JOURNAL OF HUMANITIES, SOCIAL SCIENCES AND BUSINESS (JHSSB)
Volume 2 Issue 1 (2022)

IMPACT OF INFLATION ON MAIN FOOD COMMODITIES PRICES IN CENTRAL JAVA (2019-2021)

Aisyah Aulia
Economics of Development Department, Universitas Tidar
E-mail: aisyahaulia143@gmail.com

Abstract

Food commodities play an important role as a source in meeting the needs of people's lives. Price changes are common in food commodities and a contributor to inflation. This analysis aims to determine the effect of food commodity prices on inflation with a case study of commodity prices of rice, cooking oil, and sugar in Central Java. This type of research is a quantitative research. The data used in this study is secondary data obtained from BPS (Central Statistics Agency) of Central Java Province and PHPI from 2019 to 2021. The data used is monthly data which consists of 4 components of research data. The analytical method used is ECM (Error Correction Model). Processing data using Eviews 10 software by going through several processes or stages in the analysis that includes the ECM test so that the effect is in the short and long term. The results of this study indicate that the results of the ECM (VAR) test have not had a significant effect on the prices of the 3 food commodities.

Keywords: *Error Correction Model, Inflation, Main Food Commodity Prices, Central Java*

1. INTRODUCTION

Globalization that continues to occur greatly affects how the price level of each country is determined. This happens because every region certainly wants not to be left behind by other countries or at least almost the same as an area that is considered 'healthy' economy. Unwanted things such as excessive inflation often become a concern for every region and its population. If the price of a commodity experiences a very sharp price jump, people who have not been able to adjust will become 'victims' of a system failure in the economic market (Mahdi & Kaluge, 2010).

Quoted from the Central Statistics Agency, it was noted that inflation in a certain month must have risen quite high. In general, the current inflation achievement is caused by market projections that are converging on the contribution of inflation from the food and transportation sectors (CNBC Indonesia, Thursday 1 June 2022). From this condition, it would be better if food commodity prices need to be monitored continuously (periodically). It should also be highlighted that the volatility of food commodity prices in Indonesia is also related to export and import activities carried out by the market and the government (Tyas, 2022).

The impact of imported inflation originating from the food sector is sustainable with global food commodity prices (Bishop, 2010). Therefore, in some areas there is an increase in the cost of producing food which is often consumed by local residents. It should be noted that import activities in Indonesia need to be pursued by considering various things (Helbawanti et al., 2021). One of them is an increase in demand which is correlated with an increase in population (Hendayanti et al., 2017).

Currently, the population in Central Java Province has increased to 200.000 residents every year. BPS explained that in 2020 the population in Central Java Province

reached 36.516.035 million people. Then followed by 2021 which reached 36.742.501 million people where as many as 25.89 million people (69.54%) of the population in Central Java province were the productive age group (15-64 years) who needed nutrition. Price changes that occur from time to time represent an increase (inflation) or vice versa (deflation) of goods and services for daily consumer (household) needs. This means that the needs of the population are increasing from time to time. Therefore, some commodities are imported in order to maintain the adequacy of the needs that will be distributed to the community.

In calculating inflation, data is usually taken and tested through several markets ranging from outlets, traditional markets, to modern markets in each city. Then the prices in each region (city for example) will be divided into several data classifications depending on the characteristics of each commodity. As previously explained, food commodities as a form of human daily needs certainly greatly affect how much the price increases (Perdagangan, 2017). In 2020, Indonesia experienced an international outbreak, namely Covid-19. This condition certainly affects the price fluctuations of various commodities, including food commodities that are commonly consumed by Indonesian people, such as rice as a staple food for Indonesian people in general, cooking oil to process various dishes, and sugar as a complement to dishes.

The 2020 Covid pandemic food stock in Central Java Province is still in a safe condition. At that time, the entire territory of Indonesia was still in a safe position in the agricultural sector. Indeed, from various studies, test results are presented that the food commodity (especially agriculture) that has the most influence on the amount of production is the weather. Therefore, agriculture is still relatively safe when the pandemic occurs. The most affected by the pandemic are industries such as factories, tourism, and so on.

Overall economic growth in Indonesia experienced a recession after a contraction in the second and third quarters of 2020. At the beginning of 2020, the Indonesian economy still experienced positive growth of 2,97% but when entering the second quarter there was a contraction (-5,32%). The contraction then occurred again in the third quarter of -3,49% *yoy*. The two contractions that occurred in the two (2) months were influenced, among other things, by contractions in the expenditure component, particularly Household Consumption. In fact, the Indonesian economy is still firmly held by Household Consumption which covers half of Indonesia's Gross Domestic Product (GDP) with a total of 57,31% in the third quarter (2020).

The decline in purchasing power continues to be triggered by inflation and the pandemic that hit Central Java Province. This province has a dense population. Therefore, it is natural for readjustment to occur after a contraction. Although in 2021 it has not recovered and social restriction program from the government (hereinafter referred to as PPKM) which is still being implemented, the economic recovery is increasing little by little. Due to these conditions, food prices have movements that could be different from the year before the pandemic.

Food prices such as rice, cooking oil, and sugar as commodities that are often used by the public have the potential to be closely related to inflation. In discussing inflation experienced by Central Java Province, inflation development starting from 2019-2021 was in the range of 0,16694 where at the end of 2021 it peaked because at the beginning of 2022 economic growth was getting better after the pandemic. If accumulated, price changes had experienced a decline in food commodity prices due to the pandemic so that at that time people's purchasing power decreased.

From the assumptions described previously, the researcher concludes that it is necessary to study the prices of these food commodities on a regular basis. This analysis aims to review the policies taken by the government as well as to minimize the impact of inflation caused by food prices. The consumption of the people of Central Java with a population of 36.742.501 million of which 25,89 million people (69,54%) can trigger an over-consumption pattern so that the movement of food commodity supply can be threatened. Price changes do not reduce people's purchasing power at certain moments except for this pandemic moment which still needs to be studied.

With the basic consideration of the need for food commodities in the form of rice, cooking oil, and sugar which are used daily by the community and can make a major contribution to inflation, the researchers are interested in analyzing more deeply about The Effect of Inflation on Prices of the Three Main Food Commodities in Central Java (2019-2021). This analysis aims to detect how the prices of three main food commodities, namely rice, cooking oil, and sugar, affect inflation in Central Java Province as a province with a fairly high population density.

This analysis has theoretical benefits to provide knowledge about the effect of the prices of three main food commodities, namely rice, cooking oil, and sugar on inflation in Central Java Province as a province with a fairly high population density. Another benefit that can be taken is that it is hoped that this analysis can provide additional knowledge and references for further analysis regarding the effect of the prices of three main food commodities, namely rice, cooking oil, and sugar on inflation in Central Java Province as a province with a fairly high population density. The government is expected to interpret this analysis if it is correct and good policy recommendations are made for the existing variables in order to maintain inflation and food commodity prices. Based on this background, this analysis aims to determine the effect of food commodity prices on inflation with a case study of commodity prices of rice, cooking oil, and sugar in Central Java.

2. LITERATURE REVIEW

2.1. Inflation

Inflation is an economic cycle that occurs although sometimes it is not desired. Milton Friendman explained that inflation occurs anywhere and has always been a phenomenon of the monetary cycle. This is due to a decrease in the value of the monetary calculation variable for a commodity. Keynesian added that inflation is believed to be able to materialize independently of the monetary cycle. If it is concluded, inflation is an increase in the price of goods and services in general and occurs continuously.

Inflation cycles occur when prices generally increase over a long period of time and occur continuously. Price increases that do not occur for a moment can not be a problem or cause losses if prices return to normal (optimal people's purchasing power). Price increases in a small scope and not in the long term can not be said to be inflation. That in essence inflation is closely related to the general increase in the prices of goods and services. This means that price increases are not experienced by one or a few types of goods and services.

Continuous price increases can indeed occur, and not just one or two times. This continuous increase can have an impact on the availability of goods and services. It is possible that goods and services are in shortage, and while consumers need to spend more

to get the same amount of goods and services, this also has an impact on the value of money. Poor value for money, can have the effect of narrowing the purchasing power of a unit of currency (Rupiah, Dollars, and its kind.). If the value of money does not have competitiveness, automatically the economic condition of a region can certainly be shaken.

Sadono Sukirno defines inflation as an increase in prices in goods and services that can occur due to an increase in demand that is greater than the supply in the market. Or it can be concluded that there is too much money in circulation, while the supply of goods or services is only small. The types of goods that are usually classified to calculate inflation over a period of time include the prices of goods that are often consumed by the public, ranging from food, housing, and clothing commodities. This inflation then usually refers to the prices that are in consumers and can also use other prices in the market such as wholesale trading prices, total wages, asset prices, and so on.

Ebert et al. (2011)actually explain that inflation is a situation where the number of goods in circulation is less than the amount demanded, resulting in the phenomenon of widespread price increases in a macroeconomic system. Inflation itself is described in several concepts, including: :

1) Quantity Theory

This theory is an elaboration of the classical theory which basically states that changes in the money supply that occur can cause price increases to the same level as the money supply level. This means that this theory explains the causes of rising prices for goods or services in general that trigger inflation, namely:

a) Amount of Money Supply

Money that is printed and circulated in society can lead to inflation. This occurs when the money supply is not followed by an increase in production and the ideal supply of goods or services. The velocity of money or the speed at which money moves from one individual to another is so fast that people tend to be consumptive. The money supply that occurs is in the form of currency and demand deposits, if the greater the amount of money circulating in society, inflation can increase continuously. For example, the amount of money circulating in the community is 10% per year, so it can be assumed that inflation will occur at 10% per year.

Meanwhile, the flow of money in the economy in the form of bank loans to entrepreneurs/private sector to finance investment needs can be excessive because it cannot be financed from available supplies or savings (Saputra & Nugroho, 2013). The financing for the excessive investment needs is a net addition to the demand for goods, where the amount of demand does not change because the economy is in a full employment position. From these conditions, inflation or price increases began to occur.

The money supply occurs because the government's budget deficit is financed to print money and later circulated to the public. In addition, the amount of production decreased on a national scale.

b) Psychological Expectations of Residents about Future Prices

The public has a suspicion that the price of goods and services in the future will increase continuously, so that the circulation of the money supply is responded to by the community so that they immediately spend their money at this time and store goods (especially goods that are investment assets from inflation, such as gold, diamonds and properties). From this condition, inflation could soar. This behavior

is carried out by the community in order to avoid losses when holding cash and spending it to be converted into goods. This condition can be necessary when people believe that price increases from time to time are getting bigger, so it is natural that people can respond by spending more money than the increase in the money supply (over consuming).

2) Keynesian Theory

This theory explains that inflation is caused by several groups of people who want to live excessively (beyond their limits and forced). This population group is divided into three groups, namely the government, entrepreneurs / private sector, and labor unions.

a) Government

When experiencing a budget deficit, the government is financed by printing new money and circulating it to the public so that the government can cause inflation.

b) Entrepreneur/Private

Entrepreneurs/private companies can cause inflation when they force their business to invest on a large scale without careful consideration and the costs are obtained from bank loans.

c) Labour Union

If this union demands a salary that is not in accordance with productivity, it will cause inflation.

When these three groups do the same thing in carrying out coercive behavior, inflation is called the inflation gap or in other words the effective demand from all levels of society at the prevailing price exceeds the number of goods that the economy can produce.

3) Structural Theory

The theory of inflation is also based on experience in Latin American countries where this theory emphasizes the resilience of the developing economic cycle. Structural factors can also be said to be the causative factors of the inflation process and the most basic are not completely structural. It is often thought that inflation is caused by the policy or price decisions of the government itself.

In addition to these theories, inflation can be expanded by identifying anything that can cause economic conditions to experience inflation. This is described in several identifications of inflation, namely:

1) Causes of Inflation

a) Demand Pull Inflation

Demand-pull inflation is inflation that occurs because the goods demanded (aggregate demand or AD) exceed the number of goods supplied in the economy (aggregate supply or AS). In other words, public demand for certain goods and services always increases while on the other hand production capacity remains or cannot be increased. The production capacity that is lower than what the community needs can be caused by two things. First, the existing production capacity is already optimal so that it cannot be increased anymore. Second, production capacity is not fully utilized due to limited existing resources or inadequate technology. This increase in demand is caused by the increase in population as well as the increasing type and number of community needs.

Another factor is the increase in people's income or also because of the fear of continuous price increases in the future. The increase in public demand for goods and services is greater than the goods and services offered, resulting in an increase in prices, causing inflation. This inflation usually occurs when the workforce is full and the economy is growing rapidly. With a rapid economic growth rate that encourages an increase in demand for goods or services while the goods offered remain constant because production capacity is already at its maximum, it drives prices to increase continuously. In inflationary demand pressure, it does not always mean that aggregate supply (US) does not increase. What is certain is that even if there is an increase in aggregate supply, the amount will be smaller than the increase in aggregate demand.

b) Inflation due to Production Push (Cosh Push Inflation)

Cost-push inflation or supply-side inflation is inflation that occurs as a result of a rapid increase in costs compared to the productivity and efficiency of the company, so that the company reduces*supply*goods and services. The increase in production costs will encourage companies to increase the prices of goods and services, although they must accept the risk of reducing the demand for goods and services they produce from the community. An increase in prices can occur due to a decrease in the number of goods and services offered. The enactment of the overall price increase can be sourced from internal or external to the company. From the internal side, there are factors caused by the company itself such as an increase in labor wages, interest rates, wanting to get high profits, rising raw material prices. These factors cause inflation when the economy has reached the level of full employment (Feranika & Haryati, 2020). Production-driven inflation can also be caused by the following:

a. Trade unions are compelled to demand wage increases that exceed their productivity growth.
b. Entrepreneurs increase the price for each unit of product they have produced because they want to get a higher profit.
c. The price of raw materials increases causing companies to pay higher for raw materials. Because the company pays more for the raw materials they get, the company sets the final product at a higher price than before which will then be borne by the consumers.

From the external side, namely factors caused by foreign sectors such as rising prices of goods abroad or problems with balance of payments imbalances, both of which increase the prices of imported goods.

c) War

War can lead to political and economic instability of a country. In conditions of war, the government requires large costs, but on the other hand, state revenues are minimal, so if war funding is financed by printing money, it will trigger inflation.

d) Sharia Inflation

Al-Maqrizi in Rozalinda suggests the causes of inflation in the view of Islam, namely: a) Natural inflation b) Human error inflation (inflation that occurs due to human error) (Ibrahim, 2013; Yuliati & Hutajulu, 2020)

2) Inflation Rating Scale

a) Mild Inflation

That is inflation below 10% per year. While inflation of 2% to 4% is said to be low inflation. This inflation is characterized by a slow increase in prices with a small percentage and in a relatively short period of time. In this inflation range, people still believe in money and still want to hold money. Indonesia experienced this inflation during the reform and new order.

b) Moderate Inflation

That is inflation between 10%-30%. Characterized by a relatively rapid increase in prices or the need to watch out for its impact on the economy.

c) Heavy Inflation

That is inflation between 30%-100%. Where the economic sectors have begun to experience paralysis except those controlled by the state. Characterized by a fairly large increase and sometimes run in a short time and has an accelerating nature which means that the price of this week or month is higher than the previous week or month.

d) Very Heavy Inflation

That is inflation of more than 100%. This inflation causes people no longer want to save money, the value of money drops sharply, so it is better to spend money and save in the form of goods such as gold, land, buildings, because these types of goods increase in price equivalent to inflation. Prices went up five to six times. Usually this situation arises by the existence of war which is financed or covered by printing money. This inflation occurred during the 2nd world war (1939-1945) where for the purposes of war was forced to print excessive money.

3) The Origin of Inflation

a) Domestic Inflation

Domestic inflation. This inflation arises because of a country's deficit, crop failure, or increased demand for certain goods.

b) Foreign Inflation

Inflation originating from abroad. Inflation arising from the increase in the price of the goods we import or due to a continuous surge in export demand originating from abroad.

4) Inflation Calculation

a) Consumer Price Index

The consumer price index is an index indicated by the price level of goods or services that consumers must buy in a certain period. The CPI level is calculated by calculating the prices of the main goods and services that are usually consumed by the public in a certain period. Therefore, the CPI calculation is useful for the community because it illustrates the magnitude of the increase in the cost of living for consumers. The CPI is calculated by inputting commodities that are relevant and commonly consumed by the public, such as food commodities.

Each price of existing goods and services is given a weight according to its priority level. Goods and services that are considered primary have the greatest weight. Indonesia is known for its index of 9 basic ingredients, because it has the importance of each commodity of goods and services and for a person it is not the same. Therefore, in the calculation, the index is given a certain weighting number. The weighting figure is usually based on the percentage of expenditure for certain goods to overall or aggregate expenditure.

b) Wholesale Price Index

The Wholesale Price Index (hereinafter referred to as IHPB) views inflation from a producer's perspective. The IHPB shows that the price level received by producers is classified into various levels of production.

c) Implicit Price Index

The CPI and IHPB only cover a few years or a few hundred goods and services that are produced or consumed in a few dozen cities. Whereas in reality, the types of goods and services produced and consumed in an economy can reach thousands, tens of thousands, maybe even hundreds of thousands of types. Economic activities also occur not only in a few cities but in all corners of the region. To get a picture of inflation that best represents the actual situation, economists use the implicit price index (GDP Deflator), abbreviated as IHI.

5) Inflation Impact

a) Income

Inflation changes people's income and is manifested in profits or vice versa, in losses. Inflation drives the economy when entrepreneurs expand their production. With this, there will be an expansion of job opportunities while increasing one's income. However, the fixed income group will experience a decline in the real value of the money earned and property ownership will experience a decline in the form of money.

This loss is caused when income is exchanged for more expensive goods and services while their income is still constant. But for someone whose income exceeds the current increase in inflation or the owner of fixed wealth such as land or buildings, it can survive and add to the real value of his wealth. For example, when inflation rises by 10% per year, income growth may be greater than 10%, then inflation can be avoided because the adverse effects are not experienced. Thus, inflation causes the distribution of income between the two groups and can be unequal in its realization.

b) Export

The competitiveness of a region for export goods may decline due to inflation. This is due to the high price of export goods. Although it makes it difficult for state exporters, the country also suffers from a loss in its competitiveness because reduced export goods cause the number of sales to decline. This is also related to the decline in foreign exchange reserves because the foreign exchange reserves obtained are small.

c) Saving Interest

People's real income for saving automatically decreases so savers are reluctant to save their money in the bank because they think that if money is saved, the value of money will decrease. This condition can be detrimental to savers.

d) Real Sector

Barriers and disturbances in this sector can occur in the process of growth because inflation causes the level of people's purchasing power (aggregate demand) to decrease. Furthermore, this decrease causes the bidders (producers) to reduce their production levels so that the output is ideal so that the end point that occurs is termination of employment. The result of this chain is an increasing number of unemployed.

e) Price Distortion

Low inflation causes consumers and producers to realize that inflation can be distinguished from inflation between substitute goods (substitute goods). When the price of beef is peaking, people turn to chicken or eggs. But when inflation peaked, people could not understand the rate of inflation because prices at that time rose in general.

f) Distortion of Money Usage

Each individual changes the way money is used where inflation tends to reduce the value of the currency so that individuals tend to maximize the use of money for the amount in circulation.

g) Tax Distortion

The higher the inflation, the higher the tax burden in real terms.

3. RESEARCH METHODS

This analysis uses the ECM (Error Correction Model) method to detect long-term relationships and short-term relationships (Vamvoukas, 1998). This relationship is formed between inflation and prices in three (3) main food commodities that are always consumed by the public, namely rice, cooking oil, and sugar. The data used in this study is inflation data from January 2019 to December 2021 which is monthly data and then becomes the dependent variable. For the independent variables, three (3) main food commodity variables are presented, namely rice, cooking oil, and sugar taken from January 2019 to December 2021. These data are secondary data taken from the Central Java Provincial Statistics Agency. along with the Indonesian National Strategic Food Price Information Center (hereinafter referred to as PIHPS Nasional). This analysis uses software in the form of E-Views 10. There are several stages of research used, namely:

a. Descriptive statistical analysis
b. Compiling a Time Series plot on each variable
c. Stationarity test
d. Estimation of long term equation
e. Cointegration test
f. Estimation of short term equation
g. Assumption test
h. Interpretation

4. RESULTS AND DISCUSSION

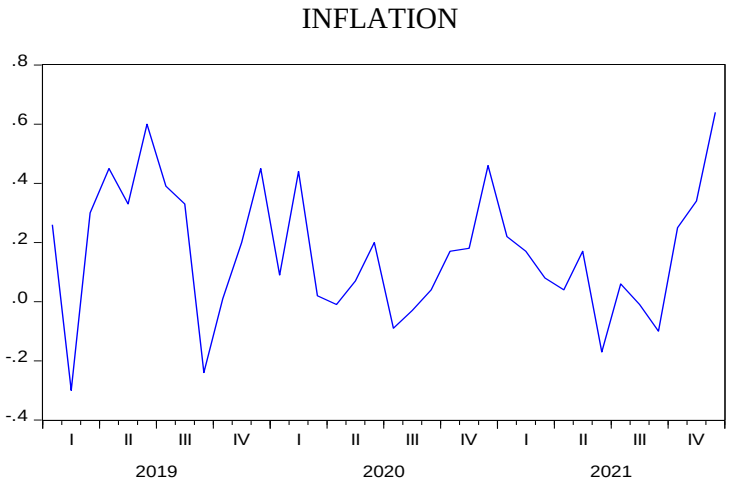
4.1. Analysis Results

In analyzing the data on the dependent variable of inflation, along with three (3) independent variables, namely rice, cooking oil, and sugar, it is necessary to observe how the descriptive statistics of the data and the form of detailed analysis are descriptively statistical.

Table 1. Investment Descriptive Statistics and 3 Prices of Main Food Commodities (Rice, Cooking Oil, and Sugar)

	RICE	SUGAR	COOKING OIL	INFLATION
Mean	10826.39	13759.72	13245.83	0.166944
Median	10850.00	13450.00	12725.00	0.170000
Maximum	11050.00	17900.00	18500.00	0.640000
Minimum	10550.00	12500.00	11750.00	-0.300000
Std. Dev.	162.3427	1249.561	1594.158	0.223732
Skewness	-0.325503	2.327683	1.427167	0.078475
Kurtosis	1.766216	7.798560	4.992615	2.567585
Jarque-Bera	2.919050	67.04792	18.17661	0.317424
Probability	0.232347	0.000000	0.000113	0.853242
Sum	389750.0	495350.0	476850.0	6.010000
Sum Sq. Dev.	922430.6	54649097	88946875	1.751964
Observations	36	36	36	36

The table above shows descriptive statistics of inflation and the prices of 3 main food commodities, namely rice, cooking oil, and sugar. Based on Table 1, it is known that the minimum inflation is -0.30 percent and the maximum is 0.64 percent with the average value in each month is 0.166944. Then, the prices of several commodities in the picture below fluctuate where the independent variables are the price of rice, cooking oil, and sugar. The inflation rate is also presented where all the data is collected in units of time every month starting from January 2019 to December 2021.



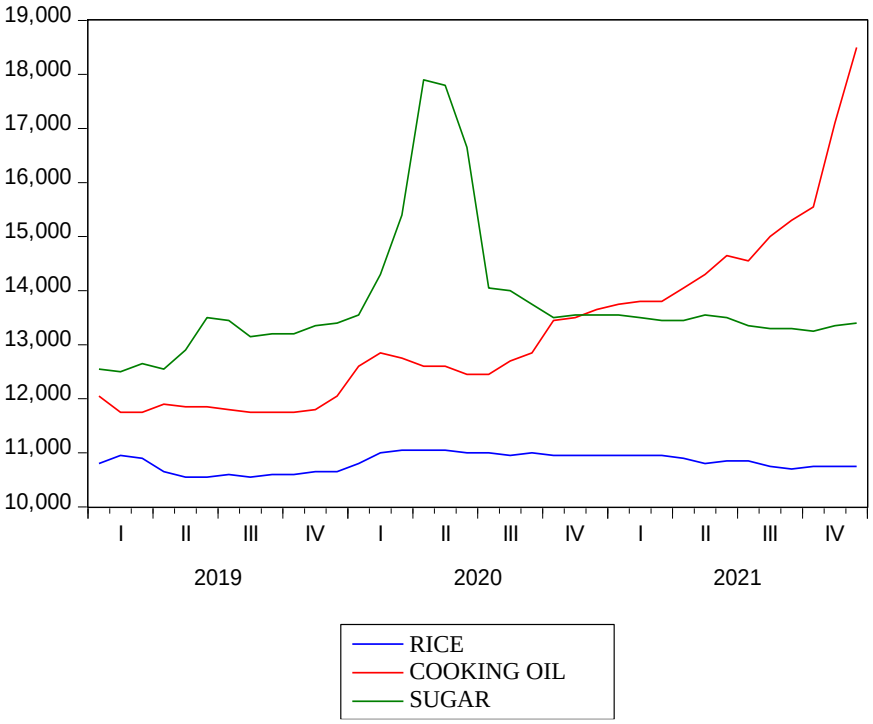


Figure 1. Time Series Plot of 2019-2021 Inflation Value against 3 Main Food Commodity Prices (Rice, Cooking Oil, and Sugar)

Figure 1 shows that the inflation rate in Central Java in 2019-2021 has an irregular plot and will increase at the end of 2021. This condition proves that the data is not stationary in the variance so it is necessary to do stationarity in the variance. In knowing the effect of the inflation rate in 2019 to 2021 on the prices of 3 main food commodities (This analysis uses a transformation model with the PP (Philips-Perron) transformation.

Table 2. Stationarity Test of First & Second Difference on Inflation Data and 3 Main Food Commodity Prices (Rice, Cooking Oil, and Sugar)

Series	Prob.	Bandwidth	Obs
D(RICE)	0.0012	0.0	34
D(SUGAR)	0.0217	16.0	34
D(COOKING_OIL)	0.3788	2.0	34
D(INFLATION)	0.0000	3.0	34

Series	Prob.	Bandwidht	Obs
D(RICE,2)	0.0000	22.0	33
D(SUGAR,2)	0.0000	21.0	33
D(COOKING_OIL,2)	0.0000	1.0	33
D(INFLASI,2)	0.0001	3.0	33

Based on table 2, it is known that inflation and commodity prices consisting of rice, sugar, and cooking oil are in a non-stationary position at the level level. From these conditions, differencing was carried out to find out how the process that the four variables could be stationary for further analysis. Stationary test results show that inflation, rice,

and sugar are stationary at the first difference. However, for food commodity prices, cooking oil is still at a probability above 0.05. Therefore, the second differencing is carried out again until all the data is stationary.

From the differencing process that has been carried out, it is proven that the data is stationary at the level 2nd differences. Furthermore, it can be estimated equations in the long term because the variables used have met the estimation requirements. In this data processing, the regression equation will be arranged for the variables, with inflation as the dependent/dependent variable and 3 food commodity prices which include rice, cooking oil, sugar as the independent/independent variables. The estimation results are carried out using the Least Squares (NLS and ARMA) method, the F-statistic results are shown in the following table.

Table 3. Estimation of Long-Term Equation on Inflation Data and 3 Main Food Commodity Prices (Rice, Cooking Oil, and Sugar)

Dependent Variable: INFLATION
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.322976	2.685656	1.982002	0.0561
RICE	-0.000519	0.000272	-1.905560	0.0657
SUGAR	1.21E-05	3.53E-05	0.343078	0.7338
COOKING-OIL	2.25E-05	2.35E-05	0.955782	0.3463

R-squared	0.131267	Mean dependent var	0.166944
Adjusted R-squared	0.049823	S.D. dependent var	0.223732
S.E. of regression	0.218087	Akaike info criterion	-0.103402
Sum squared resid	1.521989	Schwarz criterion	0.072545
Log likelihood	5.861233	Hannan-Quinn criter	-0.041992
F-statistic	1.611752	Durbin-Watson stat	1.491594
Prob(F-statistic)	0.205987		

Table 3 data shows that the Prob (F-statistic) value of 0,205987 is greater than 0,05 indicating that this data has no long-term relationship. Data that is smaller than alpha indicates that in the long run the above data is not significant. The significance of each variable in the probability column is also not below 0,05. So the independent variable above is said to have no effect on the dependent variable.

Then for the cointegration test on the ECM theory, it is explained that a cointegration of the regression equation is in the residual. If the residual is stationary, then there is data cointegration. The following is the ECM resid workfile as a place for the estimated equation residuals, where the long-term equation residuals will be tested for stationarity and used as variables in the next equation. The resulting output provides information that the variable res is stationary at the Level with the implication that Inflation, food commodity prices of Rice, Cooking Oil, and Sugar are cointegrated with each other.

Table 4. Cointegration Test Results on Inflation Data and 3 Main Food Commodity Prices (Rice, Cooking Oil, and Sugar)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-15.69204	0.0000

After the data are mutually cointegrated, it is continued with the estimation of the equation in the short term using a stationary variable added to the res variable. The following are the results of the estimation of the short-term equation.

Table 5. Short-term estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.007229	0.057205	-0.126365	0.9003
D(RICE,2)	-0.001180	0.000702	-1.680763	0.1039
D(COOKING_OIL,2)	-6.84E-05	0.000188	-0.364008	0.7186
D(SUGAR,2)	1.99E-05	7.76E-05	-0.256206	0.7997
RES(-1)	-0.609222	0.158520	-3.843189	0.0006
F-statistic	4.649020			
Prob(F-statistic)	0.005273			

The probability value of the F-statistic is already below alpha (0,05). Speed of adjustment is also indicated by the value of res(-1) that the coefficient value is negative and significant so that several significant variables are found with the main variable. After that, the assumption test is carried out where the method used by ECM is interpreted.

4.2. Discussion

After the ECM test stage has been fulfilled, the following equations that form the core of the ECM model are carried out. From the interpretation of the data below, it is found that the influence of the independent variables on the dependent variable is analyzed. The following presents the results of the data (output) starting from the long-term and short-term equations.

$$\mathrm{Y_t} = -0{,}000519\ \mathrm{Rice_t} * + 1.21\mathrm{E} - 05\ \mathrm{Sugar_t} * + 2.25\mathrm{E} - 05\ \mathrm{Cooking\_Oil_t} *$$

Information :
(*) is a significant variable
(t) is the period/year

$$\Delta Y_t = -0{,}007229 - 0{,}001180\ \Delta Rice, 2_t * -6.84E - 05\ \Delta Cooking\_Oil, 2_t * -1{,}99E - 05\ \Delta Sugar, 2_t - 0{,}609222\ RES_{(t-1)}$$

The above equation provides an explanation that in the short term, the prices of food commodities in the form of rice, cooking oil, and sugar. Ministry & Bappenas (2020) said that starting at the end of 2020 inflation tends to be low. This is due to the low value of core inflation.

From the results of the ECM test, Table 3 shows that the Prob (F-statistic) value of 0,205987 is greater than 0,05 indicating that this data has no long-term relationship. Data that is smaller than alpha indicates that in the long run the above data is not

significant. The significance of each variable in the probability column is also not below 0,05. Hence, the independent variable above is said to have no effect on the dependent variable.

The effect above indicates that changes in food commodity prices cause a rapid shock response in the economy, namely changes in prices that go up and down which lead to inflation. In addition, the response in the economic sector is usually caused by changes in seasons, natural disasters such as floods, where when a natural disaster occurs it will hamper the distribution of food commodities. The Department of Industry and Trade also said that the rainy season made supplies fall, because during the rainy season farmers chose to plant less risky crops. Rice tends to be at risk during the rainy season due to many pests and fungus attacks, so yields are reduced and prices are rising. However, this does not make the demand for rice decrease because the demand will still exist to fulfill food needs.

As revealed by Rahmanta & Maryunianta (2020), that the high public demand for rice because there is no food that can substitute for rice needs. In addition, rice is not only consumed as daily food but as a raw material in the food industry so that the consumption value is relatively large. The results of the analysis explain the diversity of inflation, from the largest to the smallest, is the price of food commodities above (Rizaldy, 2017). This is also in line with the research conducted (PPN/Bappenas, 2019).

The above commodity is one of the horticultural commodities that is often used as a complement or staple in cooking and commodities that are consumed directly by the community in daily life so that the demand for these 3 commodities is always increasing, especially on religious days. Changes in seasons that cause stocks to decline make garlic prices rise and if this continues it will affect the response to inflation. This is also in line with previous research (Riyadh, 2019; Yuliati & Hutajulu, 2020).

5. CONCLUSION

Price changes that occur in food commodities can be the biggest contributor to inflation, including Central Java as a densely populated province. The existence of an insignificant influence in the 3 commodities above on inflation is influenced by human error where corruption cases occur, especially in cooking oil. From the results of the ECM test on the cooking oil variable, the odd contribution of inflation with conditions experiencing shocks or shocks, the most responsive variable is inflation. Based on the results of the ECM test, the prices of other basic commodities still need to be addressed in reducing imports. From 2019-2021, the variables that contributed greatly were inflation with a small average and cooking oil was in shock, the most responsive variable was inflation. Thus, it can be concluded that inflation in Central Java province is influenced by the price of red chili and the price of garlic. Price fluctuations that occur in food commodities can be a big influence on inflation growth that leads to uncontrolled growth. For stakeholders or officers in controlling inflation, especially in Central Java Province, it is recommended to continue to make efforts.

REFERENCES

Bishop, M. (2010). Ekonomi: Panduan Lengkap dari A sampai Z. *Yogyakarta: Pustaka Baca*.

Ebert, R. J., Griffin, R. W., Starke, F. A., & Dracopoulos, G. (2011). *Business essentials*. Prentice Hall NJ.

Feranika, A., & Haryati, D. (2020). Strategi Kebijakan Fiskal Terhadap Output dan Inflasi pada Perekonomian Indonesia dalam Menghadapi Dampak Virus Covid 19. *Business Innovation and Entrepreneurship Journal*, *2*(3), 146–152.

Helbawanti, O., Saputro, W. A., & Ulfa, A. N. (2021). Pengaruh Harga Bahan Pangan Terhadap Inflasi Di Indonesia. *AGRISAINTIFIKA: Jurnal Ilmu-Ilmu Pertanian*, *5*(2), 107–116.

Hendayanti, N. P. N., Nurhidayati, M., & Nugrahini, D. S. (2017). Analisis Pengaruh Nilai Tukar Rupiah terhadap Jumlah Uang Beredar dengan Pendekatan Error Correction Model (ECM). *E-Proceedings KNS&I STIKOM Bali*, 186–190.

Ibrahim, Z. (2013). Pengantar Ekonomi Makro Edisi Revisi. *Lembaga Penelitian Dan Pengabdian Kepada Masyarakat (LP2M) IAIN Sultan Maulana Hasanuddin Banten*.

Kementerian, P. P. N., & Bappenas. (2020). *Laporan Perkembangan Ekonomi Indonesia dan Dunia Triwulan III Tahun 2020*. 1–100.

Mahdi, M., & Kaluge, D. (2010). Pengaruh Tingkat Suku Bunga (Birate) Dan Kurs Dolar As Terhadap Indeks Harga Saham Gabungan (Ihsg) Dengan Menggunakan Metode Error Corection Model (Ecm). *Jurnal Ekonomi Pembangunan*, *8*(2), 308–314.

Perdagangan, K. (2017). Pusat Pengkajian Perdagangan Dalam Negeri Badan Pengkajian dan Pengembangan Perdagangan. *Pusat Pengkajian Perdagangan Dalam Negeri Badan Pengkajian Dan Pengembangan Perdagangan Kementerian Perdagangan Republik Indonesia*.

PPN/Bappenas, K. (2019). *Rencana Pembangunan Jangka Menengah Nasional 2020–2024*. Kementerian PPN/Bapennas Jakarta, Indonesia.

Rahmanta, R., & Maryunianta, Y. (2020). Pengaruh Harga Komoditi Pangan Terhadap Inflasi Di Kota Medan. *Jurnal Agrica*, *13*(1), 35–44. https://doi.org/10.31289/agrica.v13i1.3121

Riyadh, M. I. (2019). Analisis pergerakan harga cabai dan bawang di kota Medan. *JEpa*, *4*(1), 56–68.

Rizaldy, D. Z. (2017). Pengaruh Harga komoditas pangan terhadap inflasi di Kota Malang Tahun 2011-2016. *Jurnal Ekonomi Pembangunan*, *15*(2), 171–183.

Saputra, K., & Nugroho, S. B. M. (2013). *Analisis faktor-faktor yang mempengaruhi inflasi di Indonesia 2007-2012*. Fakultas Ekonomika dan Bisnis.

Tyas, H. P. (2022). Analisis Ekspor Indonesia Tahun 1990-2019. *Transekonomika: Akuntansi, Bisnis Dan Keuangan*, *2*(2), 37–52.

Vamvoukas, G. A. (1998). The relationship between budget deficits and money demand: evidence from a small economy. *Applied Economics*, *30*(3), 375–382.

Yuliati, R., & Hutajulu, D. M. (2020). Pengaruh Harga Komoditas Pangan Terhadap Inflasi di Kota Magelang. *Jurnal Wira Ekonomi Mikroskil*, *10*(2), 103–116.