IJEBAS
International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration

EFFECT OF INCREASING FOOD COMMODITY PRICES AGAINST INFLATION IN MEDAN CITY

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Abstract

Inflation is a situation where the prices of goods and services generally increase over a certain period of time. High and unstable inflation is a reflection of economic instability which results in a general and continuous increase in the price level of goods and services, and results in increasing levels of goods and services. Inflation in food can be caused by various factors, including fluctuations in the price of agricultural raw materials such as grain prices, adverse weather conditions such as drought or floods that affect agricultural production, increases in production costs such as energy and fertilizer costs, changes in global or local demand, trade policies, market speculation, and other factors. The aim of this research is to identify the influence of corn prices, soybean prices, chicken prices, garlic prices on inflation in Medan City. The data used in this research is secondary data in the form of a time series starting from 2019 to 2023 (per month). The research method used is the VECM method and Granger causality. The research results are Based on the research results, the variables that have a long-term relationship are the price of soybeans (X2) and the price of purebred chickens (X3) as evidenced by the T-statistic value > from the t-table. In the short term, several variables, namely the price of corn (X1-1) at lag 1, the price of soybeans (X2-2) at lag 2, the price of chicken (X3-1) and general inflation (Y-2) at lag 2 have an effect on general inflation. (Y). This is because each variable has a t-statistic value > t-table. Based on the results of the Granger causality test, there is a one-way causality relationship between the variables corn price (X1) and soybean price (X2). one-way causality between the variable corn price (X1) and general inflation (Y), one-way relationship between the variable broiler chicken (X3) and the price of soybeans (X2), one-way relationship between the variable price of garlic (X4) and the price of soybeans (X2), a one-way relationship between the soybean price variable (X2) and the inflation variable (Y), a one-way relationship between the price variable for purebred chickens (X3) and general inflation (Y).

Keywords: ***Food Inflation, Corn Prices, Garlic Prices, Pure Chicken Prices, Soybean Prices, General Inflation***

1. INTRODUCTION

Food commodities apparently have an important contribution in various aspects including economic, social and political. The influence of food commodities themselves is the stability of the dissemination of demand and supply. Food commodity prices fluctuate due to several factors, namely scarcity of food supplies, high public demand, bad weather and pest attacks on food crops. Domestically, food commodity prices that are in the public spotlight for contributing to inflation and deflation are rice, corn, soybeans, wheat flour, sugar, cooking oil, shallots, chilies, eggs, meat, fresh fish and milk (Irnawati , 2020). Inflation is a situation where the prices of goods and services generally increase over a certain period of time. In everyday life, we can imagine inflation like an inflating balloon: the bigger the balloon, the more expensive the goods and services we buy. Consider a situation where we have 100 rupiah and a cake worth 10 rupiah. With our money, we can buy 10 cakes. However, if inflation occurs and the price of cakes rises to 20 rupiah per cake, then we can only buy 5 cakes with the same money. This means that the purchasing power of our money decreases because the price of cakes increases (Rai, 2022). A decrease in the purchasing power of a currency will have a decreasing impact on people's purchasing power for their daily needs. Apart from that, the unstable inflation rate also makes planning difficult for the business world, does not encourage people to save, and has various other negative impacts that are not conducive to the economy as a whole (Rahmanta & Maryunianta, 2020). In this research, the effect of

price increases focused on food commodities will be analyzed further. Food commodities have a significant impact on people's daily lives because food is a basic need that cannot be avoided (Rai, 2022). Inflation has both positive and negative impacts on the economy. If a country's economy experiences a downturn, Bank Indonesia can carry out expansionary monetary policy by reducing interest rates. High and unstable inflation is a reflection of economic instability which results in general and continuous increases in the price level of goods and services, and results in higher levels of poverty in Indonesia. Because the inflation rate is getting higher, people who were initially able to meet their daily needs with high prices for goods and services are unable to meet their needs, giving rise to poverty and the inflation rate in Indonesia fluctuates from year to year (Central Statistics Agency, 2020).

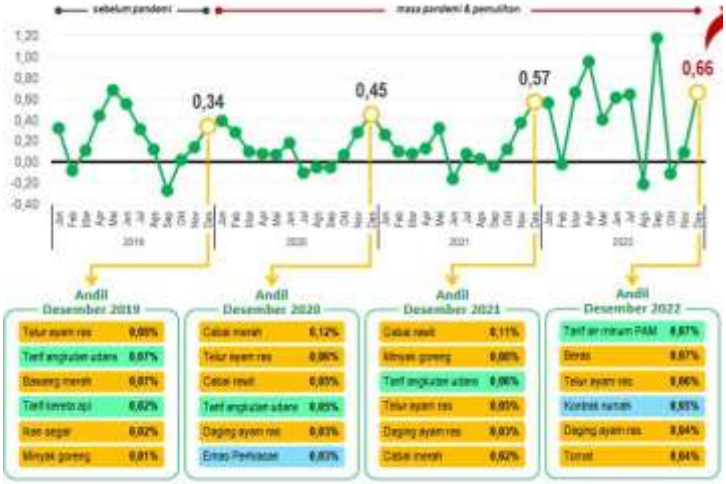

Figure 1. Inflation Rate 2019-2022 (Central Statistics Agency, 2020)

Based on the picture above, you can see how the inflation rate fluctuated from 2019 to 2022. The highest inflation occurred in September 2022, where the inflation rate reached 1.17%. Every year we can see how the agricultural sector, especially the food subsector, contributes to an increase in the inflation rate. Every year vulnerable food items increase. In 2022, the rice commodity will contribute to inflation of 0.07% of the overall inflation value of 0.66%.

Inflation in food can be caused by various factors, including fluctuations in the price of agricultural raw materials such as grain prices, adverse weather conditions such as drought or floods that affect agricultural production, increases in production costs such as energy and fertilizer costs, changes in global or local demand, trade policies, market speculation, and other factors. Based on the explanation above, a problem identification was formed, namely: How does food prices such as corn prices, soybean prices, chicken prices, garlic prices influence inflation in the city of Medan?

2. RESEARCH METHODS

2.1 Method for Determining Research Areas

The research area was determined purposively or based on certain considerations, namely the city of Medan. Medan City is the capital of the province of North Sumatra, where this area can describe the province of North Sumatra proportionally. Medan City is the economic center of North Sumatra Province, so based on this the author determined Medan City as the research area.

2.2 Method for Determining Research Samples

The sampling method in this research uses Cluster Random Sampling, where the sample is the variable that will be used in this research equation. There are 4 variables used in this research, namely Corn Price, Soybean Price, Garlic Price, Purebred Chicken Meat Price. The amount of data needed in this research is the total price of each variable over the past 5 years, starting from 2018- 2022. The determination of 5 years is a representation of each phase of the economic condition of Medan City, the

phase before Covid-19, the phase during Covid-19, and the phase after Covid-19, so that the picture of the fluctuations will be clearly visible as to how the influence occurred.

2.3 Method of collecting data

The data collected in this research is secondary data. Secondary data is obtained from literature studies in the form of books, journals, research results and statistical data from relevant agencies related to the research topic. Such as, BPS North Sumatra, BPS Medan City.

2.4 Data analysis method

Based on the model, testing using the VAR method is carried out according to the following equation:

INFt = a0 + a1 INFt-p + a2 HBRt-p + a3 HDAt-p + a4 HCMt-p + a5 HTAt-p + a6 HGPt-p + et1
HBRt = b0 + b1 HBRt-p + b2 INFt-p + b3 HDAt-p + b4 HCMt-p + b5 HTAt-p + b6 HGPt-p + et2
HDAt = c0 + c1 HDAt-p + c2 INFt-p + c3 HBRt-p + c4 HCMt-p + c5 HTAt-p + c6 HGPt-p + et3
HCMt = d0 + d1 HCMt-p + d2 INFt-p + d3 HBRt-p + d4 HDAt-p + d5 HTAt-p + d6 HGPt-p + et4
HTAt = e0 + e1 HTAt-p + e2 INFt-p + e3 HBRt-p + e4 HDAt-p + e5 HCMt-p + e6 HGPt-p + et5
HGPt = f0 + f1 HGPt-p + f2 INFt-p + f3 HBRt-p + f4 HDAt-p + f5 HCMt-p + f6 HTAt-p + et6

3. RESULTS AND DISCUSSION

3.1 Variant Decomposition (VD) Analysis Results

Table 3.1 Results of Variance Decomposition Analysis of Corn Prices (X1)

Variant Decomposition of D(X1)						
Period	**S.E**	**D(X1)**	**D(X2)**	**D(X3)**	**D(X4)**	**D(Y)**
1	631.8708	100,0000	0.000000	0.000000	0.000000	0.000000
2	656.2308	**94.49395**	**2.859117**	**0.025302**	**0.184297**	**2.437330**
3	709.3883	92.68683	3.015812	1.299343	0.193154	2.804858
4	797.0180	93.66678	2.606353	1.085618	0.156294	2.484950
5	834.9730	92.00388	3.112614	1.757302	0.309465	2.816737
6	875.1629	92.23984	2.837998	1.601919	0.295087	3.025151
7	933.4755	92.10052	2.560005	1.468826	0.435974	3.434679
8	964.0189	92.20991	2.568928	1.590009	0.410252	3.220899
9	1001.087	92.53760	2.444915	1.588222	0.442477	2.986789
10	1045.851	92.93375	2.286713	1.464055	0.414336	2.901147

Table 3.2 Results of Variance Decomposition Analysis of Soybean Prices (X2)

Variant Decomposition of D(X2)						
Period	**S.E**	**D(X1)**	**D(X2)**	**D(X3)**	**D(X4)**	**D(Y)**
1	285.8609	0.034115	99.96588	0.000000	0.000000	0.000000
2	393.0367	**2.753853**	**93.13373**	**0.523496**	**1.283989**	**2.304927**
3	457.9909	3.958622	72.31362	5.779461	4.763318	13.18498
4	520.3396	3.468264	57.95909	17.09502	5.338836	16.13878
5	529.5124	3.753786	57.53591	17.56873	5.545617	15.59596
6	538.7777	4.072608	55.90616	17.77857	5.490500	16.75216
7	556.0432	5.706814	52.76893	19.25055	5.372960	16.90075
8	574.5318	7.706206	50.19803	20.58635	5.319887	16.18953

9	577.5896	7.625580	50.31628	20.45422	5.315461	16.28846
10	582.8046	**7.562225**	**49.46385**	**21.56050**	**5.372789**	**16.04064**

Table 3.3 Results of Variance Decomposition Analysis of Purebred Chicken Prices (X3)

Variant Decomposition of D(X3)						
Period	**S.E**	**D(X1)**	**D(X2)**	**D(X3)**	**D(X4)**	**D(Y)**
1	556.3809	16.73502	7.426687	75.83829	0.000000	0.000000
2	647.0289	**12.52591**	**10.49058**	**69.01013**	**0.779201**	**7.194180**
3	704.7727	10.62400	15.13917	66.29333	1.870378	6.073124
4	761.9113	12.52172	14.02748	64.54638	2.452633	6.451783
5	820.6173	11.25638	13.33517	67.08374	2.248879	6.075833
6	876.1194	9.910730	15.37471	67.27614	2.000605	5.437816
7	934.2118	10.44655	15.68761	65.89649	1.762350	6.206996
8	964.3480	9.852956	15.67739	66.89336	1.653946	5.922346
9	1010.461	9.647778	15.82784	67.27869	1.512129	5.733569
10	1059.163	**9.298021**	**16.16723**	**67.53977**	**1.376393**	**5.618588**

Table 3.4 Results of Variance Decomposition Analysis of Garlic Prices (X4)

Variant Decomposition of D(X3)						
Period	**S.E**	**D(X1)**	**D(X2)**	**D(X3)**	**D(X4)**	**D(Y)**
1	753.7000	33.15201	6.990352	0.065336	59.79231	0.000000
2	826.1369	**36.26224**	**8.293879**	**0.059973**	**49.90322**	**5.480690**
3	895.8192	36.61167	7.552381	0.071419	51.09930	4.665229
4	963.2827	35.15888	7.811704	0.500333	52.44184	4.087244
5	1069,009	40.50955	7.927705	0.450025	45.69152	5.421200
6	1116.077	39.11537	8.522018	0.438531	46.91358	5.010497
7	1176.843	40.10536	8.229763	0.455137	45.94540	5.264342
8	1238.371	41.28527	8.110670	0.429275	45.17352	5.001257
9	1284.090	40.79951	8.821982	0.598845	44.88640	4.893261
10	1341.123	**41.63274**	**8.544997**	**0.551574**	**44.67039**	**4.600302**

Table 3.5 Results of Variance Decomposition Analysis of General Inflation Prices (Y)

Variant Decomposition of D(X3)						
Period	**S.E**	**D(X1)**	**D(X2)**	**D(X3)**	**D(X4)**	**D(Y)**
1	13589.90	0.079695	0.475485	4.895211	1.101271	93.44834
2	14536.84	**8.810707**	**2.540985**	**5.109267**	**1.233137**	**82.30590**
3	16873.55	6.876582	2.679250	4.099072	1.121542	85.22355
4	17413.97	7.325319	2.604298	4.053704	1.252681	84.76400
5	18374.43	8.199115	2.377510	3.739416	1.245061	84.43890
6	19130.08	7.566681	2.442767	3.617149	1.658327	84.71508
7	19988.40	8.240725	2.375222	3.338662	1.555668	84.48972
8	20597.03	7.878767	2.256701	3.204250	1.577239	85.08304
9	21255.62	8.009413	2.120110	3.253849	1.502005	85.11462
10	22012.00	**7.715536**	**1.978364**	**3.048012**	**1.406288**	**85.85180**

3.2 Granger Causality Test

Table 3.6 Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistics	Prob.
X2 does not Granger Cause X1	58	0.28862	0.7505
X1 does not Granger Cause X2		**3.19250**	**0.0491**
X3 does not Granger Cause X1	58	0.05862	0.9431
X1 does not Granger Cause X3		0.79428	0.4572
X4 does not Granger Cause X1	58	1.40942	0.2533
X1 does not Granger Cause X4		1.50580	0.2312
Y does not Granger Cause X1	58	0.95926	0.3897
X1 does not Granger Cause Y		**4.27439**	**0.0190**
X3 does not Granger Cause X2	**58**	**3.86796**	**0.0270**
X2 does not Granger Cause X3		0.75134	0.4767
X4 does not Granger Cause X2	**58**	**3.98642**	**0.0244**
X2 does not Granger Cause X4		0.10191	0.9033
Y does not Granger Cause X2	58	0.50461	0.6066
X2 does not Granger Cause Y		**3.37284**	**0.0406**
X4 does not Granger Cause X3	58	1.71423	0.1899
X3 does not Granger Cause X4		0.99259	0.3774
Y does not Granger Cause X3	58	2.31079	0.1091
X3 does not Granger Cause Y		**3.12625**	**0.0319**
Y does not Granger Cause X4	58	0.88196	0.4200
X4 does not Granger Cause Y		1.31876	0.2761

Based on table 3.6, it is known that there is a one-way causal relationship between the variables corn price (X1) and soybean price (X2). This is because the variable price of corn (X1) against the price of soybeans (X2) has a probability value of 0.0491<0.05. Meanwhile, the soybean price variable (X2) has a probability value of 0.7505 > 0.05. There is a one-way causal relationship between the corn price variable (X1) and general inflation (Y). This is because the variable corn price (X1) against general inflation (Y) has a probability value of 0.0190 < 0.05. Meanwhile, general inflation (Y) on corn prices (X1) has a probability value of 0.3897 > 0.05. There is a one-way relationship between the variable chicken breeds (X3) and the price of soybeans (X2). This is because the variable price of purebred chickens (X3) against the price of soybeans (X2) has a probability value of 0.0270 < 0.05. Meanwhile, the variable price of soybeans (X2) on the price of purebred chickens (X4) has a probability value of 0.4767.

There is a one-way relationship between the garlic price variable (X4) and the soybean price (X2). This is because the relationship between the variable price of garlic (X4) and the price of soybeans (X2) has a probability value of 0.0244 < 0.05. Meanwhile, the relationship between the soybean price variable (X2) and the price of garlic (X4) has a probability value of 0.9033.

There is a one-way relationship between the soybean price variable (X2) and the inflation variable (Y). This is because the relationship between the soybean price variable (X2) and the general inflation variable (Y) has a probability value of 0.406 < 0.05. Meanwhile, the relationship between general inflation (Y) and soybean prices (X2) has a probability value of 0.6066. There is a one-way relationship between the price variable for purebred chickens (X3) and general inflation (Y). This is because the relationship between the breed chicken variable (X3) and the inflation variable (Y) has a probability value of 0.0319 < 0.05. Meanwhile, the relationship between general inflation (Y) and the variable price of purebred chickens (X3) has a probability value of 0.1091.

4. CONCLUSION

Based on the results of data analysis and discussion in the research above, the following conclusions are produced:

1. Based on the research results, the variables that have a long-term relationship are the price of soybeans (X2) and the price of purebred chickens (X3) as evidenced by the T-statistic value > from the t-table. In the short term, several variables, namely the price of corn (X1-1) at lag 1, the price of soybeans (X2-2) at lag 2, the price of chicken (X3-1) and general inflation (Y-2) at lag 2 have an effect on general inflation. (Y). This is because each variable has a t-statistic value > t-table.
2. Based on the results of the Granger causality test, there is a one-way causal relationship between the variables corn price (X1) and soybean price (X2). one-way causality between the variable corn price (X1) and general inflation (Y), one-way relationship between the variable broiler chicken (X3) and the price of soybeans (X2), one-way relationship between the variable price of garlic (X4) and the price of soybeans (X2), a one-way relationship between the soybean price variable (X2) and the inflation variable (Y), a one-way relationship between the price variable for purebred chickens (X3) and general inflation (Y).

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