Eurasia: Economics & Business, 11(89), November 2024
DOI https://doi.org/10.18551/econeurasia

UDC 332

ANALYZING THE PRICE RELATIONSHIP OF BIRD'S EYE CHILE: AN EVIDENCE FROM TRADITIONAL MARKETS IN WEST NUSA TENGGARA AND EAST NUSA TENGGARA, INDONESIA

Siubelan Yakobus C.W., **Nendissa Doppy Roy***, **Pellokila Marthen R.**, **Sulastri Viktoriana Sri**, **Chamdra Santhy**
Study Program of Agribusiness, Faculty of Agriculture, University of Nusa Cendana, Indonesia

Lerik Mariana Dina Charlota
Faculty of Public Health, University of Nusa Cendana, Indonesia

Yusuf Herson, **Elim Yuan Valentino**
Regional Planning, Research, and Innovation Agency of East Nusa Tenggara Province, Indonesia

Jalaludin
Faculty of Animal Husbandry, Marine, and Fisheries Sciences, University of Nusa Cendana, Indonesia

Khoiriyah Nikmatul
Faculty of Agriculture, University of Islamic Malang, Malang, Indonesia

*E-mail: roynendissa@staf.undana.ac.id

ABSTRACT
The province of West Nusa Tenggara (NTB) is a major producer of bird's eye chili in Indonesia, while East Nusa Tenggara (NTT) serves as a key consumer market. This study aims to analyze the long-term and short-term relationships between chili prices in Mataram (NTB) and Kupang (NTT) and to examine price fluctuation patterns in these cities. Using monthly price data from January 2018 to December 2022 and the Vector Error Correction Model (VECM), the study finds significant long-term price integration and short-term price responsiveness between Mataram and Kupang. Analysis shows high price volatility, with coefficient of variation values of 52% for Mataram and 41% for Kupang, indicating substantial price instability. These findings highlight the need for stabilization policies to support the Chilean market in NTB and NTT.

KEY WORDS
Bird's eye chile, market integration, price, fluctuation, VECM.

The agricultural sector is a backbone of many economies worldwide, particularly in developing countries, where it is a primary source of income, employment, and food security. Globally, horticultural products such as chili peppers (Capsicum spp.) play a significant role in the economy and food systems. According to recent studies, the demand for chili has grown worldwide due to its culinary uses, nutritional benefits, and medicinal properties (Saptana et al., 2022). In Indonesia, chile production is an essential part of the horticultural sector, and the country has become a significant producer of this commodity. Chile, especially red chili and cayenne pepper, is not only a staple in Indonesian cuisine but also a high-value economic commodity that significantly contributes to rural economies (Rachmaniah et al., 2021).

Public perception highlights the critical importance of chile farming to food security and rural livelihoods. However, chili farmers face substantial challenges, including market fluctuations, crop diseases, and inadequate infrastructure (Hartono et al., 2023). Global

DOI https://doi.org/10.18551/econeurasia

statistics reveal that volatile prices and unpredictable supply chains impact food accessibility and affordability, affecting not only farmers but also consumers worldwide. These conditions emphasize the importance of supporting chile production and ensuring market stability through effective policies and technology (Putri Nuvaisiyah et al., 2019). Consequently, this study addresses the epistemological necessity of analyzing the economic and logistical factors influencing chili production to stabilize markets, enhance farmer welfare, and secure food supplies.

Chilean production in Indonesia has been studied extensively within the frameworks of agricultural economics, rural development, and supply chain management. The conceptual definition of chile as a high-value horticultural crop emphasizes its sensitivity to factors such as climate variability, market dynamics, and policy impacts. For example, theories of agricultural market integration explain how interconnected markets influence the prices of Chile across regions, showing that price changes in one area often affect others (Dessy et al., 2022).

Previous studies have revealed that the economic potential of Chile is hampered by high market volatility, often linked to seasonal fluctuations and climate impacts. In addition, farmer welfare is closely tied to Chile pricing stability, which affects both production motivation and long-term sustainability (Sundari et al., 2021). The ontological understanding of the agricultural supply chain, therefore, encompasses not only economic theories but also social and environmental dimensions, as chile farmers encounter challenges related to capital, technology, and market access. These theories provide the foundation for assessing the structural challenges within Indonesia's Chilean production system, including inefficiencies in distribution and market monopolization by intermediary traders, which often lead to price manipulation and impact farmers' incomes (Karyani et al., 2020).

The primary problem addressed in this study is the fluctuating price of chili, which creates instability within the market and threatens farmer welfare and food security. This issue is compounded by logistical and supply chain challenges, which prevent efficient distribution from high-yielding regions to deficit areas. These price fluctuations often discourage farmers from Chile cultivation due to unpredictable incomes and financial risks. Studies have shown that the lack of stable pricing mechanisms contributes to farmers' reluctance to invest in chili production, which in turn affects supply and price stability (Wardhono et al., 2021).

Without addressing this issue, chili production will likely continue to face disruptions, leading to declining income for farmers and unstable market conditions. Globally, these market dynamics can impact export opportunities, as chile from Indonesia becomes less competitive in terms of quality and price compared to other regions (Angreheni et al., 2020). The current scenario underscores the critical need for strategic interventions, such as contract farming models, improved supply chain infrastructure, and price prediction systems, to stabilize markets and support chili farmers economically (Riyadh, 2023).

The primary aim of this study is to analyze the economic impact of Chile price fluctuations on farmer welfare and to identify strategic solutions that can help stabilize the market and enhance production sustainability in Indonesia. To achieve this aim, the study focuses on the following objectives: to evaluate the economic effects of price fluctuations on chili farmers in Indonesia, examining both direct financial impacts and broader social implications on farmer welfare; to identify the structural and logistical challenges within the Chile supply chain, with an emphasis on factors that lead to market instability and affect the efficient distribution of chiles across Indonesia; to propose evidence-based policy recommendations and technological interventionsthat could mitigate the adverse effects of price volatility and support a more resilient, sustainable Chilean production sector.

METHODS OF RESEARCH

This research was conducted in two provinces, namely Mataram City, NTB Province and Kupang City, NTT Province. The consideration of selecting the research location was

done intentionally (Purposive Method). Data collection was carried out from February to March 2024 which is the data collection stage.

The data used in this study is time series data from January 2018-December 2022. It is monthly price data for cayenne pepper in Mataram City and Kupang City. The data was obtained from the Agriculture Service of Mataram City and Kupang City, BPS of NTT and NTB Provinces, and National Strategic Food Price Information from Bank Indonesia, as well as other Reference Sources related to the study.

This study uses the technique of recording and observing time series data at the Central Statistics Agency (BPS) or institutions related to the research. Recording Data collection comes from secondary data by recording data at the Central Statistics Agency (BPS) or institutions related to the research and the official website of Bank Indonesia https://www.bi.go.id which is price data owned and presented in real time (daily, weekly, and monthly price data).

This study uses a unit root test using the Augmented Dicky-Fuller (ADF) model. Determining the optimal lag length using the Akaike Information Criteria (AIC) and Schwarz Criteria. Cointegration test is the second stage in integration testing which in this study aims to determine the existence of long-term correlation between markets.

The Impulse Response function is used to determine how much influence a shock to a variable has on the variable itself and other variables in a system.

The VECM model is used to overcome data non-stationarity, where this model will gradually correct the imbalance, deviation through short-term partial adjustments (Enders, 1995 and Gujarati, 2004). This technique is also used to see short-term imbalances towards long-term equilibrium called the Error Correction Model (ECM).

Granger Causality Test Granger causality test is conducted to see whether two variables have a reciprocal relationship or not. In other words, whether one variable has a causal relationship with another variable, because each variable in the study has the opportunity to be an endogenous or exogenous variable. To reject or accept the null hypothesis, you can see the probability value compared to the level of confidence, in this study using a critical value of 5%. If the probability value is greater than 5% then the null hypothesis is rejected which means there is a causal relationship in the variables being tested.

The coefficient of variation (CV) is a measure of relative risk calculated by dividing the standard deviation by the expected value (Pappas and Hirschey, 1995). If the CV value in the market ranges between 5-9%, then the fluctuation is considered unstable or there is fluctuation turmoil. Conversely, if the CV value is less than 5%, the price is considered stable (Ministry of Trade of the Republic of Indonesia, 2010).

In this study, data management was carried out using Software: Eviews9 and Microsoft Excel, which aims to test stationarity, produce cointegration analysis, and fluctuations to describe price movement patterns.

RESULTS AND DISCUSSION

From the price data for cayenne pepper in the traditional markets of Mataram City and Kupang City, it can be seen using monthly data on cayenne pepper prices for the period January 2018-December 2022.

Based on the results of stationary testing using ADF modeling, it can be seen that the data is stationary at the level indicated by the ADFtest statistic value of 2.986253 at a 5% confidence level.

ADFtest critical and the probability value is less than 0.005, namely 0.0481. So it can be concluded that the time series data is stationary at the level or in other words has accepted H1.

Based on the results of stationary testing of time series data using augmented Dicky-Fuller modeling, it can be seen that the probability value is 0.0353, which is less than 0.005 and the ADFteststatistic value is 3.130503, which is smaller than the ADFtestcritical value at a confidence level of 1%, which is 3.679322. Thus, it can be stated that the price data for

Cayenne Pepper in Kupang City has been stationary at the level or in other words accepts H1.

Table 1 – Stationary Test Results of Time Series Data on Cayenne Pepper Prices in Mataram City, NTB 2018-2022

Null Hypothesis: KOTAMATARAM has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistics		-2.986253	0.0481
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Source: Secondary data processed, 2024. Description: Significant at α 5% confidence level.

Table 2 Stationary Test Results of Time Series Data on Chili Prices in Traditional Markets in Kupang City, NTT, 2018-2022

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistics		-3.130503	0.0353
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Source: Secondary data processed, 2024. Description: Significant at 1% confidence level.

Table 3 – Results of Optimum Lag Testing of Time Series Data on Chili Pepper Prices in Mataram City and Kupang City

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-466.9223	NA	1.12e+16	42.62930	42.72848	42.65266
1	-460.5134	11.06989*	9.02e+15	42.41031	42.70787*	42.48040
2	-455.1382	8.307162	8.06e+15*	42.28529*	42.78122	42.40211*
3	-453.8237	1.792440	1.06e+16	42.52943	43.22373	42.69298
4	-450.6534	3.746685	1.21e+16	42.60486	43.49753	42.81514
5	-447.7017	2.951786	1.46e+16	42.70015	43.79119	42.95717
6	-445.3338	1.937308	1.98e+16	42.84853	44.13794	43.15228
7	-441.7650	2.271055	2.65e+16	42.88773	44.37552	43.23821
8	-434.1996	3.438814	2.90e+16	42.56360	44.24976	42.96081

Source: Secondary Data processed, 2024.

Based on the table above, it can be seen that the most frequently appearing star sign is lag. The appearance of the star sign is spread across three criteria, namely FPE, AIC (Akaike Information Criterion), and HQ (Hannan-Quinn Information Criterion) for the three criteria can be determined from the lowest value. So it can be concluded that the second lag (2) is the optimal Lag length in this VAR-VECM test.

DOI https://doi.org/10.18551/econeurasia

Based on the results of the VAR analysis using the Johannsen test, it can be seen that the trace statistic value (21.71891) > critical value (15.49471) at none*, is the same as the maximum eigenvalue value (16.57511) > critical Value (14.26460) with a probability value of less than 5%. Thus, it can be stated that the price of cayenne pepper in Mataram City and Kupang City has a long-term equilibrium relationship. This is in line with research conducted by Wati Sukma (2021) which states that there is a long-term equilibrium relationship between the markets in NTB (Mataram and Bima) and Kupang City which is marked by price changes that occur in the central market which are always followed by the following markets.

Table 4 – Results of the Cointegration Test of Mataram City and Kupang City

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
None *	0.458760	21.71891	15.49471	0.0051
At most 1 *	0.173463	5.143801	3.841466	0.0233

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**
None *	0.458760	16.57511	14.26460	0.0212
At most 1 *	0.173463	5.143801	3.841466	0.0233

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

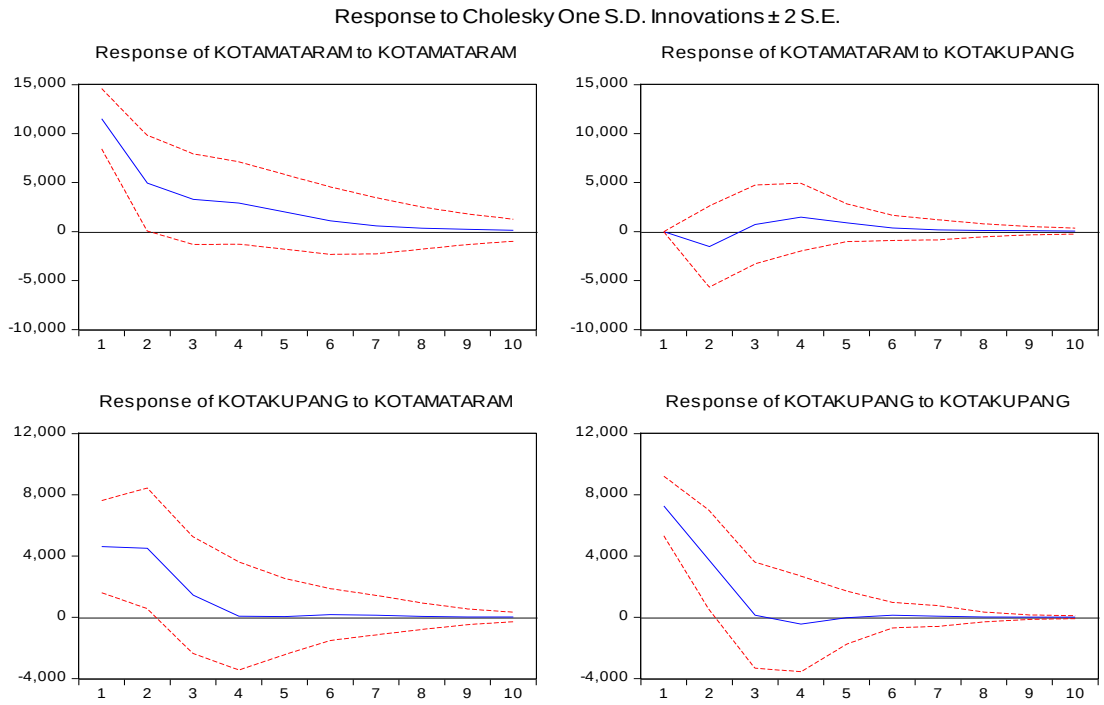

Figure 1 – Graph of Impulse Response Function of Chili Prices between Mataram City and Kupang City

DOI https://doi.org/10.18551/econeurasia

The blue line shows the city of Mataram while the red line shows the city of Kupang. The four line graphs above contain information from the shock carried out by the independent variables that affect the dependent variables. The two red lines are projections of the shock experienced by the blue line. Based on the above, it can be explained:

1. The first response graph shows the response of Mataram City to Mataram City showing an upward graph, namely if it is assumed that in Mataram City there is a shock to the price in the present, it will have an impact in the future. The shock in Mataram City (blue line) starts from the first period and continues to increase until the 10th period with prices that are increasing and getting further from the equilibrium point. This means that the shock in the present is directly proportional to the shock in the future.
2. The second response graph shows the response of Mataram City to Kupang City. This second graph shows that if there is a shock experienced by the price of cayenne pepper in Mataram City, it will affect Kupang City. The shock experienced by Kupang City began in the middle of the first period and continued to move away from the equilibrium point until the 10th period. However, the price changes experienced were not higher than those experienced by Mataram City to Mataram City itself.
3. The third response graph shows the response of Kupang City to Mataram City. Assuming that there is a shock experienced by Mataram City, it shows a change in the balance graph experienced by Kupang City which is marked by an increase in the first period and continues to increase until the 10th period and the projection of the shock experienced by Mataram City has a negative and positive effect on Kupang City. This is influenced by transportation costs, slow distribution, calculation and data collection of damaged roads and travel data so that there is an increase in prices and balance in Kupang City.
4. The fourth response graph shows the response of Kupang City to Kupang City. If there is a shock in Kupang City at present, it will affect price fluctuations in the future. Similar to the first graph, each variable will form the same pattern to itself. This graph shows that Kupang City is no longer at the equilibrium point starting from the first period and the increase continues until the 10th period.

Based on the explanation above, each variable influences other variables and itself until certain time and does not return to the equilibrium point in the 10th period and so on. This impulse response graph only shows the shock that occurs in a variable that may affect other variables but does not measure the equilibrium value and its relationship, so VECM testing is needed.

Based on the results of the ECM test, the top of the table indicates a long-term relationship and the table below it is tasked with indicating whether or not there is a short-term relationship in both variables. The value that serves as Tstatistic is the number in the square brackets, later the number in the square brackets will be compared with the Ttable obtained from = TINV (0.05; 58) or 2.001717.

In accordance with the observation criteria, namely if the Tstatistic value < from Tcritical then it states that there is no significant influence, while if the Tstatistic value > from the Tkirtis value then it can be concluded that Mataram City has a significant influence on Kupang City. The following are the observation results from the calculation of the table above:

- In the short term, price changes in Mataram City 1 lag ago, significantly negatively affect Kupang City at present with a Tstatistic value of |-0.52125| < Tcritical value | 2.001717|. If the price increase 1 lag ago increased by 1 rupiah, it caused the current price change in Kupang City to increase by 0.323227 rupiah.
- In the long term, price changes in Mataram City have a negative and significant effect on price changes in Kupang City with a Tstatistic value of | -1.42643| < Tcritical value | 2.001717|.

By selecting the highest value of R-squared of0.226154or 22.61% concluded that the variables entered were already in the best model. The estimation results above can be concluded that Mataram City has a relationship and influences price changes in Kupang City,

the results of this VECM modeling test are in line with research conducted by Wati Sukma (2021) which states that there is a short-term relationship between the two regions which is marked by price changes that occur in NTB have a positive effect, namely every increase in the price of shallots by 1 rupiah in NTB (Mataram and Bima) will be followed by Kupang City.

Table 5 – Results of VECM Test of Chili Price Data in Mataram City and Kupang City

Cointegrating Eq:	CointEq1	
KOTAMATARAM(-1)	1,000,000	
KOTAKUPANG(-1)	-2.509725	
	(0.48527)	
	[-5.17182]	
C	64893.16	
Error Correction:	D(KOTAMATARAM)	D(KOTAKUPANG)
CointEq1	0.122303	0.418385
	(0.15038)	(0.10496)
	[0.81329]	[3.98622]
D(KOTAMATARAM(-1))	-0.323227	-0.082438
	(0.22660)	(0.15815)
	[-1.42643]	[-0.52125]
D(KOTAMATARAM(-2))	-0.100991	-0.180783
	(0.21381)	(0.14923)
	[-0.47234]	[-1.21145]
D(KOTAKUPANG(-1))	-0.176225	0.369648
	(0.29559)	(0.20631)
	[-0.59618]	[1.79173]
D(KOTAKUPANG(-2))	0.128901	0.283943
	(0.29838)	(0.20825)
	[0.43200]	[1.36344]
C	-332.4768	-50.53138
	(2334.14)	(1629.11)
	[-0.14244]	[-0.03102]
R-squared	0.226154	0.476066
Adj. R-squared	0.041905	0.351320
Sum sq. resids	2.98E+09	1.45E+09
SE equation	11921.37	8320.503
F-statistic	1.227436	3.816274
Log likelihood	-288.3430	-278.6335
Akaike AIC	21.80318	21.08396
Black SC	22.09115	21.37193
Mean dependent	-490.5185	-627.5926
SD dependent	12179.29	10330.81
Determinant residual covariance (dof adj.)		7.34E+15
Determinant residual covariance		4.44E+15
Log likelihood		-563.0284
Akaike information criterion		42.74284
Black criterion		43.41476

Source: Secondary Data processed, 2024.

The analysis of the causal relationship of each rice price variable in East Java and NTT can be observed through the Granger causality test. In this study, the causality test was carried out using the Granger Causality Test with H0 that there is no causal relationship, and H1 that there is a causal relationship. Rejection of H0 is carried out based on a probability value that is smaller than the predetermined critical value.

Table 6 – Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
KOTAKUPANG does not Granger Cause KOTAMATARAM	28	0.73955	0.4883
KOTAMATARAM does not Granger Cause KOTAKUPANG		0.64295	0.5349

Source: Secondary Data processed, 2024.

Based on the results above, there is a one-way relationship between Mataram City and Kupang City as evidenced by the probability value of Mataram City against Kupang City of 0.5349, which is greater than the probability value set at 0.05 or 5%. This is in accordance with research by Kapioru et al. (2020) according to the results of the Granger causality test, it only occurs in one direction, namely between collectors and traditional markets. This means that price changes that occur at the collector or trader level change prices at the market level and do not affect the other direction.

Trend of Chili Price Movement in Mataram City and Kupang City for the period January 2018-December 2022 from the lowest price of IDR 11,250.00 to the highest price of IDR 83,150.00 which is very different. The picture above can also be seen the similarity of the price fluctuation trend has a similar trend every year even between these two regions. If you pay attention, these two regions experienced an increase in prices in the period 2020, 2021 although there will be a decrease between the middle of that time. However, this does not apply in 2020 where there has been a significant change in the trend, namely the price increase that has occurred in early 2020 and continues to change with a trend that is very different from the previous or subsequent years. This is due to the economic shock that occurred in 2020 when the Covid 19 pandemic began to enter and spread in Indonesia. This almost similar trend occurs in June every year, which is marked by changes in prices in each intersecting city. This intersecting graph shows the lowest price in Kupang City of IDR 13,500 and the highest price of IDR 73,750.00 in 2021 to November 2023. Maratam City reached its lowest price of IDR 11,250 in 2018 and its highest price of IDR 83,150.00 in 2021 to 2022 and became the highest price ever in Mataram in the 2018-2022 period. Based on Figure 2, it can also be seen that these two areas have price fluctuations that can be displayed in the graph above, and show that the trend in Kupang City has experienced greater fluctuations than the example of the difference between the highest and lowest prices in this period that has ever occurred to prove this statement, the calculation of the Coefficient of Variation can be seen below.

The coefficient of variation (CV) is a measure of relative risk obtained by dividing the standard deviation by the expected value (Pappas and Hirschey, 1995).

If the CV value ranges from alpha 5% -9%, it can be stated that the fluctuation in the data is unstable, while if the CV value is <5%, the data is said to be stable or highly fluctuating. To see this, calculations were made on these two regions using time series data on red chili prices for the period January 2018 - December 2022, as follows: Coefficient of variation of Mataram City is CV=52%.

The coefficient of variation in Mataram City is 52%, which is greater than 5%, indicating that the price of cayenne pepper in this area fluctuates greatly or the price fluctuations are very unstable.

The coefficient of variation in Kupang City is 41% when compared to the alpha value of 5%. The CV value in Kupang City is very large so it can be stated that the price of cayenne pepper in this area is very unstable.

DOI https://doi.org/10.18551/econeurasia

Based on the two calculations above, it can be concluded that Mataram City and Kupang City, when viewed from the price movement trend, have almost the same trend and even the comparison of the highest and lowest prices in the two regions is far apart, especially in Kupang City, but based on calculations using the coefficient of variation, the biggest fluctuations occurred in Mataram City which has a very high CV value of 52% greater than the alpha value and even greater than the CV value in Kupang City with a CV value of 41%. Although it is a reference market and a center for producing cayenne pepper, Mataram City has high and very unstable price fluctuations, followed by Kupang City which also has high and very unstable price fluctuations, the results above are in line with Kapioru, et al. (2020) whose CV calculation results for collectors were 24.03% and in traditional markets were 22.67%, which means that price fluctuations in these two institutions are very high and unstable.

CONCLUSION AND RECOMMENDATIONS

Based on the analysis and discussion, it can be concluded that there is a price integration between Mataram and Kupang that demonstrates long-term equilibrium. This analysis indicates that price changes in cayenne pepper in Mataram significantly impact prices in Kupang, while price changes in Kupang do not reciprocally affect prices in Mataram. This one-way relationship suggests that Mataram acts as a reference market or price leader for Kupang, highlighting Mataram's role as the primary supplier for cayenne pepper demands in Kupang.

Moreover, the price trends of cayenne pepper in both cities reveal a highly volatile and unstable pattern. The coefficient of variation (CV) for cayenne pepper prices in Mataram reached 52%, higher than the CV in Kupang, which was 41%. This finding indicates that although both cities experience high price fluctuations, the variability in Mataram is greater, subsequently affecting the stability of prices in Kupang. This fluctuation pattern could be influenced by factors such as distribution infrastructure limitations, seasonal harvest variations, and Kupang's dependency on supply from Mataram.

Considering the market integration and volatile price patterns between Mataram and Kupang, it is recommended that the government formulates policies to reduce Kupang's dependency on Mataram, especially to stabilize cayenne pepper prices. One policy recommendation is to enhance support for distribution infrastructure in Kupang to ensure more stable cayenne pepper supply. Additionally, the government should consider implementing a transparent price information network to allow farmers to monitor price movements in reference markets, thereby assisting them in securing better pricing positions at the production level.

Furthermore, the government is encouraged to promote diversification in cayenne pepper supply sources for Kupang by facilitating access to alternative supply sources outside Mataram. Such diversification efforts are expected to ease pressure on cayenne pepper prices in Kupang and provide more options for consumers in the region.

SUGGESTIONS FOR FUTURE STUDIES

This study provides a foundation for further research on price integration and fluctuation patterns of other horticultural commodities in Indonesia. Future studies can focus on specific factors influencing price volatility, such as climatic conditions, interprovincial trade policies, and distribution systems. Additionally, a deeper examination of the long-term impacts of price fluctuations on farmers' incomes and consumer welfare in Kupang is necessary. Given the importance of cayenne pepper in the national food supply chain, further analysis of the broader effects of price changes on a national scale could offer a more comprehensive perspective for policymakers in designing food security and price stability strategies for the future.

DOI https://doi.org/10.18551/econeurasia

REFERENCES

1. Angreheni, D., Darma, R., & Asrul, L. (2020). Impact of contract farming on price: a case study of red chili farmers in Magelang regency. IOP Conference Series: Earth and Environmental Science, 473.
2. Badan Pusat Statistik Nasional (2020) Porduksi Cabai Rawit di Indonesia. Badan Pusat Statistik Nasional.
3. Badan Pusat Statistik. (2016) Nusa Tenggara Timur Dalam Angka. (2016). Badan Pusat Statistik.
4. Badan Pusat Statistik (2018) Kota Mataram dalam angka (2018). Badan Pusat Statistik Kota Mataram.
5. Badan Pusat Statistik (2019) Kota Mataram dalam angka (2019). Badan Pusat Statistik Kota Mataram.
6. Badan Pusat Statistik Kota Kupang, (2017). Proyeksi Penduduk Kota Kupang.
7. Badan Pusat Statistik Nusa Tenggara Barat. (2018). Produksi Cabai Rawit.
8. Badan Pusat Statistik. (2017). Kota Kupang Dalam Angka (2017). Badan Pusat Statistik Kota Kupang.
9. Badan Pusat Statistik. (2021). Kota Kupang Dalam Angka (2021). Badan Pusat Statistik Kota Kupang.
10. Dessy, V., Toiba, H., & Fahriyah, F. (2022). Market integration analysis of cayenne pepper in East Java Province. HABITAT.
11. DinasPertanian dan Kehutanan Kota Kupang. (2018). Produksi dan Luas Panen Cabai Rawit.
12. Hartono, R., Rahman, M. S., Retnoningsih, D., & Shaleh, M. I. (2023). Price volatility of horticulture commodity during the pandemic in East Java, Indonesia. HABITAT.
13. Haryanto, L., Harahap, M. D., & Putri, D. I. (2023). The heterogeneity of small, mid-scale, and large-scale curly red chili farming in Megamendung, Indonesia. Jambura Agribusiness Journal.
14. Kapioru Charles, Nendissa Roy, Bano Maria (2020) Market Cointegration And Red Chili Price Behavior Between Wholesalers And Traditional Markets, (2020). Kupang.
15. Karyani, T., Susanto, A., Djuwendah, E., & Hapsari, H. (2020). Red chili agribusiness and the risks faced by the farmers. IOP Conference Series: Earth and Environmental Science, 466.
16. Kementrian Pertanian (2017). Pengembangan Tanaman Hortikultura dan Ketahanan Terhadap Hama dan Penyakit. Indonesia
17. Limun, B. (2007). Analisis integrasi pasar beras di Bengkulu. Statistik Pertanian Tanaman Hortikultura Kabupaten Kubu Raya (2016)
18. Muslimin, Taufik, M., Thamrin, M., & Suddin, A. F. (2021). Financial analysis of red chili farming business with green cultivation technology in South Sulawesi. IOP Conference Series: Earth and Environmental Science, 911.
19. Nisa, K. (2017). Analisis Integrasi Pasar Horisontal Cabai Rawit (Capsicum Frutescens L) Dan Cabai Merah Besar (Capsicum Annum L) (Studi Kasus Di Pasar Desa Dlanggu Dan Pasar Desa Pohjejer Kabupaten Mojokerto) (Doctoral Dissertation, University Of Muhammadiyah Malang).
20. PIHPS Nasional (2022) Harga cabai merah besar. Nusa Tenggara Timur. (2022).
21. PIHPS Nasional 2018. Harga cabai merah besar. Nusa Tenggara Barat.2018.
22. PIHPS Nasional 2018. Harga cabai merah besar. Nusa Tenggara Timur.2018.
23. PIHPS Nasional 2022. Harga cabai merah besar. Nusa Tenggara Barat.2022.
24. Putri Nuvaisiyah, F. Nhita, & D. Saepudin. (2019). Price prediction of chili commodities in Bandung Regency using Bayesian Network. International Journal on Information and Communication Technology (IJoICT).
25. Rachmaniah, M., Suroso, A., Syukur, M., & Hermadi, I. (2021). Strategic food risks – chili's agrosystem perspective. Jurnal Manajemen dan Agribisnis.

DOI https://doi.org/10.18551/econeurasia

26. Riyadh, M. I. (2023). Factors influencing the prices of red chili and shallots in Indonesia: Analysis of the impact on the global market. International Journal of Social Service and Research.
27. Saptana, E. Ariningsih, A. Ashari, E. Gunawan, A. D. Perwita, S. G. Sukmaya, H. P. Saliem, H. J. Purba, K. S. Indraningsih, & A. Pitaloka. (2022). Competitiveness and impact of government policy on chili in Indonesia. Open Agriculture, 7, 226-237.
28. Sundari, M. T., Darsono, J., Sutisno, J., & Antriyandarti, E. (2023). Analysis of chili supply in Indonesia. IOP Conference Series: Earth and Environmental Science, 1200.
29. Sundari, M. T., Darsono, J., Sutrisno, J., & Antriyandarti, E. (2021). Analysis of chili farming in Indonesia. IOP Conference Series: Earth and Environmental Science, 905.
30. Susenas dan BPS. 2016. Perkembangan Kebutuhan Konsumsi Cabai Rawit Nasional. Outlook Cabai Rawit. 2017.
31. Wardhono, A., Nasir, M., Qori'ah, C. G., & Indrawati, Y. (2021). Perfecting policies of chili agribusiness to support food security: evidence from Indonesia districts. IOP Conference Series: Earth and Environmental Science, 759.
32. Wati Sukma (2021) Kointergasi Pasar Bawang Merah Antar Provinsi Nusa Tenggara Barat dan Nusa Tenggara Timur. 2021. Kupang.
33. Widarjono. 2010. Analisis Statistika Multivariat Terapan. Edisi pertama. Yogyakarta: UPP STIM YKPN.
34. Widaryono, A. (2018). Ekonometrika Pengantar Disertai Panduan Eviews, Edisi Kelima, Ekonesia. Yogyakarta.