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Inflation Analysis in West Sumatera

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ABSTRACT

This study aims to analyze and determine the effect of chili prices, rice prices, onion prices, household fuel prices, per capita income, consumption and the money supply to inflation in West Sumatra both partially and jointly. Then, the study also wants to find out which factors are the most dominant influencing inflation in West Sumatra, whether in terms of supply or demand side. All variable data in this study began in the first quarter of 2008 - fourth quarter of 2018 with a total of 44 data (N). The analytical methods are Error Correction Mechanism (ECM) and Ordinary Least Square (OLS). The results of this study concluded that 1) Change chili prices, rice prices, onion prices, and fuel prices significant effect on change inflation in West Sumatra. 2)Change per capita income, consumption, and the money supplysignificant and positive effect on change inflation in West Sumatra. The policies that can be suggested from the results of this study are the West Sumatra Regional Government and related staff must be able to maintain the availability, distribution and prices of basic necessities in West Sumatra because if this is disrupted it will have an impact on rising inflation in West Sumatra. Then, Government The West Sumatra Region and Bank Indonesia must be able to maintain the speed of the money supply.

Keywords: inflation, supply, demand

1. INTRODUCTION

Inflation is a symptom where the general price level has been increasing continuously. In other words, the occurrence of inflation, means the prices of goods and services have increased. The increase in prices of goods and services has caused the real purchasing power of the people to fall. This decline in people's purchasing power will have an impact on their reduced consumption of goods and services. Conversely, if there is a decrease in inflation (deflation), it means there has been a decline in the prices of goods and services. The decline in the prices of goods and services has caused the people's real purchasing power to increase. Increased purchasing power of these people will have an impact on increasing their consumption of goods and services.

Based on its source, inflation comes from the supply side and demand side. Supply-side

inflation is inflation caused by rising production costs. There are several factors that cause fluctuations in inflation from the supply side (Atmajaya (2009), Najed (2005), Andri (2008), Lim (2015), Dion (2008) and Sobriakhir (2007) Aurangzeb (2012) G. Adu (2011) HA Altowaijri (2011) and M. Jaradat (2011)) which states that the price of groceries has an effect and has a positive impact on inflation. This means that an increase in the price of groceries will encourage inflation but a fall in the price of basic food items will reduce inflation.

Based on Bank Indonesia Report (2018), it was noted that on the average in the last three years the biggest contributor to inflation in West Sumatra from the supply side was Red Chili, Rice, Shallots and Household Fuels. On average in the three years, the contribution of each component to inflation in West Sumatra was 0.88% Red Chili, 0.17% Rice, 0.04% Red Onion and 0.03% RT Fuel.



The Central Statistics Agency (BPS) of West Sumatra reported that inflation in West Sumatra from 2008-2018 along with the factors causing it from the supply side. In the table it can be seen that inflation in West Sumatra has fluctuated from 2008-2018. In 2013, West Sumatra inflation reached its highest level during the observation period of 10.87%. The high inflation in West Sumatra this year from the supply side is estimated by the increase in chili prices, rice prices, onion prices and household fuel prices. This year the price of chili actually increased to 5.69% from 5.54% the previous year. The price of rice and onion prices actually experienced a decline in development by 2.53% and 3.15% respectively. While the price of household fuels did experience an increase of 9.19%.

According to research Atmajaya (2009), Najed (2005), Andri (2008), Lim (2015), Dion (2008), Sobriakhir (2007) Aurangzeb (2012) G. Adu (2011) HA Altowaijri (2011) and M. Jaradat (2011)) which states that income, consumption and the money supply have an effect and have a positive impact on inflation. An increase in income (income per capita) will cause an increase people's purchasing power. purchasing power will encourage increased demand so that the prices of goods also increase. Increased consumption will also cause the prices of goods and services to go up because of high demand. Therefore, this situation will trigger inflation. The higher the money supply, the higher the inflation because the high money supply indicates the amount of money held by the public while the supply remains. This condition has an impact on rising prices for goods.

Viewed from the demand side, the high inflation of West Sumatra in 2013 was expected by the increase in income, consumption and the money supply. Table 1.2 shows that in 2013 per capita income in West Sumatra did increase by 5.73% from 5.47% in the previous year. The consumption variable also increased by 5.83%

from the previous year of 3.18%. The same conditions are also shown by the variable money supply. In 2013, the money supply did increase by 33.44%, which was 25.13% in the previous year.

2. METHODS

Data on all variables in this study began in the first quarter of 2008 - fourth quarter of 2018 with a total of 44 data (N). This study used estimation techniques. the error correction model (ECM) is as follows:

D (Y) = β 0 + β 1 D (X1) + β 2 D (X2) + β 3 D (X3) + β 4 D (X4) + β 5 D (X5) + β 6 D (X6) + β 7 D (X7) + μ t-1 (1)

Where:

Y = inflation

X1 = chili prices

X2 = the price of rice

X3 = the price of shallots

X4 = household fuel prices

X5 = income per capita

X6 = consumption

X7 = the money supply

3. RESULTS AND DISCUSSION

The phenomenon of inflation is a symptom or event that can be observed where the general price level has risen continuously. phenomenon of inflation must be experienced by every country in the world so that each country always tries to create a controlled and stable inflation rate in the country. Inflation is very influential on a country's economy. Inflation has positive impacts and negative effects depend on whether or not inflation is severe. If inflation is mild, it has a positive influence in the sense that it can encourage a better economy, which is to increase national income and make people eager to work, save and invest. Conversely, in times of severe inflation, which is when inflation is out of control (hyperinflation), the economy becomes chaotic and the economy feels sluggish.



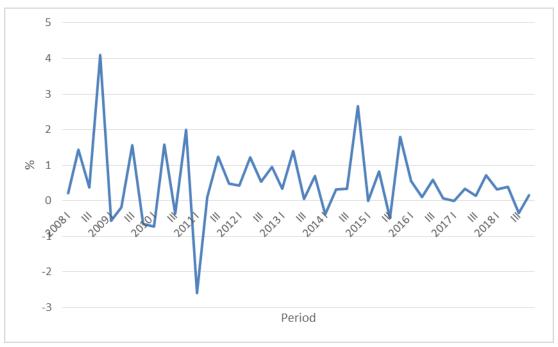


Figure 1. Development of West Sumatra Inflation From the First Quarter of 2008 - Quarter IV of 2018

Figure 1 shows the development of inflation in West Sumatra from the first quarter of 2008 the fourth quarter of 2018. The table shows that inflation in West Sumatra has fluctuated both nominally and developmentally. In the IV quarter of 2008 inflation reached its highest level during the study period. The policy of raising the price of fuel oil (BBM) has had a significant impact on the development of prices in general in the Province of West Sumatra, represented by the City of Padang. Annual price developments in the city of Padang in the fourth quarter of 2008 experienced inflation of 4.33 percent on a year-onyear basis (YoY). This figure is higher compared to the previous quarter which was recorded at 5.71 percent (YoY). Compared to the national annual inflation in quarter IV-2008 which was recorded at 4.01 percent (YoY), the annual inflation rate in Kota Padang was still higher. If observed, since the second quarter of 2004 the annual inflation rate in the city of Padang has always been above the national annual inflation rate (KER West Sumatra, 2008).

On the other hand, in the first quarter of 2011 there was the lowest inflation in West Sumatra which only reached -2.59percent. West Sumatra's annual inflation rate has reached its lowest point in the past 10 years. West Sumatra's annual inflation rate in the first quarter of 2011 was -0.73 percent (YoY). This inflation rate is the lowest in the previous years since the first quarter of 2008, the rate of inflation in West Sumatra also briefly touched the level of 1.02% (YoY). The low rate of inflation in West Sumatra is supported by the continuous flow of goods distribution to West Sumatra. Although there are several distribution channels that are disrupted due to natural disasters, the supply of daily necessities both in the form of aid and trade goods has succeeded in making the supply of existing goods relatively maintained. Other than that, (KER West Sumatra, 2013).

Based on data processing with the help of the E-Views 9 program, the results of data processed for various tests and analysis models are obtained as follows:

Stationary Test



Based on the cointegration test results it can be seen that all the variables in this study are stationary at the 1st difference. This condition shows the probability value of each of these variables is smaller than α = 0.05 on the 1st difference. Because all the variables in this study are stationary, all the variables in this study can be said to be average, variant and autocovariant whose values are constant from time to time (for various lags that have the same value, it doesn't matter where the point starts to measure).

Cointegration Test

From the cointegration test it is known that in the equation DUY = UY (-1) the probability is small of α = 0.05. Therefore this model is a cointegrated or mutually explanatory model. In other words, although all the variables in each equation in this study are not stationary, all the variables in each equation have a long-term relationship or balance between these variables. Thus the equation no longer contains the problem of spurious regression.

Multicollinearity Test

From multicollinearity testing it can be seen that the Centered VIF values of all variables (X1, X2, ... X7) <5. Therefore, it can be concluded that there is no strong correlation between fellow independent variables.

Heteroscedasticity Test

Based on the heteroscedasticity test obtained the probability value of each variable> α = 0.05. Therefore, the equation does not contain heteroscedasticity problems. With the meaning of the word, there is similarity in inflation variants of residuals for all observations in each equation.

Autocorrelation Test

From autocorrelation test results the DW value is 1.84. While from the DW Table with a significance of 0.05 and the amount of data (n) = 44, and k = 4 (k =the number of exogenous variables) the values of dL = 1.336, dU = 1,720, 4-dU = 2.28, 4-dL = 2,664. Since the DW value is 1.84 in the area between dU and 4-dU, it can be

concluded that there is no autocorrelation problem in the investment equation. With the meaning of the word in the investment equation there is no correlation between residuals in one observation with another observation

ECM Estimation Results

Table 1 shows the results of the estimated shortterm balance of the effect of chili prices, rice prices, onion prices, household fuel prices, per capita income, consumption and the money supply that have a significant effect on inflation in West Sumatra. From the estimation results, the inflation equation model is obtained as follows:

D (Y) = 0.413270 + 0.390444 D (X1) + 0.327414 D (X2) + 0.233637 D (X3) + 0.278366 D (X4) + 0.147430 D (X5) +0.054698 D (X6) + 0.089037 D (X7)-0.014441 UY (-1) (2)

Based on the results of the analysis above, it can be seen that if changes in the price of chili, rice prices, onion prices, household fuel prices, and income per capita, consumption and money supply are zero then the inflation value in West Sumatra is 0.413270 one-unit. The R-squared value of the inflation equation is 0.699187. This shows the contribution of variable changes in chili prices, rice prices, onion prices, household fuel prices, per capita income, consumption and the money supply have a significant effect on changes in inflation in West Sumatra is 69.92 percent while the remaining 30.08 percent is influenced by other variables not included in the inflation equation in West Sumatra.

1. Effect of Chili Prices (X1) on Inflation in West Sumatra

Partially changes in chili prices have a positive and significant effect on changes in inflation in West Sumatra. Obtained probability value changes in chili prices (0.0011) to changes in inflation is smaller than $\alpha=0.05$. Therefore, partially chili price changes significant effect on changes in inflation in West Sumatra. Chili is one of the ingredients that are very popular with residents of West Sumatra. The people of West Sumatra will not feel like eating if there is no chili



on the cuisine. Therefore, West Sumatra cuisine is famous for being spicy and savory. Thus, chili is one of the main components in the cuisine of West Sumatra people, so there is almost no cuisine of West Sumatra people who do not use chili in it. So, when the price of chili has increased and the people of West Sumatra continue to consume this chili so that this condition has an impact on rising inflation in West Sumatra. This has been going on for a long time since ancient times. However, when the price of chili is well controlled, it is proven that inflation in West Sumatra is also well controlled.

commodities in Indonesia such as sugar, cooking oil, soybeans and corn are related to world prices. In a period of around one year, a one percent increase in average world commodity prices will cause a one percent increase in domestic prices in Indonesia. Other commodities will respond to the same thing with varying response times. In general, the fastest domestic prices to adjust to world price shocks are the sugar and cooking oil commodities, while the slowest is for soybeans and corn. The speed of transmission to international price shocks also differs between provinces in Indonesia.

The results of this study are in line with Rahardja's (2011) theory that the prices of

Table 1. Results of Estimated Effects of Chili Prices, Rice Prices, Shallot Prices, Household Fuel Prices, Per Capita Income, Consumption and Amount of Money Supply Against Inflation in West Sumatra

Dependent Variable: D (Y) Method: Least Squares Date: 01/09/19 Time: 4:58 a.m. Sample (adjusted): 2008Q2 2018Q4

Included observations: 43 after adjustments

Variable	Coefficient	Std. Error	t-Statistics	Prob.
С	0.413270	0.594239	0.695460	0.4915
D (X1)	0.390444	0.111228	3.510291	0.0011
D (X2)	0.327414	0.092717	3.531314	0.0012
D (X3)	0.233637	0.332352	0.702981	0.4862
D (X4)	0.278366	0.039759	7.001353	0.0000
D (X5)	0.147430	0.007008	21,03643	0.0000
D (X6)	0.054698	0.021806	2.508373	0.0134
D (X7)	0.089037	0.036159	2.462392	0.0152
UY (-1)	-0.014441	0.034257	-0.421547	0.6743
R-squared	0.699187Mean dependent var			-0.059070
Adjusted R-squared	0.628407SD dependent var			1.889502
SE of regression	1.151811 Akaike info criterion			3.304313
Sum squared resid	45,10671Schwarz criterion			3.672936
Log likelihood	-62.04272 Hannan-Quinn criter.			3.440250
F-statistics	9,878361 Durbin-Watson stat			1.883048
Prob (F-statistic)	0.000001			

Source: Results of data processing with Eviews 9, n = 44 $\alpha = 0.05$

The results of this study are also in accordance with previous studies, namely Atmajaya's research (2009), Najed (2005), Andri (2008), Lim (2015), Dion (2008) and Sobriakhir

(2007) which stated that the price of groceries affected and had a positive impact on inflation. This means that an increase in the price of



groceries will push inflation up, but a fall in the price of groceries will reduce inflation.

2. Effect of Rice Prices (X2) on Inflation in West Sumatra

Partially changes in rice prices also have a positive and significant effect on changes in inflation in West Sumatra.Obtained probability value of changes in rice prices (0.0012) to changes in inflation is smaller than α = 0.05. Rice is the staple food of West Sumatra residents. Nearly 98% of the population of West Sumatra consumes rice as its main food. Because West Sumatra is supported by good agricultural conditions to produce rice so that rice is easily available everywhere in the West Sumatra region so that the staple food is rice. Because rice is the staple food of West Sumatra residents, of course, when supply or stock of rice is disrupted, this condition will threaten West Sumatra inflation so that the presence of rice on the market must be properly maintained.

The results of this study are in line with Rahardja's (2011) theory that the prices of commodities in Indonesia such as sugar, cooking oil, soybeans and corn are related to world prices. In a period of around one year, a one percent increase in average world commodity prices will cause a one percent increase in domestic prices in Indonesia. Other commodities will respond to the same thing with varying response times. In general, the fastest domestic prices to adjust to world price shocks are the sugar and cooking oil commodities, while the slowest is for soybeans and corn. The speed of transmission to international price shocks also differs between provinces in Indonesia.

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3. Effect of Shallot Prices (X3) on Inflation in West Sumatra

Partially changes in onion prices also have a positive and significant effect on changes in inflation in West Sumatra.Obtained probability value of changes in the price of shallots (0.4862) to inflation greater than α = 0.05Shallots are also included as the main component of West Sumatra cuisine. Many dishes of West Sumatra people use shallots as a component of cooking because West Sumatra people love making dishes called Goulash. One famous curry that has a long cooking process and uses shallots as its component is Rendang. Rendang is a favorite food of West Sumatra people who are already famous throughout the world. Thus, onion as its component will certainly increase the price of red onions will have an impact on rising inflation in West Sumatra because onion is a favorite component of West Sumatra cuisine.

The results of this study are in line with Rahardja's (2011) theory that the prices of commodities in Indonesia such as sugar, cooking oil, soybeans and corn are related to world prices. In a period of around one year, a one percent increase in average world commodity prices will cause a one percent increase in domestic prices in Indonesia. Other commodities will respond to the same thing with varying response times. In general, the fastest domestic prices to adjust to world price shocks are the sugar and cooking oil commodities, while the slowest is for soybeans and corn. The speed of transmission to international price shocks also differs between provinces in Indonesia.

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4. Effect of Household Fuel Prices (X4) on Inflation in West Sumatra

Partially, changes in the price of household fuel also have a positive and significant impact changes in inflation West Sumatra. Obtained the probability value of changes in household fuel prices (0.0000) to changes in inflation is smaller than $\alpha = 0.05$. Fuel is one of the basic needs for the community, especially residents of West Sumatra. These fuels include kerosene, cooking oil, LPG gas and others. Of course the availability of this fuel is needed by various layers of West Sumatra society in terms of cooking. If the availability of this fuel is disrupted, of course the price of this fuel will increase. Because the rising fuel prices have finally had an effect on rising inflation in West Sumatra. Conversely, if the availability of fuel is maintained properly, prices in the market will not increase. This stable condition will be able to keep inflation in West Sumatra.

The results of this study are in line with Rahardja's (2011) theory that the prices of commodities in Indonesia such as sugar, cooking oil, soybeans and corn are related to world prices. In a period of around one year, a one percent increase in average world commodity prices will cause a one percent increase in domestic prices in Indonesia. Other commodities will respond to the same thing with varying response times. In general, the fastest domestic prices to adjust to world price shocks are the sugar and cooking oil commodities, while the slowest is for soybeans and corn. The speed of transmission to international price shocks also differs between provinces in Indonesia.

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5. Effect of Per Capita Income (X5) on Inflation in West Sumatra

Partially, changes in per capita income have a positive and significant impact on changes in inflation in West Sumatra.Obtained probability value of change in income per capita (0.0000) to changes in inflation is smaller than α = 0.05. An increase in people's per capita income indicates an increase in people's purchasing power Increased purchasing encourage increased consumption so that an increase in consumption will cause an increase in inflation as long as production does not increase. Conversely, if per capita income decreases, purchasing power will also go down so consumption will also decline and ultimately inflation will also be affected as long as supply does not go down.

The results of this study are in accordance with AD-AS theory. When AD increases due to rising public income with the assumption that the US is fixed then this situation will drive up prices in an economy (Dornbusch, 2008: 111). The opposite condition is shown when AD decreases due to the decline in public income with the assumption that the US is fixed then this situation will depress prices in an economy.

The results of this study are in accordance with Atmajaya (2009), Najed (2005), Andri (2008), Lim (2015), Dion (2008) and Sobriakhir (2007) which states that per capita income influences and positively impacts inflation. This means that an increase in per capita income will encourage inflation but a decrease in per capita income will reduce inflation.

6. Effects of Consumption (X5) on Inflation in West Sumatra

Partially, changes in consumption have a positive and significant effect on changes in inflation in Indonesia. Obtained the probability value of changes in consumption (0.0134) to changes in inflation is smaller than $\alpha = 0.05$ The high consumption of the people while at the same time the amount of production of goods



and services remains, this condition has an impact on increasing demand. Demand which increases in aggregate but not accompanied by an increase in aggregate supply will have an influence on rising inflation. Conversely, a decrease in consumption will give effect to the decrease in aggregate demand and this condition will eventually put pressure on inflation with the assumption that the aggregate supply remains constant.

The results of this study are in accordance with AD-AS theory. When AD increases due to rising consumption with the assumption that the US is fixed then this situation will drive up prices in an economy (Dornbusch, 2008: 111). The opposite condition is shown when AD decreases due to falling consumption with the assumption that the US is fixed then this situation will depress prices in an economy.

The results of this study are in accordance with Atmajaya (2009), Najed (2005), Andri (2008), Lim (2015), Dion (2008) and Sobriakhir (2007) which states that consumption influences and has a positive impact on inflation. This means that an increase in consumption will encourage an increase in inflation but a decrease in consumption will reduce inflation.

7. Effect of the Money Supply (X5) on Inflation in West Sumatra

Partially the money supply has positive and significant effect on inflation in Sumatra. Obtained the probability value of changes in the money supply (0.0152) to changes in inflation smaller than $\alpha = 0.05$. This condition is because the increased money supply in the economy means that the amount of money held by the public. The high amount of money held by the public that encourages public demand while the amount of production in the economy is fixed then the conditions will trigger inflation. Conversely, a decrease in the money supply means that the money held by the community is small so that public demand for goods and services also decreases while the production of goods and services remains. Thus, this situation

will make prices go down or in other words will be able to reduce inflation.

Likewise, with the theory of Milton Friedman (Mishkin, 2008: 333) which states an increase in the money supply will have an impact on increasing prices (inflation). Whereas a decrease in the money supply will result in a fall in prices.

The results of this study are not in accordance with previous research (Ikasari, 2005) which states that both in the short and long term, the variable base money (LM0) does not significantly influence the inflation rate in Indonesia. Whereas in this study found regardless of the period of time whether the short-term or long-term money supply (M2) has a significant effect on inflation in West Sumatra.

4. CONCLUSIONS

The results of this study concluded that 1) Change chili prices, rice prices, onion prices, and fuel prices significant effect on change inflation in West Sumatra. 2)Change per capita income, consumption, and the money supplysignificant and positive effect on change inflation in West Sumatra. The policies that can be suggested from the results of this study are the West Sumatra Regional Government and related staff must be able to maintain the availability, distribution and prices of basic necessities in West Sumatra because if this is disrupted it will have an impact on rising inflation in West Sumatra. Then, Government The West Sumatra Region and Bank Indonesia must be able to maintain the speed of the money supply.

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