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The Impact Of Price Subsidy Policy Of Fertilizer On Production, Demand And Supply Of Corn In Indonesia

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ABSTRACT

This study aims to determine the factors affecting the production, demand, and supply of corn in Indonesia and the impact of fertilizer price subsidy policy on production, demand, and supply of corn in Indonesia. The *time series* data 1980 to 2012 that source from the central body of statistics, and ministry of agriculture, commerce, were used. The data used comprises the corn production and consumption, exports and imports of corn, corn prices, and fertilizer subsidies. The study used econometric models with a system of simultaneous equations. The results showed that the productivity of corn was significantly affected by the price of corn, production technologies, while the price of TSP and UREA fertilizer affected insignificantly on production of corn. The domestic price of corn, soybean and rice affected the demand of corn. The policy scenario of increasing price subsidies of TSP fertilizer by 20 percent effect on the increase of domestic corn production, domestic supply and demand of corn. It is viewed better than the policy scenarios by increasing subsidy of urea by 20 percent and the increase subsidy of urea and TSP fertilizer by 10 percent simultaneously.

KEY WORDS

fertilizer subsidies, production, demand, supply of corn JEL classification codes: C15, C32, H24

INTRODUCTION

The agricultural sector plays an important role in national development. The contribution of the agricultural sector is reflected through its contribution in the formation of national GDP, employment, and exports of agricultural products. In the last five years, agricultural GDP grew at an average of 3.4 percent. Source of this growth comes from food crops sub-sector 2 percent; 4.4 percent, 6.5 percent and fishing.

The subsector of food crops, corn is the second largest contributor after rice on the national economy. The utilizing of corn for animal feed industry experienced growth in 1990, although still dominated by the use of corn for direct consumption. After 2000, the corn was dominated as an intermediate demand. During 2000 to 2012 the use of corn for direct consumption declined by about one-half percent per year. Based on the research results of Pasandaran and Ariani (2005), corn as a food ingredient is now regarded as aninferior goods, so that when income increases, consumption of corn will decrease. In line with the Ministry of Agriculture (2013) using a model LA-AIDS *(Linear Approximation - Almost Ideal Demand System)* to obtain the elasticity of expenditure (a proxy for income) that is negative is -0.544. That is, any increase in household income of 10%, the direct consumption of corn fell 5.44%. Therefore, in the future with rising incomes, it is estimated that the direct consumption of corn will continue to decline, while the indirect consumption of raw materials for feed and food industry will continue to increase.

The Ministry of Agriculture data(2013) showed that the development of the total consumption in the country during 2000-2012 rose an average of 5.41 percent. In 2012, total consumption reached about 20.39

million tones, well above the 2008 consumption of only 16.62 million tons. While domestic production is still low at only rise by an average of 3.21 percent per year, causing Indonesia to import corn.

The Indonesian corn production in the period 2000-2012 had not been able to meet domestic demand. There fore, Indonesian state in the world corn trade was a net importer. The import of corn in the period 2000-2012 an average of 940 thousand tons per year. Even since 2010, the volume of imports of corn has over 1 million tons. When viewed from its share of the domestic demand was still small (9.21%) with the rate of increase in the share of around 7 percent per year. However, without an effort to spur domestic production, the volume and share of imports of corn continue to rise, given the rate of increase needs faster than the rate of increase in production.

Some research shows that Indonesia has a comparative advantage for the production of corn, not only for the purpose of import substitution but also export promotion. That is farm corn yield decent returns and competitive against imports of corn (Erwidodo, Herman and Herena, 2003. While Simatupang (2005) concluded that hybrid corn farming has a comparative advantage and competitive, efficient and resilient to face price volatility, exchange rate and production risks that are worthy of the development of government (Pasadilla, 2006).

Fauzi M. Musyaffak (2008) found that agricultural development policy of the greatest boosted agricultural labor income is the policy in the field of production, prices and trade. Thus the next required government policies more effective in increasing agricultural production through intensification processes such as; access to sources of quality inputs, information, counseling and assistance, appropriate technology, credit, and market output, all of this is access reform whose main purpose is to increase the added value for farmers, and extending through the opening of new agricultural land (land reform), given the availability of untapped land area of 10 million hectares.

At every level of government, there are various programs in the form of a transfer of money or goods to improve the welfare of the community, especially for low income earners [11,15]. The assistance of government can be in the form of price support subsidy for a commodity product, inputs of production which is basically a form of government intervention policy of the government expenditure. Although the economic situation achieve Pareto, the intervention of government can occur if there are two reasons. ***First,*** the public revenue derived from a market economy is not distributed properly. ***Second,*** less perfect welfare assessment criteria in the person's perception of well-being.The government intervention could be done through three forms, namely wisdom for the production of public, private production policy with tax treatment and subsidies, as well as private production policy with the regulation of the government. Form of subsidies may include the imposition of a tax system or block grants directly. If the subsidy in the form of direct grants, then the subsidy requirements need to be set in accordance with the purpose of the subsidy. Assessment of a subsidy must be viewed within the long term, in which producers and consumers have adjusted their behavior and assessment of output in the short-term period [13].

When subsidy policy done properly, it could provide a boost for manufacturers to do with the production process more productive. This subsidy is expected to encourage the supply curve moves to the right due to an improvement in the production process as a result of success in the field of agricultural research funded from the budget and therefore discovered a new technology that can improve the productivity and quality of agricultural products. Low input prices will also encourage farmers to use the recommended technology package in accordance with the recommendation of the results of the study valid. The success of the increase in production is accompanied by a decrease in the cost of production is expected to increase the competitiveness of agricultural products both in domestic and international markets. [16,18].

Subsidy policy is similar to the negative tax and it is one of the instruments of government to reduce the price of a product or goods that are cheaper than the market price and can be purchased by consumers for consumption or manufacturers for raw materials production process [6,1]. Subsidy policy, of course, will increase the production or consumption of an item so that the welfare of the population could be increased. However, if examined from economic theory is not necessarily the case in reality and in fact will be seen the extent to which gains and losses are to be obtained both from the producers, consumers and governments with the policy of this subsidy. This can be explained easily by the producer and consumer surplus approach, how much is actually well-being obtained and how much welfare loss.

Fertilizer as one of the input factors to increase the production of agricultural commodities.It makes the fertilizer as a strategic production manner. To provide fertilizer at the farm level strived meet 6 right principles, namely: the place, the type, time, quantity, quality and reasonable prices so that farmers can use fertilizer as needed. Farmers in Indonesia generally have low purchasing power so difficult when having to buy fertilizer at market prices. With a selling price according to the ability of farmers, it is difficult for manufacturers of fertilizers to maintain business continuity and the ability to guarantee the fulfillment of the national fertilizer. In order for an affordable price of fertilizer farmers and maintain the continuity of the fertilizer industry, the government needs to provide fertilizer subsidies for farmers.

Based on these descriptions, the study aims to: (1) to analyze the factors that affect the production, demand, and supply of corn in Indonesia. (2) determine the impact of fertilizer price subsidy policy on production, demand, and supply of corn in Indonesia.

Data And Methodology:

The *time series* data from 1980 to 2012 that taken from the Bureau of Statistic Centre , ministry of agriculture, commerce, planning and development were used. The data comprises the corn production and consumption, exports and imports of corn, corn prices, and fertilizer subsidy.

The econometric models with a system of simultaneous equations were used. The constructed model systems of simultaneous equations consist of five structural equations and one equation using *software* computer program SAS version 9.1. The constructed simultaneous equation system models are as follows :

Indonesian Corn Production:

Corn harvest area presumable influenced by the price of corn, because of the high price of corn will affect the decisions of farmers to grow corn, and vice versa if the price of corn fell farmers would be reluctant to plant corn. In addition, the corn harvest area allegedly also influenced by the price of soybean and peanut price the previous year as the substitution of corn planting. Peanuts and soybeans require similar growing conditions tocorn. Djulin research results, Syafa'at and Kasryno (2005) shows the B / C corn, soybeans and peanuts in some corn production center has a value that is not much different. Wage labor in the agricultural sector is also expected to affect the corn crop acreage. In addition, farmers plant corn plant habit over a particular area is also thought to affect the corn crop acreage. Increasing technology also affect the corn harvest area for the discovery of new technologies to stimulate farmers to cultivate corn..

While the productivity of corn crop acreage conjectur able affected by corn crop, corn prices at the previous year, the price of urea, TSP fertilizer prices, and productivity of land of corn crop. The more expensive inputs, use of production inputs will be decreased so that the productivity of corn will also decrease. Conversely, if an increase in the price of corn, the growers of corn will be harder pursue farming corn, so that productivity will go up. Improving technology also affects the productivity of corn due to the discovery of new technologies can improve the productivity of corn.

Thus equation corn production can be formulated as follows.

$$LAJ_t = a_0 + a_1HJR + a_2LHKCR_{t-1} + a_3LHKDR_{t-1} + a_4UTPR_t + a_5LLAJ_{t-1} + a_6T_t + u_1 \quad (1)$$

$$PJR_t = b_0 + b_1HJR_t + b_2\,HPURR_t + b_3HPTSR_t + b_4\,SB_t + b5\ T + U_2 \quad (2)$$

$$QJt = LAJt * PRJt \quad (3)$$

The sign and magnitude of the expected estimated parameters are: a_1, a_5, a_6 b_1, , $b_5 > 0$; dan a_2, a_3, a_4, and b_2, b_3, $b_4 < 0$.

Supply and Demand of Corn in Indonesia:

Corn in this study offer a structural equation, which offers corn allegedly influenced by the price of corn, the number of domestic corn production, the amount of imported corn, corn prices the world, and offer corn on the previous year.

Therefore, the corn supply equation is as follows:

$$QS_t = c_0 + c_1HJR_t + c_2QJ_t + c_3MJ_t + c_4HWRt + c_5QS_{t-1} + U_3 \quad (4)$$

sign and magnitude of the expected estimated parameters are: c_1, c2, c3, c4, c5 > 0;

While the demand of corn presumable influenced by: the price of corn in the country, the price of soybean, peanut price, the price of rice, per capita income, export corn, world corn prices, the price of flour and corn demand in the previous year.

Therefore equation is formulated as follows:

$$QD_t = d_0 + d_1HJR_t + d_2HKDR_t + d_3HKCR_t + d_4HBRRt + d_5PK_t + d_6XJ + d_7HWR_t + d_8HTRR_t + d_9LQD_{t-1} + U_4 \quad (5)$$

The sign and magnitude of the expected estimated parameters are: d_2, d_3, d_4, d_6, d_8, $d_9 > 0$; and d_1,d_5,$d_7 <$ 0. and d_1, d_5, $d_7 < 0$.

Corn prices in Domestic Market:

Commodity prices in the domestic market is determined by the total supply and demand. Thus the price of corn in Indonesia is affected by domestic corn production, domestic demand for corn, and corn prices in the country the previous year. The variables are defined as follows:

$$HJR_t = e_0 + e_1 QJ_t + e_2 QD + e_3 HJR_{t-1} + U_5 \quad (6)$$

The sign and magnitude of the expected estimated parameters are: $e_{2,} e_{3>} 0$; $e_1 < 0$ $e_1 < 0$

The Methods of Model Estimation:

From the results of the identification of the model, then the model is expressed *over-identified*, so that in this study the model estimation was conducted using 2SLS *(Two Stage Least Squares)* for 2SLS method is suitable for the simultaneous equations is *over-identified*, can be used in a relatively small number of samples and are not sensitive to modification *(respesification)* good models for structural analysis and simulation for analysis and forecasting. Data processing was performed using a computer software program SAS version 9.1.

Simulation Model:

Simulation is basically a mathematical solution from the various collection of equations simultaneously. Thus simulating the model refers to a set of equations *(sets of equations).*Simulation models done for various reasons, eg for testing and evaluation models, historical and policy analysis for forecasting [10].

In this study, the simulation is primarily intended for the purposes of historical policy analysis *(historical policy analysis).* Policy simulation analysis is, to see the impact of fertilizer subsidies on corn production in Indonesia. Various scenarios fertilizer subsidy policy conducted either partially or in combination, and consists of five scenarios as follows:

1. Increase Urea fertilizer price subsidies by 20 percent.
2. Increase TSP fertilizer price subsidies by 20 percent.
3. Increase price subsidies urea and TSP respectively by 10 percent

Research Result:

Results of Prediction Model:

Simultaneous equation model to analyze the impact of fertilizer price subsidies for corn production is composed of five structural equations and the equation of identity. The model was analyzed using *time series* data from 1980 to 2012 that taken from various sources.

Almost all the exogenous variables included in the structural equation parameters have alleged that sign up to the expectations even though the effect is not noticeable at test level α ranges between 10 percent to 20 percent. Some explanatory variables guessed parameters are not in line with expectations can be explained logically and in accordance with the conditions in the field. The coefficient of determination ($R^{2)}$ estimation of the model results show that the five structural equation ranged from 0.61 to 0.99 so that in general the variables eksogen able to explain well the endogenous variables. Therefore, the estimation results are representative models to describe the phenomenon of fertilizer subsidies for corn production. The results of data processing fertilizer subsidies to corn production are presented:

Results Prediction Model of Production, supply and Corn demand:

Model of production, demand and supply of corn consists of five structural equation and the equation of identity consisting of a corn crop acreage equations, the productivity of corn, corn demand equation, and the corn supply equation and the equation of domestic corn prices. Explanation of each equation is as follows.

Table 1: Results of Prediction Model

Equation Variables Name		Parameter Estimates	T Value	Pr>t	Elasticity	R^2
Equation Area of Corn						
Intercept	Intercept	3608949			-	0.61634
HJR	Domestic corn prices	74,7141	1.54	0.1382	0,2833	
HKCR	peanuts price in previous year	-11,2867	-0.99	0.3347	0,3373	
HKDR	Soybean prices lag previous year	-3,4878	-0.81	0.4259	0,3979	
UPTR	Wage labor	2,77899	1.31	0.2039	0,2765	
T	Technology trends	63607,27	4.5	0.0002	0,0027	
LLAJ	Lag The area of corn	-0.45599	-2.14	0.0446		
Corn Productivity Equation						
Intercept	Intercept	1.611.764				0.96104
HJR	Domestic corn prices	-0.00003	-1.47	0.1574	-0,0015	
HPURR	Fertilizer price	0.00005	0.89	0.3856	0,0017	
HPTSP	TSP fertilizer prices	-0.00004	-1.22	0.2367	-0,0175	
SB	Interest rate	-0.02251	-1.74	0.097	-0,0518	
T	Trend	0.087683	9.57	<.0001	0,0877	
Corn demand equation						
Intercept	Intercept	17790315				0.87586
HJR	Domestic corn prices	-678.873	-2.25	0.038	-1,0676	
HKDR	Soybean prices	-322.479	-1.35	0.194	-1,0598	
HKCR	Tanah Price Peanut	-549.394	-0.98	0.3405	-0,3621	
HBRR	Price of Rice	4.554.628	2.39	0.0285	1,1826	
PK	Income per capita	4.128.743	1.33	0.2005	0,1678	
XJ	Exports of corn	-169.512	-0.75	0.4644	-0,0168	
HWR	World Corn prices	-1312928	-1.05	0.3094	-0,3375	
HTRR	Prices of wheat	2.481.229	0.42	0.6813	0,0893	
LQD	Request corn previous year	0.036609	0.26	0.7944	-	
Corn supply equation						
Intercept	Intercept	433508.4				0.99881
HJR	Corn prices in the country	-417.543	-2.47	0.022	-0,0614	
QJ	Corn production in the country	0.978369	54.23	<.0001	0,9207	
MJ	Imports of corn	1.134.683	19.65	<.0001	0,0774	
HWR	World Corn prices	17902.58	0.23	0.8193	0,0043	
LQS	+ +	0.005225	0.34	0.7341	-	
Corn prices in the domestic equation						
Intercept	Intercept	2.595.419				0.63525
QJ	Corn production in the State	-0.00005	-0.22	0.8246	-0,0320	
QD	Corn Demand	0.000063	0.32	0.7519	0,0401	
LHJR	Price of corn previous year	0.778514	5.4	<.0001	-	

Area of corn:

The results of parameter estimation factors affecting corn crop area is presented in Table 1. The coefficient of determination ($R^{2)}$ corn crop acreage is 0.61634 means jointly explanatory variables can explain 61.63 percent of crop diversity Area of Corn in Indonesia. Based on the statistical t-test showed that the corn crop acreage in Indonesia is influenced by the price of corn, a time trend of technological development, and the corn crop acreage previous year, while the wages of agricultural laborers, the price of peanuts a year earlier, and the price of soybeans a year earlier wasin significantly affect the corn crop acreage. All variables that affect the corn crop acreage in Indonesia inelastic response in the short term.

Corn Productivity:

The results of estimated parameter factors affecting the productivity of corn are presented in Table 1. The coefficient of determination ($R^{2)}$ productivity of corn is 0.96104 means jointly explanatory variables can explain 96.10 percent of the diversity of corn Productivity in Indonesia. Based on the statistical t test showed that the productivity of corn in Indonesia is affected by domestic corn prices, interest rates on the real level of 10 percent, and a time trend of technological change.All the variables that affect the productivity of corn in Indonesia inelastic response in the short term unless the time trend of technological change. [5]

Fertilizer production factors and the value estimated parameters opposite direction between the TSP and urea fertilizer prices. TSP fertilizer price is directly proportional to changes in productivity due to the decrease in the price of fertilizer; it will also increase the use of fertilizers to the farmers so that will increase productivity. This finding is inline with Djulin, Syafa'at and Kasryno [5] which says that because of the use of phosphorus fertilizer is still under the recommended dose, with an average of 80 percent of the recommended dose in paddy fields and 76 percent of the recommended dosage on dry land. Even in NTT, fertilizer use is only 20 percent of the rice fields and 28 percent on dry land. The use of phosphorus fertilizer that is still below the recommended dosage is also caused by the TSP fertilizer use transitions into the SP-36 where there are differences in the levels of phosphorus element of 45 percent in the TSP to 36 percent in the SP-36, while the

farmers generally do not add fertilizer dose given. In contrast, the increase in urea prices would lower fertilizer use this turned out to raise the productivity of corn. This suggests that the use of urea in corn is already past the point of the recommended optimum which is in decline as a result of production curve if its use plus it will actually decrease productivity.

Increased land productivity of corn positively correlated to the trend of technology development of corn farming. Proper management will automatically increase productivity, as well as a good instrument production technology improvements through the use of seeds quality that are adaptive and resistant to pest and disease attack, high production and in accordance with the wishes of corn farmers, fertilizer use and a balanced and appropriate pest eradication technology integrated real effect in improving productivity of corn.

Corn Demand:

The results of estimated parameter factors that affect the demand for corn is presented in Table 1. The coefficient of determination ($R^{2)}$ domestic corn demand is 0.87586 means jointly explanatory variables can explain 87.86 percent of the diversity of corn demand in Indonesia. Based on the statistical t test showed that the demand for corn in Indonesia is influenced by the price of corn in the country at 5 percent significance level, the price of soybeans in the real level of 20 percent, and the price of rice at 5 percent significance level. Price of domestic corn, soybean prices and price bersas responsive to the demand for corn in the country. While the parameters of peanut price, per capita income, export corn, corn prices the world, and wheat prices are not responsive to the demand for cornin the country. All of the direction and magnitude of the alleged parameter values in line with expectations, the price of peanuts, soy bean prices and income per capita.

When the price of corn rises, demand will fall, and vice versa. Corn is still an important contributor to rural dwellers carbohydrates in low-income groups (the solar *et al.*, 2005). In addition, corn for direct consumption is not only used as a staple food but for consumption such as snacks, vegetables or other snacks.

Changes in corn demand is determined by the corn itself, the price of rice, and the price of soy beans and quite responsive. Prior to 1975, corn consumption patterns in the low-income group was positively correlated to household income and food substitution of cassava to corn. But in 1978 the opposite happens, the higher the income, the lower the level of consumption of corn in the group. As a staple food, corn is no longer shows its nature as inferior goods, but rather as a normal good. This is due to the consumption of corn, not only for direct consumption, but nowadays many corn demand is determined by the demand for corn by the animal feed industry and the food industry.

Corn Offer:

The results of parameter estimation factors that affect the supply of corn are presented in Table 1. The coefficient of determination ($R^{2)}$ offers domestic corn is 0.99881 means jointly explanatory variables can explain 99.88 percent of the diversity of corn offers in Indonesia. The statistical t test showed that the supply of corn in Indonesia affected by domestic corn production in the real level of 1 percent, and imports of corn at 1 percent significance level.

All of the direction and magnitude of the alleged parameter values in line with expectations, except for the price of corn in the country and world corn prices. All the variables that affect the price of corn in the country inelastic response in the short term

At the time of domestic corn production increases, the corn supply will increase, and vice versa. The same thing happens if the import of corn increased, then the bid of corn will rise, making the domestic corn prices decline. Therefore, although the signs of domestic corn prices in contrast with the expected sign. It is still reasonable, because the response of corn production is higher than the price of corn on the response of corn in the country offers.

Corn prices in the country:

The results of parameter estimation factors that affect the price of corn in the country are presented in Table 1 The coefficient of determination ($R^{2)}$ the price of corn in the country by 0.63525 means jointly *explanatory* variables can explain 63.52 percent of the diversity of the domestic corn prices. Based on the statistical t test showed that the domestic corn prices only influenced by the explanatory variable is the price of corn in the country last year on the real level of 1 percent, while the other variables that domestic corn production, and domestic corn demand does not significantly affect the price of corn domestic.

All of the direction and magnitude of the alleged parameter values in line with expectations, except for corn production and domestic demand.

Simulation Price of Fertilizer Subsidy Policy:

The results of model validation fertilizer subsidy policy for the corn crop was obtained that all equations have RMSPE values below 20 percent. This means that the predicted value can still follow the trend of historical

data well. This also happens when viewed on criteria based on the value of U Theil, all of which have Theil U value below 0.1 so that it can be interpreted simulation models following the actual data well.

Policy simulations performed on fertilizer price subsidy policy models for corn are: (1) the impact of increased urea price subsidies by 10 percent, (2) the impact of increased TSP fertilizer price subsidies by 10 percent, (3) a combination of simulation impact of increased price subsidies urea and TSP respectively by 10 percent.

Table 2: Complete results Simulation Model Price Fertilizer Subsidy Policy Impact on Production, Demand, and offering Corn inI ndonesia

Variables	Basic value	Simulation		
		S1	S2	S3
Corn acreage	3189207	0.03%	-0.03%	0.00%
Productivity	23.897	-1.72%	1.77%	0.05%
Corn Indonesia domestic demand	7659568	-0.19%	0.20%	0.02%
Domestic Corn Offer	8250290	-1.57%	1.62%	0.06%
Corn production	7762135	-1.68%	1.74%	0.06%
Corn prices in the country	11854.4	0.18%	-0.18%	0.00%

Impact of Subsidy Rates Increase Urea much as 20 percent:

The first policy scenario (S1) is done through an increase in the price of urea fertilizer subsidy of 20 percent for corn farmers outside the area causing corn crop increased by 0.03 percent, but the corn crop productivity declined 1.72 percent, making corn production decreased 1.68 percent, The offering in domestic corn declined 1.57 percent, and corn demand also decreased by 0.19 percent, and making domestic corn prices rose 0.18 percent.

As noted earlier, that urea as one of the factors of production, then the presence of urea fertilizer price subsidies, expected corn production and productivity can be increased, further increase in production, and can increase corn offers from domestic production, reducing imports and encourage exports corn abroad. In contrast, the increase in the price of urea which will reduce fertilizer use this turned out to raise the productivity of corn. This suggests that the use of urea fertilizer on corn was already past the optimum point is recommended so that the decrease in the production curve, so that if the use of urea plus it will actually reduce the productivity of corn crop.

Impact of Price Increase Fertilizer Subsidy Amounting to 20 percent of TSP:

The second policy scenario (S2), which is done through an increase in TSP fertilizer price subsidy of 20 percent for corn growers have an impact on the decline in acreage of corn (LAJ) by 0.03 percent, but can increase the productivity of corn crop of 1.77 percent, so making domestic corn production increased by 1.74 percent, and make an offer domestic corn increased by 1.62 percent, so the price of corn in the country decreased by 0.18 percent, so the demand for corn increases by 0.20 percent. Policy scenarios TSP fertilizer price subsidy increase by 20 percent this, seems quite interesting, because it can encourage increased production, demand and supply of corn in the country.

The effect of increasing combination Subsidy Urea and TSP Price Each Amount10 percent:

The third policy simulation (S3), which is done through a combination of increased price subsidy policy urea and TSP respectively by10 percent to corn farmers to give effect to the increase in productivity of corn crop of 0.05 percent, resulting in the production of corn increased by 0.06 percent, and the resulting corn offers increased 0.06 percent, so the demand for corn increases by 0.02 percent. However, this policy does not give effect to the corn crop acreage, the price of corn in the country as well as domestic demand for corn.

Conclusion And Policy Implication:

Conclusion:

The conclusion based on the estimated model simulation of the impact of the price of fertilizer subsidies to corn farmers, who have been raised in the previous section as follows

1. Production of corn is a multiplication of corn crop acreage with corn productivity. The area of the corn crop was significantly affected by the price of corn in the country, the area under corn crop the previous year. This suggests that policies can stimulate an increase in the price of corn acreage of corn. While the productivity of corn was significantly affected by corn prices, interest rates, and a time trend of technological development. Therefore, to increase corn production in the country needs to improve the technology through a variety of research and development are applicable. While the price variable TSP fertilizer, Urea, not significant.
1. The domestic demand of corn was significantly influenced by the domestic price of corn, and rice prices, while the price of peanuts, per capita income, export corn, world corn prices, the price of wheat flour and corn demand the previous year did not significantly affect the demand for corn in country

2. The domestic supply of corn was significantly influenced by the domestic price of corn, the number of domestic corn production and imports of corn. While the variable price of corn in the world market, and supply of corn in the previous year insignificantly affected domestic supply of corn.

3. Scenario policy through increased TSP fertilizer price subsidies by 20 percen affected to increase of domestic corn production, increasing the supply and demand of domestic corn. This scenario, when seen from the amount of production, demand and supply of corn was the best scenario among the third policy scenarios conducted.

Policy implication:

Policy recommendations were based on the estimate models, simulation models and how the impact of various policy alternatives to the well-being are:

1. The price of corn in the country is not responsive to national corn supply and demand and the price of the world. This indicates that the price of corn in the country is not formed on the market but by other factors such as traders and importers. Therefore, the government has properly oversee the marketing of corn in the country as long as the corn farmer's bargaining position so low that the formation of the price of corn in the market have to get control of the government.

2. Scenario TSP fertilizer subsidy policy by 20 percent when viewed from the production, supply and demand of corn is the best scenario among the five policy scenarios conducted. Therefore, these policy scenarios should be used as the main priority of the government in relation to the price of fertilizer subsidies for corn farmers in Indonesia.

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