

Analysis of Demanding of Imported Maize in North Sumatera Province

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Abstract - Maize is the second source of carbohydrates after rice. Maize is currently consumed as the substitute of rice for implementation of food diversification. Besides human, maize is also needed by poultry and mammals as feed ingredients. Increased demand of maize is not worth the supply of maize, because of the area and productivity tend to fluctuate every year. This research was conducted in 2017-2018. The purpose of this research is analyzing the price of imported maize, the price of domestic maize in North Sumatera, the production of maize, and exchange rate that influence the volume of imported maize in North Sumatera Province. Data used in this research is time series data which is monthly data from 2013 until 2016. This research used Autoregressive Distributed Lag (ARDL) model analysis method. The results showed that imported maize price had a significant effect on corn import volume in North Sumatera Province, while maize price in North Sumatra, production, and exchange rate did not significantly affect the volume of maize import in North Sumatera Province.

Keywords - Volume Of Imported Maize, Imported Maize Price, Autoregressive Distributed Lag, ARDL.

I. INTRODUCTION

Food is essential and is the right of every citizen to obtain it. The availability of food should be sufficient, good quality, and affordable. In Indonesia, food crops commonly consumed by the community are still limited to several types, namely rice, maize, cassava, and sweet potato (Purwono, 2007).

In general, the needs of some types of food crops can not be fulfilled from domestic production so that must be imported every year, one of them is maize. Maize as an important commodity in the world economy is one of the

food crops that have high nutritional value. In Indonesia, maize as a food is the second source of carbohydrate after rice. Corn is currently often consumed by some Indonesian people as a substitute for rice, in participating for the implementation of food diversification.

The number of people in North Sumatra is increasing every year, but not proportional to the area of fluctuating corn and productivity of maize. This is shown in the next table.

Table 1. Land Size, Production, and Volume of Maize Imports in North Sumatra Province (2011-2015)

Year	Land area (Ha)	Production Volume (Ton)	Import Volume (Ton)
2011	255.291	1.294.645	286.473
2012	243.097	1.347.127	217.083
2013	211.75	1.182.928	393.528
2014	200.603	1.159.795	444.082
2015	243.772	1.519.407	433.67
Total	1.154.513	6.503.902	1.996.184

Source: Central Bureau of Statistics of North Sumatra, 2016

From Table 1, it is known that maize area in North Sumatera Province during 2011-2014 has fluctuated. The decrease of maize area could be caused by the growing of imported maize into North Sumatera so that corn farmers in North Sumatera failed to grow corn. In addition, imports of

maize tend to increase every year. This is because corn demand is not followed by domestic corn supply, because corn production in North Sumatera is likely to fluctuate.

Table 2. Demand and Supply of Maize in North Sumatera Province (2008-2013)

Year	Demand (Ton)	Supply (Ton)
2008	1515917	1098969
2009	1611708	1166567
2010	1714174	1367719
2011	1738184	1084690
2012	1865860	1337104
2013	1710438	1198944
Total	10156281	7253993

Source: Food Security Agency, 2015

From Table 2, it can be seen that every year the demand for corn is greater than the supply of corn in North Sumatera. Therefore, the government imports maize to meet the demand for corn in North Sumatera.

Factors that are suspected to have an effect on the volume of maize import are imported corn prices, domestic corn prices, domestic maize production, and exchange rates. The purpose of this research is to analyze the price of imported maize, local maize price of north Sumatera, corn production, and exchange rate to maize import volume in North Sumatera Province.

Doni's research (2016) entitled "Analysis of Factors Affecting the Import of Indonesian Maize Period 1995-2014", using the Error Correction Model (ECM) analysis method. The result of this research is that the national corn production has significant effect to have negative relation and the gross domestic product (GDP) per capita has a significant effect on the Indonesian maize import volume in the period of 1995-2014 both in short and long term. The variable of import price of maize and the exchange rate of Rupiah to US Dollar did not significantly influence the volume of Indonesian maize import from 1995-2014 period in the short and long term.

The Timor Research (2008) entitled "Analysis of Factors Affecting Maize Production and Import In Indonesia", using the Two Stages Least Square (TSLS) analysis method. The result of this research is real price of corn at producer level, inflation rate and real price of local maize of previous year significantly influence to local real maize price, while corn

import price and total of corn import in previous year have significant effect to the amount of Indonesian corn import. The rupiah exchange rate against US dollar, the amount of maize import, the import tariff of maize and the price of corn imports in the previous year had a significant effect on the import price of Indonesian maize.

II. RESEARCH METHOD

This research uses data analysis method with Autoregressive Distributed Lag (ARDL) model which assisted by using Microsoft Excel and Eviews software 9. ARDL (Autoregressive Distributed Lag) is a dynamic model in econometrics.

The equation model that will be tested is as follows:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + e$$

Where:

Y = Total Maize Import Volume in North Sumatera (ton)

X1 = Imported Maize Price (Rupiah / kg)

X2 = Maize Price in North Sumatera (Rupiah / kg)

X3 = Total Maize Production Volume in North Sumatera (ton)

X4 = Rupiah exchange rate against US \$ (Rp / US \$)

β_0 = Constants

$\beta_1, \dots, \beta_5$ = Regression coefficient

E = error

After making ARDL estimation, proceed with Bound Test (Bounds Testing Cointegration), autocorrelation test, determination coefficient analysis, F statistical test, and T test statistic.

III.RESULT AND DISCUSSION

A. Maize Import Volume

The data of maize import volume used in this study is monthly data of maize import volume during 2013 to 2016. The highest volume of maize imports occurred in June 2016 of 122812 tons, while the volume of maize imports was lowest in February 2014, whereas North Sumatera altogether not importing maize.

B. Imported Maize Prices

The data of imported corn price used in this study is monthly data of imported maize price during 2013 until 2016. The highest import price of maize occurred in December 2016 amounting to Rp 6015,722 per kg, while the lowest import price of maize was Rp 2680.26 per kg in month July 2015.

C. Price of North Sumatera Maize

North Sumatra maize price data used in this research is North Sumatra maize price data monthly at retail level during 2013 until 2016. North Sumatera maize price is highest in February 2016 of Rp 4582 per kg, while North Sumatera maize price is lowest on March 2013 at Rp 2618 per kg.

D. Maize production of North Sumatera

The data of North Sumatran maize production used in this research is monthly data of North Sumatran maize production during 2013 until 2016. The highest import price of maize occurred in August 2015 was 245761 tons, while North Sumatran maize production was the lowest in October 2014 which was 60840.31 ton.

E. Exchange Rate (Rupiah Exchange Rate Against Dollar)

The exchange rate (rupiah exchange rate against the dollar) used in this study is the monthly exchange rate data during 2013 to 2016. The exchange rate (rupiah exchange rate against dollar) was the highest in September 2015 of Rp14396.1 / US \$, while the exchange rate (rupiah exchange rate against the dollar) was the lowest in February 2013 at Rp 9686.65 / US \$.

F. Root Test Unit (Unit Root Test)

Unit Root Test (Unit Root Test) was performed with Augmented Dickey Fuller (ADF) Test. The following is the result of unit root test of research variable at level or I (0):

Table 3. Root Unit Test Results of Research Variables at Level or I (0)

Variable	Test Unit Root at Level or I (0)		
	Probabilistic	Statistics-t	Critical Value
Imported Maize Volume	0.0000	-6.244826	-3.508508
Imported Maize Prices	0.0445	-3.560100	-3.518090
Maize Price in North Sumatera	0.0707	-3.350861	-3.508508
Production	0.0000	-7.230257	-3.513075
Exchange rate	0.8776	-1.292863	-3.508508

Source: Appendix 6 (processed), 2017

From Table 3. it can be seen that variables of North Sumatra corn import volume, imported corn prices and maize production of North Sumatra stationary at level or I (0). This can be seen from the probabilistic value of North Sumatra's import volume of 0,000 which is smaller than the 0.05 ($\alpha = 5\%$) confidence level and the absolute value of the

t-statistic is 6.244826 greater than the critical value of 3.508508.

While North Sumatra maize price variable and exchange rate has not stationary at level or I (0). So the root unit test should be done back in the first difference stage or I (I).

Unit root test is performed back in the first derivative stage. And the following results are obtained

Table 4. Unit Root Test on First Difference or I (I)

Variable	Unit Root Test on First Difference or I (I)		
	Probabilistic	Statistics-t	Critical Value
Maize Price in North Sumatra	0.0029	-4.651591	-3.51809
Exchange rate	0.0002	-5.542127	-3.51074

Source: Appendix 7 (processed), 2017

From Table 4, it can be seen that the variable price of maize in North Sumatra and the exchange rate previously not stationary at the level or I (0), is stationary on first derivative (I). This can be seen from the probabilistic value of the volume of maize imports of 0.0029 which is smaller than the 0.05 ($\alpha = 5\%$) confidence level and the absolute value of the t-statistic is 4.651591 greater than the critical value of 3.51809. And probabilistic value of maize import volume of 0.0002 where the value is smaller than the trust level of 0.05 ($\alpha = 5\%$) and the absolute value of the t-statistic is 5.542127 greater than the critical value of 3.51074.

G. Autoregressive Distributed Lag (ARDL) Test

From stationary test results, it is known that stationary data in different order, ie at level or I (0) and at first difference or I (1). It is then tested with Autoregressive Distributed Lag (ARDL). The number of lags on the Autoregressive Distributed Lag (ARDL) model is determined by the Akaike Information Criteria (AIC) value, where the model used is the lowest Akaike Information Criteria (AIC) value.

The following is the estimation result of Autoregressive Distributed Lag (ARDL).

Table 5. Estimation Results Autoregressive Distributed Lag (ARDL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
V_IMPORT(-1)	-0.233084	0.157048	-1.484154	0.1503
V_IMPORT(-2)	-0.145099	0.14972	-0.969133	0.3418
V_IMPORT(-3)	-0.322227	0.161669	-1.993129	0.0573
V_IMPORT(-4)	-0.366885	0.152411	-2.407214	0.0238
P_IMPORT	-1.240032	4.875634	-0.254332	0.8013
P_IMPORT(-1)	2.594908	4.949509	0.524276	0.6047
P_IMPORT(-2)	10.29448	5.6183	1.832312	0.0788
P_SUMUT	4.786509	18.19117	0.263123	0.7946
P_SUMUT(-1)	11.66382	19.77387	0.58986	0.5606
P_SUMUT(-2)	-15.09366	16.69913	-0.903859	0.3747
P_SUMUT(-3)	-13.79206	17.15495	-0.80397	0.429
P_SUMUT(-4)	31.64266	14.63777	2.161712	0.0404
PRODUCTION	0.000794	0.083947	0.009457	0.9925
EXCHANGE RATE	5.005623	17.28046	0.28967	0.7745
EXCHANGE RATE (-1)	-29.73629	25.03376	-1.187847	0.2461
EXCHANGE RATE (-2)	26.29248	24.45335	1.07521	0.2925
EXCHANGE RATE (-3)	-31.20619	25.67604	-1.215382	0.2356
EXCHANGE RATE (-4)	35.12349	16.82771	2.087241	0.0472
C	-80655.26	89729.62	-0.89887	0.3773

Source: Appendix 8 (processed), 2018

From Table 5, it is known that the imported corn price variable (X1) does not significantly affect the volume of maize import (Y).

Maize price variable in North Sumatera (X2) significantly had positive effect on the volume of corn import (Y) in the fourth lag X2 (-4) of 31.64266. That is, if there is an increase in corn prices in North Sumatra by 1% in the previous four months, then the volume of maize imports will increase in the current month by 31.64266%.

The production variable (X3) did not significantly affect the volume of maize import (Y).

The exchange rate variable (X4) significantly positively affected the volume of corn import (Y) in the fourth lag of X4 (-4) by 35.12349%. That is, if there is an increase of 1% exchange rate in the previous four months, then the import volume of maize will increase in the current month by 35.12349%.

Short Term Estimation of ARDL model can be seen in the following table:

Table 6. Short Term Estimate Results Autoregressive Distributed Lag (ARDL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(V_IMPORT(-1))	0.834212	0.288142	2.895137	0.0078
D(V_IMPORT(-2))	0.689113	0.227425	3.030069	0.0056
D(V_IMPORT(-3))	0.366885	0.152411	2.407214	0.0238
D(P_IMPORT)	-1.240032	4.875634	-0.254332	0.8013
D(P_IMPORT(-1))	-10.29448	5.6183	-1.832312	0.0788
D(P_SUMUT)	4.786509	18.191171	0.263123	0.7946
D(P_SUMUT(-1))	15.093658	16.699133	0.903859	0.3747
D(P_SUMUT(-2))	13.792059	17.154952	0.80397	0.429
D(P_SUMUT(-3))	-31.642659	14.637774	-2.161712	0.0404
D(PRODUCTION)	0.000794	0.083947	0.009457	0.9925
D(EXCHANGE RATE)	5.005623	17.280456	0.28967	0.7745
D(EXCHANGE RATE (-1))	-26.292475	24.453345	-1.07521	0.2925
D(EXCHANGE RATE (-2))	31.206187	25.676035	1.215382	0.2356
D(EXCHANGE RATE (-3))	-35.123486	16.827712	-2.087241	0.0472
CointEq(-1)	-2.067295	0.363816	-5.68226	0.0000

Source: Appendix 9 (processed), 2018

From Table 6, the short-term estimation results of the ARDL model are as follows:

$$DY = 0.834D(Y(-1)) + 0.689D(Y(-2)) + 0.366D(Y(-3)) - 1.24D(X_1) - 10.294D(X_1(-1)) + 4.786D(X_2) + 15.093D(X_2(-1)) + 13.792D(X_2(-2)) - 31.642D(X_2(-3)) + 0.0007D(X_3) + 5.005D(X_4) - 26.292D(X_4(-1)) + 31.206D(X_4(-2)) - 35.123D(X_4(-3)) - 2.067CointEq(-1)$$

Information:

Y = North Sumatra maize import volume (ton)

X1 = Price of imported maize (Rp)

X2 = Price of maize corn in North Sumatra (Rp)

X3 = Maize production in North Sumatra (ton)

X4 = Exchange Rate (rupiah exchange rate against dollar)
(Rp / US \$)

CointEq (-1) = error term

Based on the short-term estimation results, it is known that CointEq (-1) is -2.067295, meaning that the speed of adjustment is 2.06% every month to reach the equilibrium point. CointEq probability value (-1) is 0.0000 which means that variable is significant at $\alpha = 5\%$ (0,05). This proves that the model specification used has been valid (valid) and can explain the variation of the dependent variable.

The following is a long-term estimation of ARDL results:

Table 7. Long Term Estimation Results Autoregressive Distributed Lag (ARDL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
P_IMPORT	5.635072	2.36885	2.378822	0.0253
P_SUMUT	9.291014	10.084145	0.921349	0.3657
PRODUCTION	0.000384	0.04058	0.009463	0.9925
EXCHANGE RATE	2.650375	1.899996	1.394937	0.1753
C	-39014.87	43368.24	-0.899619	0.3769

Source: Appendix 9 (processed), 2018

From Table 7, the long-term equations obtained from this ARDL estimate are:

$$Y = -39014.87 + 5.635072X_1 + 9.291014X_2 + 0.000384X_3 + 2.650375X_4$$

Information:

Y = North Sumatra maize import volume (ton)

X1 = Price of imported maize (Rp)

X2 = Price of maize in North Sumatra (Rp)

X3 = Maize production in North Sumatra (ton)

X4 = Exchange Rate (rupiah exchange rate against dollar) (Rp / US \$)

The regression coefficient of imported corn price (x1) is 5.635072, meaning there is a positive influence between imported corn price (x1) and import volume of maize (y). If the price of imported corn increased by 1%, then the import volume of maize increased by 5.635072%.

North Maluku price regression coefficient (x2) is 9.291014, meaning there is positive influence between

North Sumatran maize price (x2) and maize import volume (y). If North Sumatra's maize price increased by 1%, the volume of maize imports increased by 9.291014%.

North Maluku maize regression coefficient (x3) is 0.000384, meaning there is positive influence between corn production of North Sumatera (x3) and import volume of maize (y). If North Sumatra's maize production increased by 1%, then the volume of maize imports increased by 0.000384%.

The exchange rate regression coefficient (x4) is 2,650,375, meaning there is a positive influence between the exchange rate (x4) and the import volume of maize (y). If the exchange rate increases by 1%, then the import volume of maize increases by 2,650375%.

H. Bound Test (Bounds Testing Cointegration)

The Bound test is performed to see cointegration in the long run. Here is the result of bound test:

Table 8. Bound Testing Results (Bound Testing Cointegration)

Test Statistic	Value	k
F-statistic	7.783777	4
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

Source: Appendix 11 (processed), 2018

From Table 8, it was found that the F statistic value of 7.783777, while the value of I (1) Bound is 4.01. F value of statistic > value I (1) Bound, H0 is rejected, H1 accepted. That is, there is cointegration between variables of import

volume of corn (Y) imported corn price (X1), North Sumatran corn price (X2), corn production (X3) and exchange rate (X4) in long term.

I. Autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test)

In this study, tests were performed in detecting autocorrelation problems using the LM (Breusch Godfrey)

method. Based on LM Test (Breusch Godfrey), the results obtained are as follows:

Table 9. Autocorrelation Test Results (LM Breusch Godfrey Test)

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.619009	Prob. F(2,23)	0.5472
Obs*R-squared	2.247410	Prob. Chi-Square(2)	0.3251

Source: Appendix 12 (processed), 2017

From Table 9, it is known that the value of Prob. Chi-Square of 0.3251, while the value of α is 0.05. Prob value. Chi-Square > value α , then H_0 is accepted, H_1 is rejected. That is, between the variable of imported corn price (X1), North Sumatran maize (X2), North Sumatran maize (X3), rupiah exchange rate against dollar (X4), and import volume (Y) are not autocorrelated.

J. Determination Coefficient Analysis (R-Square)

The value of R Square is 0.57. This means that the variation of independent variables is the price of imported corn (X1), North Sumatran maize (X2), North Sumatran maize (X3), and the rupiah exchange rate against the dollar (X4) is able to explain the volume of maize import (Y) by 57% the remaining 43% is explained by the variable not examined.

K. Analysis of Factors Affecting Maize Imports in North Sumatra Province

1. Test Statistic F (Test Simultaneously)

In this study obtained prob probes F of 0.067897, while α is 0.05. The probability value $F >$ value α , then H_0 is accepted or H_1 is rejected, it means that all independent variables are imported corn price (X1), North Sumatran maize (X2), North Sumatran maize (X3), and rupiah exchange rate against dollar), simultaneously no significant effect on the dependent variable that is the import volume of corn (Y).

2. Test Statistic T (Partial Test)

a) Imported Corn Prices (X1)

The probability value of imported corn price (x1) is 0.0253, while α is 0.05. The probability value <value α , then H_0 is rejected H_1 accepted. That is, the partial price of imported corn (X1) significantly significant effect on the volume of imports of maize (Y).

b) North Sumatera Corn Price (X2)

The probability value of North Sumatran maize price is 0.3657, while α is 0.05. Value of probity > value α , then

H_0 accepted H_1 is rejected. That is, partially North Sumatran maize (X2) does not significantly affect the volume of maize import (Y).

c) North Sumatra Maize Production (X3)

The probability value of North Sumatran maize production is 0.9925, whereas α is 0.05. The probability value > value α , then H_0 received H_1 is rejected. That is, partially North Sumatran maize (X3) does not significantly affect the volume of maize import (Y).

d) Exchange rate (rupiah to dollar) (X4)

The exchange rate probability value is 0.1753, while α is 0.05. The probability value > value α , then H_0 received H_1 is rejected. That is, the partial exchange rate (X4) has no significant effect on the import volume of corn (Y).

L. Discussion of Research Results

1. The Effect of Imported Corn Price on Corn Import Volume

The hypothesis in this research is that import price of maize negatively affect the volume of maize import in North Sumatra. Based on the result of research, it is known that the regression coefficient of maize price of import is 5.635072, meaning that imported maize price has a positive effect on the import volume of corn. If the price of imported maize rose by 1%, then the import volume of maize rose by 5.635072%.

The probability value of imported maize price (x1) is 0.0253, while α is 0.05. The probability value <value α , then H_0 is rejected H_1 accepted. That is, the partial price of imported maize significantly significant effect on the volume of maize imports.

This is not in accordance with Doni's (2016) study, which says that the price of imported maize has no significant effect on the volume of Indonesian maize imports from 1995-2014.

In Figures 1 and 2, an increase in maize prices is followed by an increase in the volume of maize imports. Through the econometric test, the probability value is less than the value α , meaning that the price of imported maize significantly affects the volume of maize imports. Although the price of imported maize increases, but the volume of imported maize continues to increase due to the growing demand of imported corn in North Sumatera.

2. The Influence of Maize Prices In North Sumatera To The Volume Of Import Of Maize

The hypothesis used in this research is the price of domestic maize in North Sumatera has a positive effect on the volume of maize imports in North Sumatera. From the research result, it is known that North Maluku price coefficient of regression is 9.291014, meaning that North Sumatran maize price has a positive effect on the volume of corn import. If North Sumatera maize price increases by 1%, the import volume of maize increases by 9.291014%.

The probability value of North Sumatran maize price is 0.3657, while α is 0.05. Value of probity > value α , then H_0 accepted H_1 is rejected. That is, partially North Sumatra maize price does not significantly affect the import volume of corn.

In Figure 1 and Figure 3, the development of maize prices in North Sumatera tends to fluctuate. From that comparison, it can be seen that the price of maize in North Sumatera is directly proportional to the volume of maize imports in North Sumatera. If the price of maize in North Sumatera increases, the volume of maize imports in North Sumatera also increases, and vice versa if the price of maize in North Sumatera decreases the volume of maize import in North Sumatera also decreases.

However, through econometric tests, the probability value is greater than the value of α , which means that the price of corn in North Sumatera does not significantly affect the volume of maize imports.

This is consistent with the Lisa (2013) study, which states that domestic corn prices have no significant effect on the volume of maize imports in Indonesia in 1982-2012. Where high domestic low maize prices do not affect the amount of demand for imported maize in Indonesia

However, this is not in accordance with Sholikhah's (2004) study, which states that the domestic price of maize significantly affected the volume of maize imports in Indonesia in 1990-2000.

3. The Effect of Maize Production in North Sumatera Against Imported Corn Volume

The hypothesis used in this research is corn production in North Sumatera negatively affect the volume of maize imports in North Sumatera. From the results of the study, it is known that the regression coefficient of North Sumatera maize production amounted to 0.000384, meaning that the production of North Sumatera maize has a positive effect on the volume of maize imports. If North Sumatera's maize production rose by 1%, then the volume of maize imports decreased by 0.000384%.

The probability value of North Sumatran maize production is 0.9925, whereas α is 0.05. The probability value > value α , then H_0 received H_1 is rejected. That is, partially North Sumatran maize production does not significantly affect the volume of maize import.

In Figure 1 and Figure 4 it is seen that maize production in North Sumatera tends to increase over the past 2 years.

This is not in line with Doni's (2016) study, which says that maize production in Indonesia has significantly affected the volume of Indonesian maize imports from 1995-2014. This is also not in line with the Lisa (2013) study, which states that domestic maize production significantly affects the volume of maize imports in Indonesia. Where the production of maize in a country does not affect the ups and downs of demand for imported maize.

One of the reasons for North Sumatera that has potential in maize production but still imports maize is due to the increasing demand for imported maize. Imported maize is usually used as feed raw material, while farmers in North Sumatera mostly grow local maize that is not intended as feed raw material industry.

4. Effect of Exchange Rate (Rupiah Exchange Rate Against Dollar) Against Imported Maize Volume

The hypothesis used in this study is the exchange rate negatively affect the volume of maize imports in North Sumatera. From the results of the study, it is known that the exchange rate regression coefficient of 2.650375, meaning there is a positive influence between the exchange rate and the volume of corn imports. If the exchange rate rises by 1%, then the import volume of maize decreases by 2,650375%.

The exchange rate probability value is 0.1753, while α is 0.05. The probability value > value α , then H_0 received H_1 is rejected. That is, the partial exchange rate (X4) has no significant effect on the import volume of maize corn (Y).

In Figure 1 and Figure 5 it can be seen that exchange rate developments tend to fluctuate.

The high demand of imported maize in Sumatra in 2016, while the exchange rate also tends to strengthen every year, the exchange rate in the economic field is not fully considered in the import of maize.

This is in accordance with Doni's (2016) study, which says that the exchange rate did not significantly affect the volume of Indonesian maize imports from 1995-2014. This is also in line with Lisa's (2013) study, which states that the exchange rate has no significant effect on the volume of maize imports in Indonesia. Where if the exchange rate of a country strengthens, then it does not mean the import volume of a good will decrease, the ups and downs of an exchange rate does not affect the volume of imports in a region.

IV. CONCLUSION

Based on the results of research and discussion, it can be concluded that the price of imported maize has a significant positive effect on the volume of maize imports in North Sumatra Province. Meanwhile, the price of North Sumatran maize, corn production, exchange rate (exchange rate) did not significantly affect the volume of maize imports in North Sumatra Province.

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