cointegrating relationship, while still allowing dynamic short-term changes. The term cointegration refers to error correction, because through partial short-term adjustments, it will be corrected gradually for each deviation from long-term equilibrium.. The VECM model reveals short and long-term relationships between variables. The VAR model is atheoretical, making its estimation results difficult to interpret. Therefore, an IRF and FEVD analysis are subsequently performed. To see the response of endogenous variables to certain shocks, IRF analysis is used, whether transmitted by the variable itself or other variables. This analysis evaluates not only the short-term dynamics but also offers insights into the long-term impacts. The IRF helps determine the duration and persistence of these effects. Following this, the FEVD is employed to measure the extent to which the prices of rice, chicken meat, pork, eggs, shallots, garlic, red chili, and bird's eye chili contribute to inflation in Bali. Moreover, the FEVD analysis highlights which of these commodity prices has the most significant influence on inflation in the region.

Table 2. Stationarity Test at Level

Augmented Dickey Fuller			
Variabel	**t-*Statictic***	**Prob**	**Decision**
LnINF	-6.207328	0.0000	Stationary
LnBMR	-3.718833	0.0062	Stationary
LnBPT	-3.050077	0.0361	Stationary
LnBRS	0.131068	0.9655	Non Stationary
LnCBM	-3.926611	0.0034	Stationary
LnCBR	-4.510754	0.0006	Stationary
LnDAB	-1.540884	0.5060	Non Stationary
LnDAR	-5.239550	0.0000	Stationary
LnTAR	-2.942636	0.0465	Stationary

Source: Data processed, 2025

Based on the test results in Table 2, the ADF test results indicate that two out of nine variables are not stationary at level. These variables are the price of rice (BRS) and the price of pork. Therefore, an ADF test at the first difference is needed.

Table 3. Stationarity Test at First Difference Level

Augmented Dickey Fuller			
Variabel	**t-*Statictic***	**Prob**	**Decision**
DfINF	-8.366864	0.0000	Stationary
DfBMR	-7.875030	0.0000	Stationary
DfBRS	-7.015831	0.0000	Stationary
DfCBM	-5.767332	0.0000	Stationary
DfCBR	-7.074904	0.0000	Stationary
DfDAB	-5.476227	0.0000	Stationary
DfDAR	-8.873477	0.0000	Stationary
DfTAR	-10.32841	0.0000	Stationary

Source: Data processed, 2025

According to Table 3, after the unit root test with the ADF test at the first difference level, it can be seen that all variables become stationary at the first difference with probability values below the 5% significance level. Since all variables are stationary at the first differential, the appropriate method to analyze the data is the VECM. The determination of the optimal lag is based on the values of the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Criterion (HQ). The criteria for determining the lag length are chosen by selecting the smallest values. In this study, the optimal lag is determined using the AIC. The results of the optimal lag length calculation can be seen in the following table:

Table 4. Determination of Optimal Lag

Lag	Log	LR	FPE	AIC	SC	HQ
0	-4298.562	NA	5.25e+55*	153.8415	154.1670*	153.9677*
1	-4219.407	130.0417	5.81e+55	153.9074	157.1624	155.1693
2	-4135.449	110.9435*	6.49e+55	153.8018*	159.9863	156.1995
3	-4056.136	79.31332	1.30e+56	153.8620	162.9761	157.3955

Source: Data processed, 2025

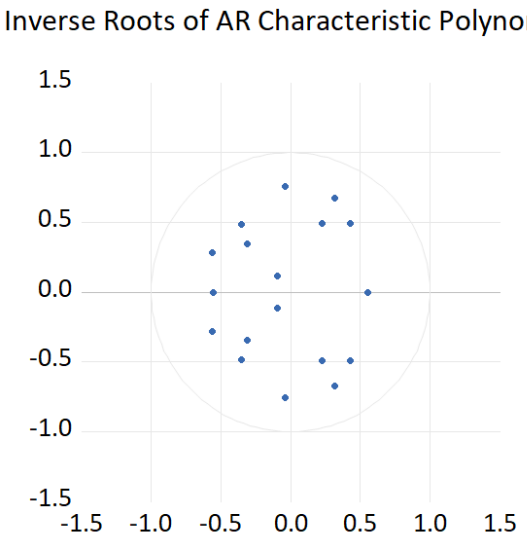
Based on Table 4, both the LR and AIC criteria—which show the smallest and most consistent values—indicate that the optimal lag is 2, as marked by an asterisk (*). Therefore, lag 2 will be used in the next step of estimating the VAR model. Stability testing is an essential requirement, as an unstable VAR model will make the analysis of the IRF and FEVD invalid. A

VAR model is considered stable if all its characteristic roots (modulus values) lie inside the unit circle (modulus < 1). The results of the stability test for the model with lag 2 are shown in Table 5 below.

Source: Data processed, 2025

Root	Modulus
-0.041795 + 0.753508i	0.754666
-0.041795 - 0.753508i	0.754666
0.320446 + 0.674570i	0.746814
0.320446 - 0.674570i	0.746814
0.431264 - 0.488625i	0.651723
0.431264 + 0.488625i	0.651723
-0.562555 - 0.285590i	0.630896
-0.562555 + 0.285590i	0.630896
-0.351785 - 0.486834i	0.600633
-0.351785 + 0.486834i	0.600633
-0.555059	0.555059
0.553902	0.553902
0.225215 - 0.493949i	0.542869
0.225215 + 0.493949i	0.542869
-0.311637 + 0.345400i	0.465209
-0.311637 - 0.345400i	0.465209
-0.091323 + 0.112308i	0.144752
-0.091323 - 0.112308i	0.144752

From Table 5, it can be seen that the values of the characteristic roots or moduli all show numbers less than 1 (< 1).



Source: Data processed, 2025

Figure 1. Stability Test of Vector Autoregression (VAR) System

Figure 1. shows that all the points of the Inverse Roots of the AR Characteristic Polynomial are located inside the circle. Therefore, it can be said that the VAR model to be tested is stable.

Table 6. Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.743801	300.1665	197.3709	0.0000
At Most 1 *	0.674308	223.9057	159.5297	0.0000

At Most 2 *	0.617942	161.0847	125.6154	0.0001
At Most 3 *	0.473271	107.2025	95.75366	0.0065
At Most 4 *	0.384972	71.30257	69.81889	0.0379
At Most 5	0.325746	44.08170	47.85613	0.1083
At Most 6	0.178174	22.00939	29.79707	0.2980
At Most 7	0.114156	11.02072	15.49471	0.2102
At Most 8 *	0.072799	4.232739	3.841465	0.0396

Source: Data processed, 2025

Based on the Johansen Cointegration Test results presented in Table 6, the trace statistic is compared to the 0.05 critical value. When the trace statistic exceeds this critical value, it indicates the presence of a long-term relationship among the variables. Consequently, the analysis proceeds with the VECM model, which is the cointegrated form of the VAR model.

Table 7. Short-Run VECM Estimation

Variabel	Koefisien	
CointEq1	-0.390043	
	(0.34365)	
INF_{-1} INF_{-2}	-0.250407	0.129705
	(0.31584)	(0.21731)
LOG BRS_{-1} BRS_{-2}	0.754452	1.732717
	(3.83912)	(3.07175)
LOG DAR_{-1} DAR_{-2}	-1.481389**	0.481217
	(0.59931)	(0.60999)
LOG DAB_{-1} DAB_{-2}	-0.555911	-0.561073
	(2.23233)	(2.00134)
LOG TAR_{-1} TAR_{-2}	-1.852304	-0.797532
	(1.28122)	(1.10292)
LOG BMR_{-1} BMR_{-2}	0.088642	0.184640
	(0.31897)	(0.31042)
LOG BPT_{-1} BPT_{-2}	0.147505	-0.045457
	(0.37635)	(0.40198)
LOG CBM_{-1} CBM_{-2}	0.316659	0.153938
	(0.25247)	(0.24872)
LOG CBR_{-1} CBR_{-2}	-0.163046	-0.674542**
	(0.20100)	(0.20063)
C	0.006256	
	(0.05668)	

*Note: *significant at the 5% confidence level*
t-table (TINV(prob;deg_freedom(n-k))= 2.0076

Based on Table 7, the adjustment mechanism from the short term to the long term is indicated by the negative coefficient of the error correction parameter (CoefficientEq1). The error correction model is considered valid and stable if the parameter value is negative, with an absolute value of less than one and statistically significant. The interpretation of the error correction value of -0.390043 is that there is an adjustment from the short term to the long term in inflation in Bali Province, which is corrected by 0.390% each month. In the short term, no variables are found to be significant in affecting inflation in Bali Province. In the short-run VECM estimation, there are no variables that are significant at the 5% level. This means that there is no short-term effect. However, the result shows a negative error correction term, which indicates that there is both a short-term and long-term relationship (Pipit et al., 2019). According to Firdaus (2011), only a few variables show significant short-term effects because a variable needs time (lag) to respond to other variables. Therefore, the response usually appears in the long term. In line with the study conducted by Hasanah et al. (2025), in the short

term, no food commodity has an effect on inflation in North Kalimantan Province. However, in the long term, the only commodity that has a positive and significant influence on inflation in North Kalimantan is the price of rice.

Table 8. Long-Run VECM Estimation

Variabel	Koefisien	t-Statistik
INF_{-1}	1.000000	
$LOG\ BRS_{-1}$	4.181165	[5.15629]*
$LOG\ DAR_{-1}$	-0.261972	[-0.76834]
$LOG\ DAB_{-1}$	-0.631788	[-2.91237]*
$LOG\ TAR_{-1}$	-2.313721	[-3.48245]*
$LOG\ BMR_{-1}$	-0.415227	[-4.17920]*
$LOG\ BPT_{-1}$	0.198846	[1.98139]
$LOG\ CBM_{-1}$	-0.155147	[-1.25087]
$LOG\ CBR_{-1}$	-0.079597	[-0.59938]
C	-1.531555	

Source: Data processed, 2025

In the long-term relationship, one out of eight food commodity variables has a positive and significant effect on inflation in Bali Province, which is the price of rice. Meanwhile, three other commodities pork, chicken eggs, and shallots have a negative and significant effect on inflation in Bali Province. The price of rice exerts a positive and statistically significant influence on inflation in Bali Province. Specifically, a 1% increase in the price of rice is associated with a 4.18% rise in inflation. Subsequently, the price of broiler chicken meat has a negative long-term effect on inflation, whereby a 1% increase in its price results in a 0.26% reduction in inflation. In addition, the prices of pork, chicken eggs, and shallots also demonstrate negative and significant effects on inflation in Bali Province. Meanwhile, garlic, red chili, and bird's eye chili exhibit negative long-term impacts on the province's inflation rate.

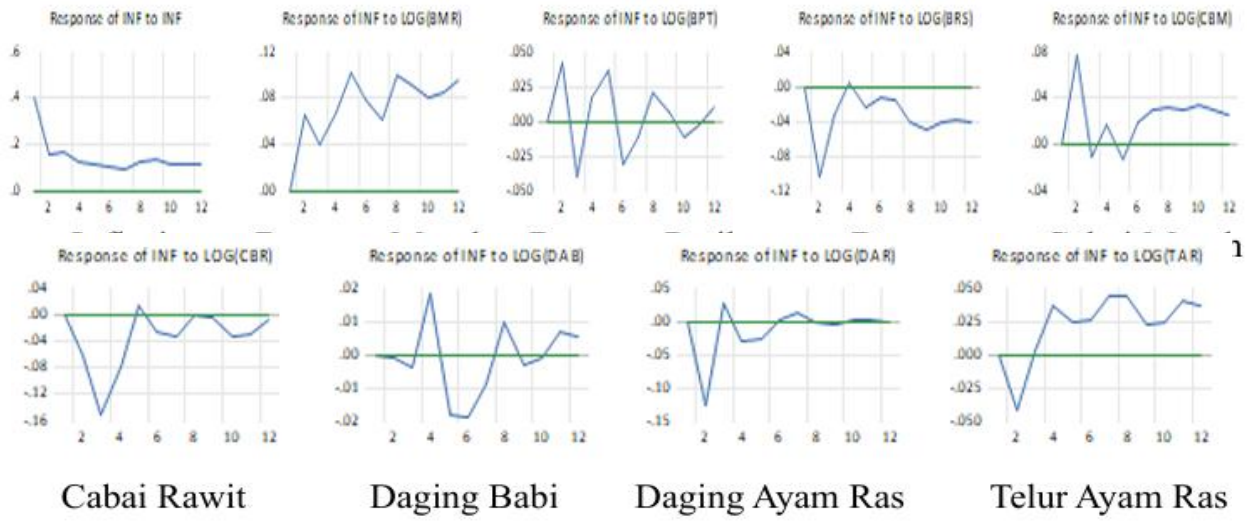


Figure 2. Impulse Response Function (IRF) Graph

The IRF analysis is used to observe how inflation (INF) responds to shocks from changes in food commodity prices in Bali Province over the next 12 periods. The IRF results show that each commodity has a different impact on inflation in terms of direction, strength, and duration of influence. From the figure above, it can be seen that in the first period, there was no shock from food commodity prices that affected inflation in Bali. However, from the second period

until the twelfth, there were three commodities that had a negative response: rice at -0.040%, bird's eye chili at -0.007%, and broiler chicken at -5.70%. A shock in shallot prices in the second period led to a 0.07% increase in inflation**,** which further rose to 0.08% in the sixth period. The high sensitivity of inflation to shallot prices reflects both high price volatility and seasonal dependency of supply. Shallot prices are highly unstable due to significant monthly fluctuations in production and the perishable nature of the commodity (Riyadh et al., 2018). Furthermore, five out of eight food commodities show a positive response to inflation in Bali Province, namely shallots, garlic, red chili, pork, and chicken eggs. In the first period, the shocks did not trigger any immediate inflationary effects; the responses only began in the second period and continued through the twelfth period. Broiler chicken meat, in particular, reached stability between the eighth and twelfth periods.

Table 9.*Variance Decomposition Test*

Variance Decomposition of INF										
Period	S.E.	INF	LOG (BMR)	LOG (BPT)	LOG (BRS)	LOG (CBM)	LOG (CBR)	LOG (DAB)	LOG (DAR)	LOG (TAR)
1	0.406	100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.481	80.852	1.902	0.776	4.733	2.541	1.585	0.000	6.861	0.750
3	0.535	74.699	2.095	1.180	4.188	2.105	9.295	0.005	5.823	0.610
4	0.562	72.615	3.312	1.153	3.806	2.000	10.447	0.113	5.555	0.999
5	0.584	70.452	6.144	1.465	3.703	1.890	9.699	0.204	5.350	1.091
6	0.600	69.408	7.515	1.663	3.557	1.890	9.379	0.294	5.071	1.224
7	0.614	68.533	8.185	1.626	3.467	2.057	9.244	0.301	4.888	1.699
8	0.637	67.092	10.025	1.617	3.639	2.170	8.573	0.301	4.533	2.050
9	0.661	66.511	11.275	1.515	3.964	2.221	7.988	0.283	4.229	2.015
10	0.679	65.886	12.073	1.463	4.126	2.340	7.799	0.268	4.004	2.041
11	0.696	65.102	12.956	1.393	4.213	2.410	7.593	0.264	3.808	2.261
12	0.715	64.390	14.064	1.337	4.318	2.416	7.206	0.256	3.608	2.406

Source: Data processed, 2025

Based on the results of the FEVD analysis, in the first period, all variations in inflation in Bali Province were entirely caused by the inflation shock itself, which was 100%. However, starting in the second period, other variables began to influence the variation in inflation. In this period, 80.852% of the variation in inflation was still explained by inflation itself, followed by shallots at 1.901%, garlic 0.776%, rice 4.732%, red chilies 2.451%, cayenne pepper 1.584%, pork 0.0004%, chicken meat 6.860%, and chicken eggs 0.750%. As seen in the table above, until the end of the 12th period, the contribution of Balinese inflation in explaining its own inflation variation decreased to 64.390%. From the results of the analysis, it is known that garlic, cayenne pepper, pork, and chicken meat tend to show a decreasing role in explaining variations in Balinese inflation in the future. On the other hand, other variables such as shallots, rice, red chilies, and chicken eggs are expected to make an increasingly large contribution to inflation variations in Bali Province in the future.

Table 10. *Granger Causality Test*

Null Hypothesis:	Obs	F-Statistic	Prob.
INFJATIM does not Granger Cause INFBALI	59	4.56263	0.0371*
INFJATIM does not Granger Cause INFBALI		0.05341	0.8181

**significant at the 5% confidence level*
Source: Data processed, 2025

This indicates the existence of inter-regional dependence in meeting the demand for goods and services. Therefore, to fulfill these needs, each region relies on surrounding areas to

supply commodities that cannot be produced or met locally (Hadianto & Setiawan, 2014). The result of the Granger causality test regarding the connection of inflation between provinces is shown in Table 10. It indicates that there is a one-way relationship from East Java Province's inflation to Bali Province's inflation because the probability value is lower than the critical value. This relationship exists because East Java and Bali are neighboring regions that often conduct commodity transactions needed by each other. These trade activities can affect prices in both regions, which is reflected in their inflation rates (Rahayu et al., 2021). Moreover, Bali mainly imports from East Java, and the province relies heavily on processed industrial products from East Java (Zulkarnain & Ulfah, 2021).

CONCLUSION

The results of this study show that in the long term, four out of eight food commodity prices have a significant effect on inflation in Bali Province, with rice prices being the most influential. In the short term, there is no significant relationship found between food commodity prices and inflation in Bali Province. Based on the FEVD analysis, the contribution of food commodity prices to explaining inflation variability in Bali, from the highest to the lowest, is as follows: shallots, bird's eye chilies, rice, broiler chicken meat, red chilies, chicken eggs, garlic, and the lowest is pork. The Granger causality test shows a one-way relationship, where the inflation in East Java Province influences inflation in Bali Province. This means that the supply of food commodities in Bali still mostly depends on other regions, especially East Java, such as the supply of bird's eye chilies, garlic, shallots, and rice.

BIBLIOGRAPHY

Apriyadi, R., & Hutajulu, D. (2020). Pengaruh harga komoditas pangan hewani asal ternak terhadap inflasi di Provinsi D.I. Yogyakarta. *Jurnal Ecobisma, 7*(2), 52–69.

Banerjee, I., Kumar, A., & Bhattacharyya, R. (2020). Examining the effect of COVID-19 on foreign exchange rate and stock market: An applied insight into the variable effects of lockdown on the Indian economy. *1–39*.

Dao, M. C., Gourinchas, P. O., Leigh, D., & Mishra, P. (2024). Understanding the international rise and fall of inflation since 2020. *Journal of Monetary Economics, 102*, 45–60.

Fadlli, M. D. (2022a). The role of East Java as a trade hub for Eastern Indonesia. *East Java Economic Journal, 6*(1), 95–110.

Firdaus, M. (2011). *Aplikasi ekonometrika untuk data panel dan time series*. Bogor: IPB Press.

Ha, J., Ivanova, A., & Ohnsorge, F. (2019). Inflation concepts, evolution, and correlates. *World Bank Policy Research Working Paper No. 8993*.

Hadianto, A., & Setiawan, A. F. (2014). Food prices fluctuation and its impact to inflation in Banten Province. *Jurnal Ekonomi Pertanian, Sumberdaya dan Lingkungan*, 81–97.

Hasanah, N., Abadi, S., & Melani, A. (2025). Analisis efek fluktuasi harga komoditas pangan terhadap inflasi di Provinsi Kalimantan Utara. *Jurnal Ilmiah Mahasiswa Agroinfo Galuh, 12*(1), 458–472.

Inogamov, S., & Leon-Gonzalez, R. (2024). Inflation comovement in emerging economies: The facts and impact of global prices. *Journal of Asian Economics, 94*, 101–120.

Kuma, B., & Gata, G. (2023). Factors affecting food price inflation in Ethiopia: An autoregressive distributed lag approach. *Journal of Agriculture and Food Research, 12*, 1–15.

Marpaung, B., Siregar, H., & Anggraeni, L. (2019). Analysis of El Niño-Niño impact and the price of food commodities on inflation. *Jurnal Ekonomi Indonesia, 8*, 1–20.

Meilaningsih, T., & Yuniastuti, W. (2022). East Java economic analysis on sectoral and regional linkages (inter-regional input-output analysis). *East Java Economic Journal, 6*(1), 81–94.

Pipit, P., Pranoto, Y. S., & Evahelda, E. (2019). Analisis volatilitas harga daging sapi di Provinsi Kepulauan Bangka Belitung. *Jurnal Ekonomi Pertanian Dan Agribisnis, 3*(3), 620–630.

Rahayu, P. I., Famalika, A., & Sihombing, R. (2021). Penerapan model vector autoregressive (VAR(2)) pada data inflasi di Provinsi Jawa Timur dan Bali. *1*(1), 55–66.

Riyadh, M. I., Hendrawan, D., & Silalahi, J. M. (2018). Analisis pergerakan harga cabai dan bawang di Kota Medan. *Kajian Ekonomi dan Kebijakan Publik, 4*(1), 56–68.

Sri Ardiyanti, D., & Juliprijanto, W. (2020). Kontribusi harga komoditas pangan terhadap inflasi di Kota Magelang. *Jurnal Paradigma Multidisipliner (JPM), 1*(1), 51–64.

Ulussever, T., Ertuğrul, H. M., Kılıç Depren, S., Kartal, M. T., & Depren, Ö. (2023). Estimation of impacts of global factors on world food prices: A comparison of machine learning algorithms and time series econometric models. *Foods MDPI, 12*(4), 1–13.

Zulkarnain, R., & Ulfah, N. (2021). Linkages perekonomian Bali. In *Seminar Nasional Official Statistics* (pp. 223–234).