

# Influence of Strategic Food Price on Inflation in Medan City

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## ABSTRACT

This study aims to determine how much influence strategic food prices have on inflation in Medan City. The data collection for this research was sourced from several related agencies, such as the Central Statistics Agency for Medan Province, Bank Indonesia, the Food Crops and Horticulture Office for North Sumatra Province, and other literature. The data analysis method used in this study is to use the Data Analysis Matrix. The results of the study show that the development of food commodity prices in Medan City from January 2018 to July 2021 generally has a fluctuating tendency.

**Keywords:** Commodities, Food Prices, Inflation

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## INTRODUCTION

Food commodities have such an important role in making food a strategic sector because food is one of the primary human needs. The availability of food for the community must always be guaranteed. Food is everything that comes from plants, livestock and fish to meet the need for carbohydrates, vitamins, proteins, fats and minerals and their derivatives that are beneficial to humans. Adequacy of food for a nation is a very strategic matter.

The development of the agricultural sector, especially the food crops sub-sector, has a very important role, this is because the food crops sub-sector has an important role in supporting the lives of the majority of Indonesia's population. Food commodity prices are one of the factors driving regional inflationary pressure, especially in areas where consumption patterns are more dominated by the food group and also in areas that have a high dependence on supplies from other regions such as Medan City.

According to Bank Indonesia, as a whole in 2021, North Sumatra's economy is predicted to grow in the range of 2.5 - 3.3%. Even though the mobility restriction policy that the Government had to adopt to deal with the rise in Covid 19 cases had restrained economic activity, continued policy stimulus, opening priority sectors and MSME support, high export performance, and accelerated vaccination are expected to be able to maintain the momentum of economic recovery. Meanwhile, on an annual basis, inflationary pressure is expected to increase but still within the range of 3.0% ± 1%. The ongoing recovery phase will increase domestic demand as well as improve people's purchasing power which in turn will affect price increases.

Food sensitivity is shown through its price, where if food prices increase it will cause price fluctuations and inflation. When a food commodity experiences a crop failure, it is likely that there will be price fluctuations in the market. Likewise, when an abundant harvest commodity also affects the stability of market prices. The development of food commodity prices in this condition is known as volatile component inflation or volatile food. Inflation included in the category of non-core inflation is defined as inflation affected by shocks in the foodstuffs group. The shock referred to in the above definition is a situation that may occur at any time in the condition of food commodities, such as harvests, natural disturbances, developments in domestic food commodity prices, as well as developments in international food commodity prices.

*Volatile food* is needed to maintain the price stability of food commodities in the market. If there really needs to be an increase in the price of a food commodity, for example rice, chilies, and others, the increase that occurs is still within a reasonable level. Otherwise, sudden and very extreme fluctuations in food prices will become a serious threat to the people's food security. Because food security will directly impact the availability, access and utilization of food. Communities with a standard of living below the average line are the ones who feel the most impact from the food price fluctuations. Just imagine, at least middle and lower class people can spend 60% to 70% of their income just for food. In addition, drastic and excessively high price increases can make production, investment, storage and trading activities more complex due to the uncertainty of future price increases.

Stabilization of food prices needs to be carried out so that economic development runs smoothly and is conducive to supporting the creation of social, political and security stability. Stable food prices are generally also desired by the community because prices that fluctuate greatly are very risky and result in uncertainty that must be faced in making decisions. According to Estrades and Terre (2012), states that rising food prices affect the poor population which will be even higher

## METHOD

This research was conducted in Medan City, North Sumatra Province in February 2022 based on secondary data (time series) sourced from the Central Statistics Agency, Bank Indonesia, Food Crops and Horticulture Service.

This study uses secondary data sources. The type of data used is monthly time series data from January 2018 to July 2021 or for 43 months. The data collection for this research was sourced from several related agencies, such as the Central Statistics Agency for Medan Province, Bank Indonesia, the Food Crops and Horticulture Office for North Sumatra Province, and other literature. Obtained from various sources, such as reading books, scientific journals and the internet that are appropriate to the research topic.

The data analysis used is Vector Autoregression (VAR) which is a system of equations that shows each variable as a linear function of the constants and the lag values of the variables themselves and the lag values of other variables in the system. The Vector Autoregression (VAR) method was first discovered by Sims in 1980. The VAR model emerged because often economic theory could not determine exact specifications (Widarjono, 2013).

The research data used in the VAR model is time series data. The VAR model is built with an approach that minimizes theory with the aim of being able to properly capture economic phenomena. Thus, the VAR model is also known as a non-structural model or a model not based on theory. VAR analysis was performed using SPSS software.

According to Juanda (2012), a causality test is a test to determine cause and effect relationships between variables in a VAR (Vector Autoregressive) system. Two sets of linear time series data related to variables X and Y are formulated in the form of a regression model as follows:

$$X_t = \sum_{i=1}^m a_i X_{t-i} + \sum_{j=1}^n b_j Y_{t-j} + u_t$$

$$Y_t = \sum_{i=1}^r c_i Y_{t-i} + \sum_{j=1}^s d_j X_{t-j} + v_t$$

Where  $u_t$  and  $v_t$  are error terms which are assumed not to contain serial correlation and  $m = n = r = s$ . The results of these two forms of linear regression models will produce four possibilities regarding the value of the respective regression coefficients.

## RESULTS AND DISCUSSION

### Development Trends in Strategic Food Prices in Medan City

Trends in the development of strategic food prices in the city of Medan which consist of several commodities, namely rice, red chilies, shallots, and purebred chicken meat.

#### 1. Development of Rice Prices

The development of rice prices in Medan City at the time of research starting in 2018 January to 2021 July can be seen in Figure 1.

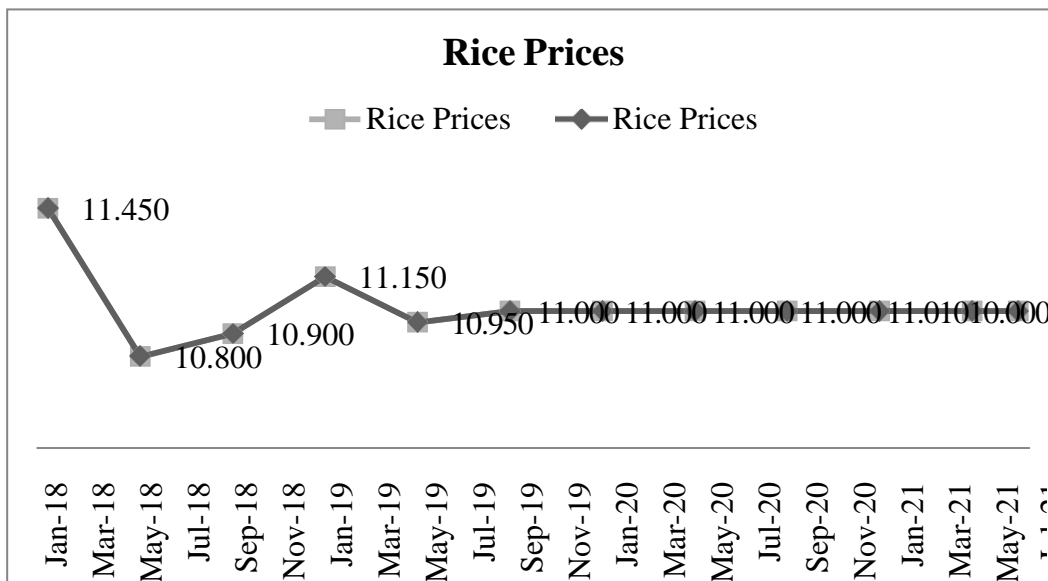


Figure 1. Graph of Rice Price Development / kg in Medan City January 2018 – July 2021

The average price is reached at Rp. 11,015 / kg, the lowest price occurred in May 2018, namely Rp. 10,800 / kg and the highest price occurred in January 2018 of Rp. 11,450 / kg. This is due to the policies carried out by the government in setting the prices of basic commodities which include the commodity of rice.

**2. Development of Red Chili Prices**

Red chilies are one of the biggest contributors to inflation, especially in Medan City. This is due to the high consumption of red chilies. The price of red chili is influenced by the availability in the market. Movements in the price of red chili are also able to affect inflation in Medan City. The development of red chili prices in Medan City at the time of research starting in 2018 January to 2021 July can be seen in Figure 2.

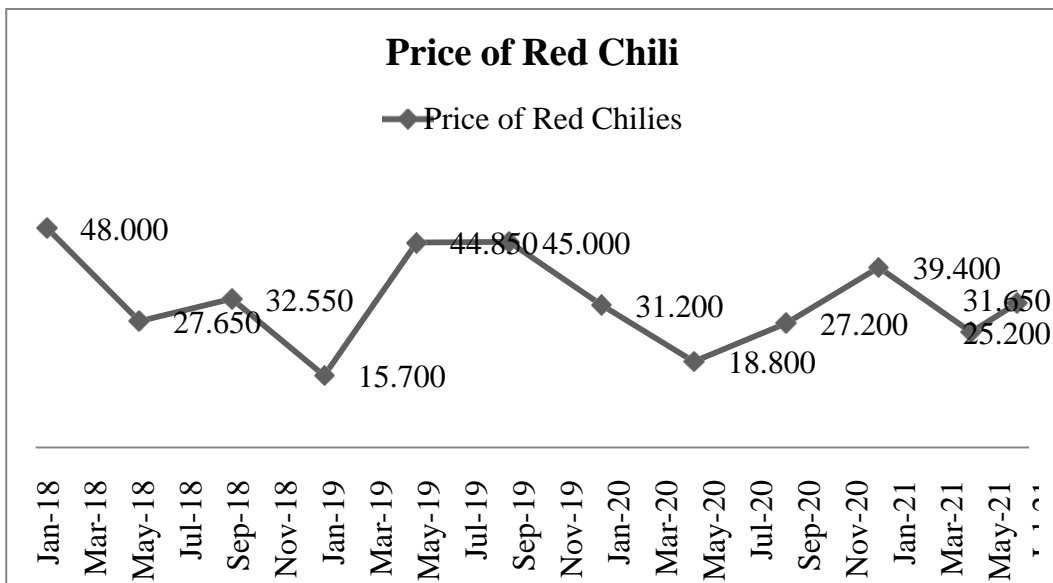


Figure 2. Graph of Red Chili Price Development / kg in Medan City January 2018 – July 2021

The average price of red chili is reached at Rp. 33,495 / kg. This is due to the existence of a policy carried out by the government in setting prices for basic commodities which are basic needs for all Indonesian people.

**3. Shallot Price Development**

Shallot is a commodity that has relatively high price fluctuations. Shallot price fluctuations can be caused by supply and demand factors. The development of shallot prices in Medan City at the time of research starting in 2018 January to 2021 July can be seen in Figure 3.

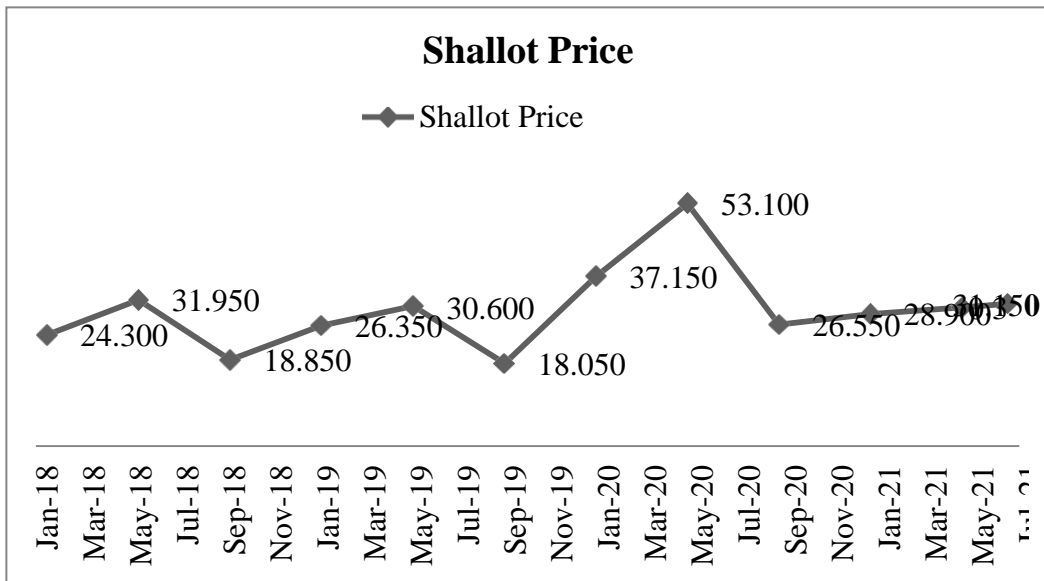


Figure 3. Graph of Shallot Price Development / kg in Medan City January 2018 – July 2021

The average price is reached at Rp. 29,353 / kg, the lowest price occurred in September 2019, namely Rp. 18,050 / kg and the highest price occurred in May 2020 of Rp. 53,100 / kg. This is due to the policy carried out by the government in setting the price of staple materials which include the shallot commodity.

#### 4. Development of Race Chicken Meat Prices

Purebred chicken meat is a source of animal protein which is consumed by many Indonesian people, especially the people of Medan City. People consume purebred chicken because the price is relatively affordable and easy to obtain. The development of purebred chicken meat prices in Medan City at the time of research starting in 2018 January to 2021 July can be seen in Figure 4.

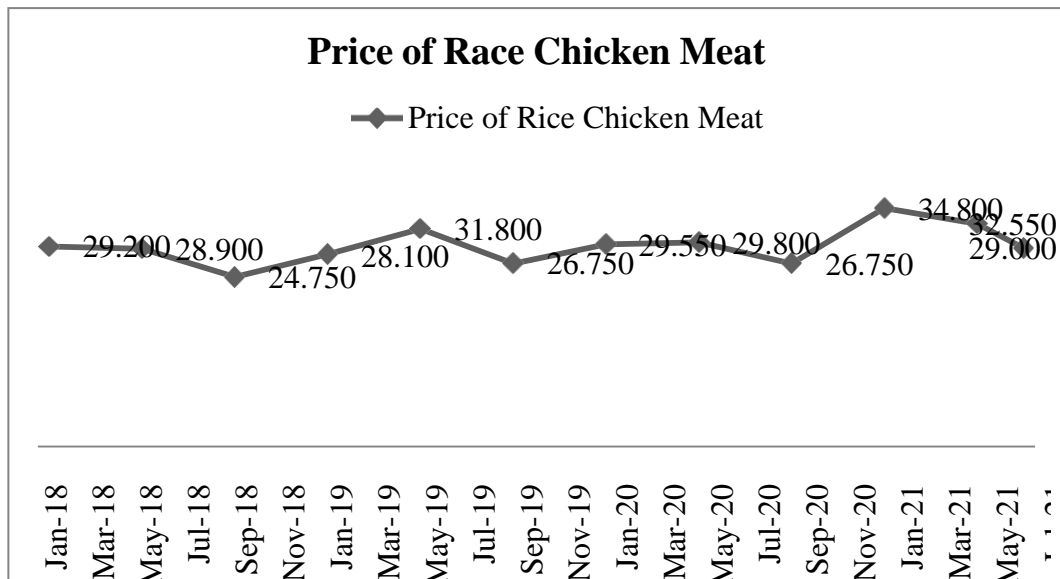


Figure 4. Graph of Price Development of Purebred Chicken Meat / kg in Medan City January 2018 – July 2021.

## 5. Development of Inflation in Medan City

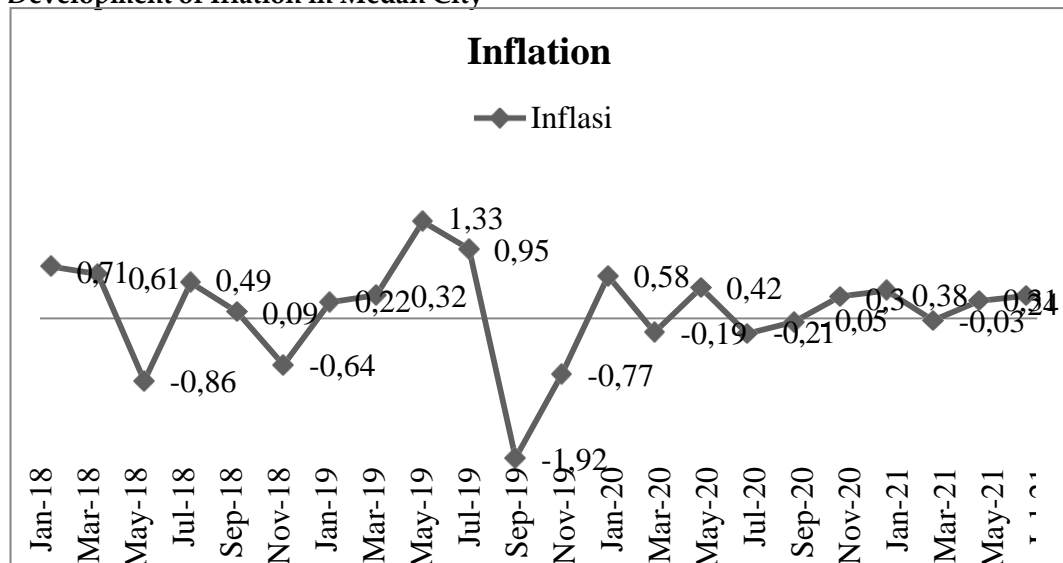


Figure 5. Graph of Inflation in Medan City January 2018 – July 2021

Food commodities are always a concern because the foodstuffs group is a significant contributor to inflation. Success in controlling food commodity prices will be one of the supporting factors for success in controlling the inflation rate. Controlling the inflation rate is a consideration that high and unstable inflation can have an impact on the people's economy.

### Forms of Government Policy in Overcoming Inflation

Monetary policy is government policy through the Central Bank as the holder of monetary authority relating to controlling the money supply and setting interest and credit rates. Monetary policy is usually more effective in dealing with inflation than in encouraging the expansion of economic activity in the short term. This is because inflation can be overcome by controlling total public demand through reducing the money supply.

Open market operations are efforts or actions to provide opportunities for the public to buy or sell state-owned securities. This sale of securities will reduce the statutory reserves of commercial banks. Thus, the amount of money circulating in the community will be reduced and price increases can be determined.

### Vector Autoregression Equation Model (VAR)

From the results of the VAR model test, it can be seen that the first equation is inflation when the inflation increase is responded positively by the price of purebred chicken, the increase in the price of purebred chicken is responded negatively by the price of red chili, the increase in the price of red chili is responded positively by the price of shallots. Then the increase in the price of shallots was responded positively by the price of rice. The second equation is that the price of purebred chicken at the time of rising inflation is responded positively by the price of purebred chicken, the increase in the price of purebred chicken is responded positively by the price of red chili, the increase in the price of red chili is responded positively by the price of shallots, the increase in the price of shallots is responded negatively by the price rice.

The third equation is the price of red chili at the time of rising inflation is responded positively by the price of purebred chicken, the increase in the price of purebred chicken is responded positively by the price of red chili, the increase in the price of red chili is responded negatively by the price of shallots, the price of shallots is responded positively by the price of rice . The fourth equation is that the price of shallots at the time of rising inflation is responded negatively by the price of purebred chicken, the increase in the price of purebred chicken is responded negatively by the price of red chilies, the increase in the price of red chilies is responded positively by the price of shallots, the increase in the price of shallots is responded positively by the price of rice . The fifth equation is that the price of rice at the time of rising inflation is responded positively by the price of purebred chicken, the increase in the price of purebred chicken is responded negatively by the price of red chili, the increase in the price of red chili is responded negatively by the price of shallots, the increase in the price of shallots is responded positively by the price of rice. The following is the VAR model equation for Lag 1.

$$\begin{aligned} \text{INF} &= 0.357501196489*\text{INF}(-1) + 3.55216295585\text{e-}07*\text{HDAR}(-1) - 1.83160180852\text{e-}05*\text{HCAM}(-1) - \\ &4.67951962833\text{e-}06*\text{HBWM}(-1) - \\ &0.000576236868253*\text{HBR}(-1) + 7.16394311188 \end{aligned}$$

$$\begin{aligned} \text{HDAR} &= 66.3313154951*\text{INF}(-1) + 0.27038641929*\text{HDAR}(-1) + 0.0332216032328*\text{HCAM}(-1) + \\ &0.167650776793*\text{HBWM}(-1) - \\ &3.49135169006*\text{HBR}(-1) + 54143.1471867 \end{aligned}$$

$$\begin{aligned} \text{HCAM} &= 3542.47738012*\text{INF}(-1) + 0.686606902236*\text{HDAR}(-1) + 0.645011687991*\text{HCAM}(-1) - \\ &0.117656020655*\text{HBWM}(-1) + \\ &0.232070638609*\text{HBR}(-1) - 8505.32970307 \end{aligned}$$

$$\begin{aligned} \text{HBWM} &= - 509.98039992*\text{INF}(-1) - 0.590024872725*\text{HDAR}(-1) - 0.0466059598421*\text{HCAM}(-1) + \\ &0.704012933188*\text{HBWM}(-1) + \\ &3.39331808369*\text{HBR}(-1) - 9340.28927123 \end{aligned}$$

$$\begin{aligned} \text{HBR} &= - 4.92145022705*\text{INF}(-1) + 0.00465756289964*\text{HDAR}(-1) - 1.275034528\text{e-}05*\text{HCAM}(-1) - \\ &0.000575800402583*\text{HBWM}(-1) + 0.676220596909*\text{HBR} \\ &(-1) + 3435.13626005 \end{aligned}$$

### Granger Causality Test

The Granger causality test was conducted to see the causal relationship between the variables in the model. The initial hypothesis or H0 being tested is that there is no causality relationship. Furthermore, the alternative hypothesis or H1 is that there is a causal relationship. To accept or reject H0, the probability value is used compared to the critical value. If the probability value < critical value, then reject H0 in other words there is a causal relationship in the variables tested.

**Table 1. Granger causality test results**

Null Hypothesis:	Obs	F-Statistic	Prob.
HDAR does not Granger Cause INF	41	0.01176	0.9883
INF does not Granger Cause HDAR		0.28916	0.7506
HCAM does not Granger Cause INF	41	3.64766	0.0361
INF does not Granger Cause HCAM		2.87180	0.0696
HBWM does not Granger Cause INF	41	0.06331	0.9388
INF does not Granger Cause HBWM		1.69547	0.1978
HBR does not Granger Cause INF	41	0.49624	0.6129
INF does not Granger Cause HBR		2.20095	0.1254
HCAM does not Granger Cause HDAR	41	0.29758	0.7444
HDAR does not Granger Cause HCAM		1.52346	0.2317
HBWM does not Granger Cause HDAR	41	2.56500	0.0909
HDAR does not Granger Cause HBWM		2.17874	0.1279
HBR does not Granger Cause HDAR	41	0.69268	0.5068
HDAR does not Granger Cause HBR		0.33047	0.7207
HBWM does not Granger Cause HCAM	41	0.19751	0.8217
HCAM does not Granger Cause HBWM		0.73163	0.4881
HBR does not Granger Cause HCAM	41	0.34713	0.7091
HCAM does not Granger Cause HBR		0.54284	0.5858
HBR does not Granger Cause HBWM	41	0.42451	0.6573
HBWM does not Granger Cause HBR		0.31724	0.7302

Sumber : *Eviews 10.*

From the table above it can be seen that the research variables are not significantly related. This is indicated by the probability value that is not significant at the 5% confidence interval. Therefore, the results of the study indicate that there are no variables that are significantly or two-way related.

### CONCLUSION

Based on the results of the research that has been done, several conclusions are obtained as follows:

1. The development of inflation in Medan City from January 2018 to July 2021 fluctuated greatly.
2. The development of food commodity prices in Medan City from January 2018 to July 2021 generally has a fluctuating tendency.
3. Inflation at the time of rising inflation was responded positively by the price of purebred chicken, the increase in the price of purebred chicken was responded negatively by the price of red chilies, the increase in the price of red chilies was responded positively by the price of shallots. Then the increase in the price of shallots was responded positively by the price of rice.



4. The price of purebred chicken meat at the time of rising inflation responded positively to the price of purebred chicken, the increase in the price of purebred chicken responded positively to the price of red chili, the increase in the price of red chili responded positively to the price of shallots, the increase in the price of shallots responded negatively to the price of rice .
5. The price of red chili at the time of rising inflation was responded positively by the price of purebred chicken, the increase in the price of purebred chicken was responded positively by the price of red chili, the increase in the price of red chili was responded negatively by the price of shallots, the price of shallots was responded positively by the price of rice.
6. The price of red onion at the time of rising inflation responded negatively by the price of purebred chicken, the increase in the price of purebred chicken responded negatively by the price of red chili, the increase in the price of red chili responded positively by the price of shallots, the increase in the price of shallots responded positively by the price of rice.
7. The price of rice at the time of rising inflation responded positively to the price of broiler chicken, to an increase in the price of purebred chicken to respond negatively to the price of red chili, to an increase in the price of red chili to a negative response to the price of shallots, to an increase in the price of shallots to a positive response to the price of rice.
8. In the Granger causality test that there are no variables that are significantly or two-way related.

#### Thank-you note

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