IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 12, Issue 7 Ser. II (July 2019), PP 32-40
www.iosrjournals.org

Analyzing the Factors that Influence Production, Consumption, And Indonesia's Soybean Import

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Abstrak: *This research aims to analyze the factors that influence the production, consumption and Indonesia's soybean import; and calculating the value of the elasticity of the variables that influence it in the short run. This reaerach uses data with 32 years in time series (1986-2017). Besides, the analyzing technique using the simultaneous econometric model of the equation and predicted by the 2SLS method using SAS 9.1 application. The estimation is divided into three blocks such as the production block, consumption block, and import blocks, and each block consists of one structural equation. The results of the research conclude that (1) the factors that influence Indonesia's soybean production are soybean harvest area and soybean prices at the producer level; the factors that influence Indonesia's soybean consumption are soybean prices at the producer level, national soybean offers and per capita income, and the factors that influence Indonesia's soybean imports are soybean consumption, the exchange rate of Rupiah against the US Dollar and the price of soybean import. (2) In short term, the responses of soybean harvest area, soybean prices at the producer level, corn and rice prices at the producer level to soybean production in Indonesia are inelastic, which is about 0,9512; 0,.1436; -0,1072 and 0,0789. The responses of soybean prices at the producer level, national soybean offers, per capita income, soybean import and the population number to soybeans consumption in Indonesia is inelastic, which is about -0,282; 0,7800; 0,1244; 0,0534 and 0,4554, while the response of soybean consumption to soybean imports is elastic at 1,0507. Furthermore, the responses of soybean prices at the consumer level, the exchange rate of Rupiah against the US Dollar and the price of soybean import to Indonesia's soybean imports also are inelastic, which is about -0,0885; 0,6450; and -0,3549.*

Keywords: *Soybean, Production, Consumption, and Import*

Date of Submission: 15-07-2019 Date of acceptance: 30-07-2019

I. Introduction

A success development in agricultural sector of country is reflected in ability of the country to self-sufficiency in food or achieve food security. The one of indicator for calculating food security is dependence on national food availability on imports.

The main problem in realizing food security in Indonesia is related to the fact that the growth of demand for food commodities is faster than the growth of its supply. Therefore, the increasing of productivity of food commodities must be carried out. The one of the food commodities is soybeans.

Soybean plants are a source of vegetable food, with a protein content of 39% has an important role in various economic aspects in Indonesia. Besides that soybean processing results as needed by many people, is relatively cheaper and easy to reach.

Indonesia's soybean production is still dominated from Java Island with a contribution of 64,17% while the others is 35,83%. Based from observation result that increasing of the volume and value of Indonesia's soybean import has always increased from year to year. This means that domestic production cannot supply the demand for soybeans.

During the period 2008-2017 that soybean consumption was relatively fluctuative but tended to increase, with a growth rate about 15,14% per year. Soybean consumption in this period has average about 7,64 kg/capita/year, the highest consumption about 9,00 kg/capita/year that occurred in 2017 and increased from the previous year at 8,50 kg/capita/year.

In order to supply the increasing demand for soybeans in Indonesia, the government can make several efforts including:

(1) Import soybeans from other countries which are soybean exporting countries such as USA, Brazil, Argentina, India, China, Paraguay, Canada according to their needs, and

(2) Increasing domestic soybean production.

Indonesia's increasing population will also influence to the increasing of demand for Indonesia's soybeans. If the condition of soybean production remains and the demand for soybeans increases as a result of

the increase in population, then soybean production will be insufficient for soybean demand, consequently the import of soybeans cannot be avoided.

Besides, in the cultivation by farmers (on-farm) soybean plants also experience competition (competitive) with other plants such as corn and rice but as a source of animal feed, soybeans become complementary with corn. If the price of corn or rice increases, then the chances for farmers as producers will move to planting one of these plants or reduce the area of soybean plants. While the area that was cultivating tends to not change or its area remains.

From the phenomenas that have been stated above, it is necessary to examine the factors that influence the production, consumption and import of Indonesia's soybeans simultaneously and calculating the value of elasticity in the short run of eachs variable that influences it.

The purposes of this research such are (1) analyzing the factors that influence the production, consumption and Indonesia's soybeans import, and (2) calculating the value of the elasticity of eachs variable that influence the production, consumption and Indonesia's soybeans import in the short run.

II. Methods

Types and Data Collection Methods

This research is an quantitative research. This research uses secondary data such as time data series for 32 years (1986-2017). The data sources are from the Statistic Center of Agency, Agricultural Data and System Center, Ministry of Agriculture's Food Security Agency, Ministry of Agriculture of the Republic of Indonesia, Indonesia's Soybean Commodity Outlook, Bank of Indonesia and Word Bank.

Linkages between variable of Econometric Production Model, comsumption, and Indonesia's Soybean ImportThe soybean commodity econometrics model in this research is divided into three blocks such as, production block, consumption block and import block. Eachs block are consists of one structural equation, namely Indonesia's soybean production (QK), Indonesia's soybeans consumption (DK) and Indonesia's soybeans import (MK).

In the production block, Indonesia's soybean production (QK) is influenced by the harvest area (AK), soybean prices at the producer level (PKP), corn prices (HJ) and rice prices at the producer level (HPP). In the consumption block, Indonesia's soybean consumption is influenced by soybean prices at the producer level (PKP), Indonesia's soybean supply (SKN), per capita national income (PP), soybean imports (MK) and population number (POP) and on imported blocks, soybean imports (MK) is influenced by soybean prices at the consumer level (PKK), soybean consumption (DK), the exchange rate of Rupiah against the US Dollar (ER), and the price of soybean import (HKI). Linkages between variables in this research has been described in Figure 1.

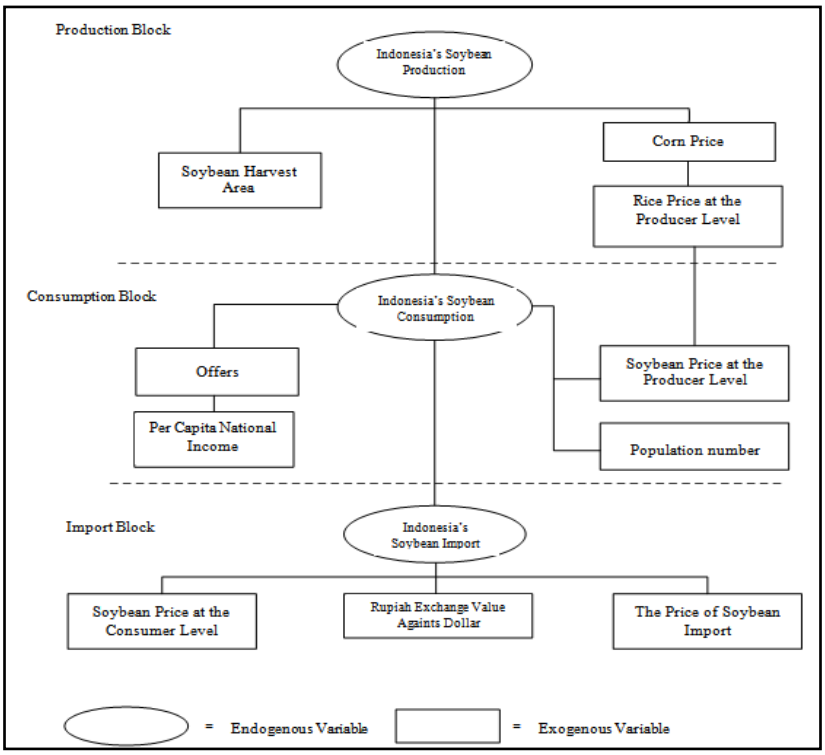

Figure 1. Linkages between Variables of Research

Figure 1 describes that the three of blocks have simultaneous links between endogenous and exogenous variables. The estimated parameters in each structural equation are the research hypotheses that will be tested and proven.

Analysis Method

Econometric Model of Production, Consumption and Indonesia's Soybean Import

Production Block

The response of Indonesia's Soybean Production

$QK_t = a_0 + a_1 AK_t + a_2 PKP_t + a_3 HJ_t + a_4 HPP_t + U_t$ ..... (1)

Where :

QK_t = Indonesia's Soybean Production of in year – t (Ton)
AK_t = Harvest Area of Soybean in year – t (Ha)
PKP_t = Soybean Price at the Producer Level in year – t (Rp/kg)
HJ_t = Corn Price in year – t (Rp/Kg)
HPP_t = Rice Price at the Producer Level in year – t (Rp/Kg)

The hypothesis of estimated parameter : a_1, a_2, $a_4 > 0$ and $a_3 < 0$

Comsumption Block

The Response of Indonesia's Soybean Consumption

$DK_t = b_0 + b_1 PKP_t + b_2 SKN_t + b_3 PP_t + b_4 MK_t + b_5 POP + U_t$ ..... (2)

Where :

DK_t = Soybean Consumption in year – t (Ton)
PKP_t = Soybean Price at the Producer Level year – t (Rp/Kg)
SKN_t = Soybean offers in year – t (Ton)
PP_t = Per Capita National Income year – t (Rp)
MK_t = Indonesia's Soybean Import year – t (Ton)
POP_t = Population number (person)

The hypothesis of estimated parameter : b_2, b_3, b_5, $b_4 > 0$ and $b_1 < 0$

Import Block

The Response of Indonesia's Soybean Import

$MK_t = c_0 + c_1 PKK_t + c_2 DK_t + c_3 ER_t + c_4 HKI_t + U_t$ ..... (3)

Where :

MK_t = Indonesia's Soybean Import in year – t (Ton)
PKK_t = Soybean price in Consumer Level in year – t (Rp/Kg)
DK_t = Soybean Consumption in year – t (Ton)
ER_t = Rupiah Exchange Value Againts US Dollars (Rp/$)
HKI_t = The Price of Soybean Importin year – t (US $/ Ton)

The hypothesis of estimated parameter: c_2, $c_3 > 0$ and c_1, $c_4 < 0$

Identification and Estimation Model

Model identification has been done done to determine the correct estimation model. According to Gujarati (1995), the requirement that an equation be identified is if the number of variables that are not included in the equation, but are included in other equations, at least as many as the number of equation in the simultaneous equation model reduced by 1 (one).

$(K-M) \geq (G-1)$ ..... (4)

Where :

G = Total number of equations (number of endogenous variables)
K = Total number of variables in the model (endogenous and predetermined)
M = Total number of variables (endogenous and exogenous) in the identified equations

If: (K-M) < (G-1), Then the equation is *under identified*
(K-M) = (G-1), Then the equation is *excatly identifed*
(K-M) > (G-1), Then the equation is *over identified*

In this research there were 3 endogenous variables (G) and 10 exogenous variables (M), with the number of variables (endogenous and exogenous) in the identified equation (K) as many as 13 variables. The endogenous and exogenous variables are as follows:

Endogenous variables consist of:

1. QK_t = Indonesia's Soybean Production in year – t (Ton)
2. DK_t = Soybean Consumption in year – t (Ton)
3. MK_t = Indonesia's Soybean Import in year – t (Ton)

Exogenous variables consist of:

1. AK_t = Harvest Area of Soybean in year – t (Ha)
2. PKP_t = Soybean Price at the Producer Level year – t (Rp/kg)
3. HJ_t = Corn Price in year – t (Rp/Kg)
4. HPP_t = Rice Price at the Producer Level in year – t (Rp/Kg)
5. SKN_t = Soybean Offers in year – t (Ton)
6. POP_t = Population number (Person)
7. PKK_t = Soybean Price at the Consumer Level in year – t (Rp/Kg)
8. ER_t = Rupiah Exchange Value Againts US Dollars (Rp/$)
9. HKI_t = The Price of Soybean Importin in year – t (US $/ Ton)
10. PP_t = Per Capita National Income in year – t (Thousands of Rp)

This research fulfills the criteria (K-M) ≥ (G-1), it means that the equation includes over identified. Thus the Two Stage Least Square (2SLS) method can be used to estimate the structural parameters of the specified model. Parameter estimation (influence) is carried out simultaneously using the SAS / ETS application with 9.1 Version.

To obtain a theoretically consistent model and phenomenon, then the specification sign and the estimation quantity of the parameters in the model is very important to fullfiled. In addition to the identification of models, several goodness tests of the models that are used such as:

Statistical tests and serial correlation using D-W statistical test (*Durbin-Watson*) According to Sumodiningrat (2012), autocorrelation is a correlation (relationship) that occurs between members of a series of observations that arranged in a series of times.

The hypothesis of statistic testing of D-Watson is as follows:

H_0 : There is no positive correlation series

With Decisions:

If : $d < d_L$ then rejecting H_0 means there is positive correlations series

If : $d > d_U$ then unrejecting H_0 means there is no positive correlation series

If : $d_L < d < d_U$ then the testing is inconclusive

Sedangkan:

H_0 : There is no negative correlation series

With Decisions :

Jika : $d > 4 - d_L$ then rejecting H_0 means there is negative correlations series

Jika : $d < 4 - d_U$ then unrejecting H_0 means there is no negative correlation series

Jika : $4 - d_U < d < 4 < d_L$ then the testing is inconclusive

In addition to the Durbin-Watson test evaluating the parameter estimation value also uses the F_{count} test and the t-test statistical value which is decided arbitrarily with the interval test level of α (alpha) until 0,10 where the estimate parameter of the variable has a $t_{statistic}$ on the interval test α less than 0,10 considered to be significantly different from zero. Another indicator that is also used for the validation of the econometric model is the coefficient of determination (R^2) of the endogenous variable to the exogenous variable. The greater of R^2 value model, means the greater the variation of endogenous changes that can be explained by exogenous variables. This shows that the model is getting better.

Calculation of Short Run Elasticity

Calculation the value of elasticity in the short run is used to answer the purpose of second research. Koutsoyiannis (1997) states that to see the degree of sensitivity of endogenous variables in an equation to the changes in exogenous variables can be used the value of elasticity. Short run elasticity values are obtained as follows:

$$E_{sr} = (Y_l, Y_t) = \frac{\alpha_1 (X_l)}{(Y_t)} \quad \text{.....} \quad (5)$$

Where:

E_{sr} = (Y_l, Y_t) = Short Run Elasticity of Exogenous Variable X_i to Endogenous Variable Y_t

α_l = Estimate Paraeter of Exogenous variable X_i

X_l = Average of Exogenous Variable X_i

Y_t = Average of Endogenous Variable Y_t

The elasticity test criteria are as follows:

a. If the value of elasticity is more than one (E>1), can be called *elastic* (*responsive*), because a one percent of change in exogenous variables results th change of endogenous variables greater than one percent.
b. If the value of elasticity between 0 and 1 (0<E<1), can be called inelastic *(non-responsive*), because a one percent of change in exogenous variables results th change of endogenous variables lower than one percent.
c. If the elasticity value is zero (E=0), can be called *perfectly inelastic.*
d. If the elasticity value is unlimited (E=~), can be *called perfectly elastic.*
e. If the Elasticity value is one (E=1), can b called *unitary elastis.*

III. Result and Discussion

Estimation of the Econometrics Pruduction Model, Consumption and Indonesia's Soybean Import. The model has been qualified and suitable to be used to estimate the factors that influence soybean production, consumption and Soybean import in Indonesia. This is showed by the statistical values and econometric indicators obtained such as the results of the F test, the t test, the coefficient of determination (R^2), the Durbin-Watson test (DW) and economic criteria in the hypothetical parameters.

From the three structural equations that are built all equations have value Pr > F about 0,0001 (*very significant*). The results of F_{count} test show that all explanatory variables that compose the simultaneously model have a significant effect on the endogenous variables.

The coefficient of determinations (R^2) have value about 0,7149, 0,8580 and 0,9843, the value of R^2 which is at a high value interval (close to 1) indicates that the explanatory variables included in the model have been able to describe the behavior of the variable endogenous.

The results of serial correlation or autocorrelation test using the Durbin Watson test on $\alpha = 5\%$ indicates that there are 3 equations such are Indonesia's soybean production (QK), Indonesia's soybean consumption (DK), and Indonesia's soybean imports (MK) have a value about d < 4 - dU then it was decided that accepting H_0 means that there are no negative correlation series, it was concluded that all the econometric models that have been used did not breaking one of the classical econometric assumptions, that there was no autocorrelation. The results of the serial correlation test as presented in Table 1.

Table 1. The Results of Serial Correlation Test of Production Econometric Models, Production, Consumption and Indonesia's Soybean Import ($\alpha = 5\%$)

No.	Equation	n	k	n-k	d_L	d	d_U	4-d_U	Decission
1	QK	32	4	28	1,177	0,8865	1,732	2,268	Accept H_0
2	DK	32	5	27	1,109	1,9691	1,819	2,181	Accept H_0
3	MK	32	4	28	1,177	1,8327	1,732	2,268	Accept H_0

Source: Data processed

Validation model also has been done by first looking at the model of identification. Based on many endogenous and exogenous variables and the number of variables (endogenous and exogenous) in the identified equations, the model meets the criteria (KM) ≥ (G-1) or (13-10 ≥ 3-1) means that the equation includes over identified so the Two Stage method Least Square (2SLS) can be used to estimate the structural parameters of a specified model.

Analyzing the Factors that Influence Production, Consumption, Indonesia's Soybean Import

The Respone of Indonesia's Soybean Production (QK)

Based on the results of F_{count} test it can be interpreted that simultaneously the four hypothesized variables, such as harvest area (AK), soybean price at the producer level (PKP), corn price (HJ), and rice price at the producer level have a significant effect on Indonesia's soybean production (QK). The coefficient value R^2 indicates that the changes of four variables that included in the model such as harvest area (AK), soybean price at the producer level (PKP), corn price (HJ), and rice price at the producer level (98,43) are able to identify about 98,43 % of the endogenous variations, while the remaining are about 1,57% is influenced by other variables outside the model. The Durbin-Watson value indicates that in the equation there is not occured serial correlation or autocorrelation. The results of estimating parameters equation of Indonesia's soybean production (Qk) are presented in Table 2.

Table 2. The Results of Estimating Parameters Equation of Soybean Production (QK)

Independent Variable	Parameter Estimate	Prob > | t |	Short-run Elasticity
Soybean Harvest Area (AK)	1,1543***	0,0001	0,9512
Soybean price at the Producer Level (PKP)	42,9569*	0,0800	0,1436
Corn Price (HJ)	-73,0095	0,1373	-0,1072
Rice Price at the Producer Level (HPP)	43,6322	0,2533	0,0789
F-Value	422,30		
Pr > F	0,0001		
R^2	0,9843		
Durbin Watson	0,8897		

Source : Data Processed

Note : (*) Real on trust level about 99,99% dan 92,00%

The partial test results of the soybean harvest area (AK) have a very significant effect whice is about 99.99% of trust level of Indonesia's soybean production, while the soybean price variable at the producer level (PKP) also has a significant effect (with significance level 92.00%) on Indonesia's soybean production (QK), while the corn price variable (HJ) and rice prices at the producer level (HPP) does not significantly on Indonesia's soybean production (QK).

Based on the analysis results, it is known that soybean harvested area (AK) and soybean prices at the producer level (PKP) are very responsive to Indonesia's soybean production (QK). The increasing of soybean harvested area (AK) and soybean prices at the producer level (PKP) will be responded by increasing of Indonesia's soybean production (QK). The reducing of corn prices (HJ) was responded by increasing of Indonesia's soybean production (QK) because soybean farmers would not divert their farming land to plant corn. By additions of soybean harvest area (productivity), then soybean production that has been produced by farmers will also increase, while with the increasing of soybean prices at the producer level, then soybean farmers will be increasingly stimulated to increase the production.

The effect of soybean harvest area (AK) on Indonesia's soybean production (QK) is about 1,1543, which means if the soybean harvested area increases by one hectare then soybean production will increase by 1,1543 tons. The effect of soybean prices at the producer level (PKP) on Indonesia's soybean production (QK) is about 42,9569, which means if the soybean price at the producer level increases by Rp.1 / kg then soybean production will increase by 42,9569 tons.

The effect of corn prices (HJ) on Indonesia's soybean production (QK) is about -73,0095, which means if the corn price increases by Rp.1 / kg, soybean production will decrease by 73,0095 tons. while the effect of rice price at the producer level (HPP) on Indonesia's soybean production (QK) is about 43,6322, which means if the rice price at the producer level increases by Rp.1 / kg then soybean production will increase by 43,6322 tons.

Based on the analysis results of soybean harvest area (AK), soybean prices at the producer level (PKP), corn prices (HJ), and rice prices at the producer level (HPP) on Indonesia's soybean production (QK) are in elastic . All of short-run elasticity values are less than 1 (one), which are 0,9512; 0,1436; -0,1072 and 0,0789.

The Respone of Soybean Consumption in Indonesia (DK)

Based on the results of Fcount test interpreted that simultaneously the five hypothesized variables such as soybean prices at the producer level (PKP), soybean offer (SKN), per capita national income (PP), soybean imports (MK) and population significantly influence Indonesia's soybean consumption (DK).

The coefficient value of R2 indicates that the changes in the five variables which is included in the model are able to explain about 85,80% of the variation of the endogenous variables, while the remaining about 14,20% that influenced by other variables. Based on the Durbin-Watson value test in the equation there is no serial correlation or autocorrelation. In summary, the results of estimate parameters of Indonesia's soybean consumption (DK) are described in Table 3.

Table 3. The Result of Estimate Parameters Equation of Soybean Consumption (DK)

Independent Variable	**Parameter Estimate**	**Prob > | t |**	**Short-run Elacticity**
Soybean Price at the Producer level (PKP)	-127,8860**	0,0400	-0,2282
The offers of National Soybean (SKN)	0,7304***	0,0001	0,7800
Percapita income (PP)	19,7579**	0,0295	0,1244
Soybean import (MK)	0,0777	0,3858	0,0534
Population number (POP)	0,0043	0,3072	0,4554
F-Value	31,41		
Pr > F	0,0001		
R^2	0,8580		
Durbin Watson	2,0160		

Source : Attachment 2 (Data Processed)

Note : *) Real on trust level about 96,00%; 97,05% and 99,99%

The results of estimation analysis of Indonesia's soybean consumption (DK) show that when soybean prices at the producer level increase, the demand for soybean commodity consumption decreases, while the national soybean offers (SKN), per capita national income (PP), Indonesia's soybean imports (MK) and population number (POP) also affects to the increase in Indonesia's soybeans consumption (DK).

The results of the analysis show that the effect of soybean prices at the producer level (PKP) on Indonesia's soybean consumption (DK) is about -127,8860 which means if the soybean price at the producer level (PKP) increases by IDR 1 / kg then Indonesia's soybean consumption (DK) will decrease about 127,8860 tons per year. The effect of national soybean offers (SKN) on Indonesia's soybean consumption (DK) is about 0,7304 which means if the national soybean offers increases by 1 ton, Indonesia's soybean consumption increases by 0,7304 tons per year.

Furthermore, the influnce per capita income (PP) on Indonesia's soybean consumption (DK) is about 19,7579 which means that the increase of income per capita is about Rp 1.000 will increase Indonesia's soybean consumption about 19,7579 tons. The influence of Indonesia's soybean import (MK) on Indonesia's soybean consumption (DK) is about 0,0777 which means if Indonesia's soybean imports (MK) increase by 1 ton, then Indonesia's soybean consumption (DK) increases about 0,0777 tons or 77,7 kg, while the influence of population (POP) on Indonesia's soybean consumption (DK) is 0,0043 which means if the population increases by 1 person, then Indonesia's soybean consumption (DK) increases by 0,0043 tons or 4,3 kg, the increase in population number is responded by increasing soybean consumption by simultant in direct and indirect.

The responsiveness of the national soybean offers to national soybean consumption because of Indonesia's soybeans offers comes from national soybean production and soybean imports. As happened in 2012-2013, when there was a long flood season in many regions in Indonesia, soybean production has been decreased, so that the soybeans offers in the market was scarce, as a result, the processing industries that made from soybeans, especially tofu and tempe reduce the production, so that the soybean prices soaring, so the price of tofu and tempe also have been increased, even in several soybean processing industries discharged their workers, so the consumption of foods that made from soybeans also decreased, especially tofu and tempe.

Based on the elasticity calculation result, it can be interpreted that in short run the elasticity of soybean prices at the producer level (PKP), national soybean offers (SKN), per capita national income (PP), soybean imports (MK) and population number (POP) on Indonesia's soybean consumption are inelastic. These are indicated by the short run elasticity value are less than 1, about -0,2282; 0,7800; 0,1112; 0,1244; 0,0534 and 0,4554.

The Respone of Indonesia's Soybean Import (MK)

Based on the results of the F_{count} test, it can be interpreted that simultaneously the four hypothesized variables such as soybean prices at the consumer level (PKK), soybean consumption (DK), the exchange rate of Rupiah against the US Dollar (ER) and the priceof soybean imported (HKI) have a significant effect on Indonesia's soybean imports (MK).

The coefficient value R2 indicates that the changes in the two variables that included in the model are able to explain about 71,49% from variation of the endogenous variables, while the remaining 28,51% is influenced by other variables. Furthermore, the Durbin-Watson value shows that in the equation there is no serial correlation or autocorrelation. In summary the results of estimation parameters equation for Indonesia's soybeans import (MK) as presented in Table 4 below.

Tabel 4. The Result of Estimate Parameters Equation of Soybean Import (MK)

Independent Variable	Parameter Estimate	Prob > | t |	Short-run Elasticity
Soybean Price at the Concumer level (PKK)	-25,7493	0,4910	-0,0885
Soybean Consumption (DK)	0,7215***	0,0059	1,0507
Exchange Rate (ER)	128,3618***	0,0003	0,6450
The Price of Soyban Import (HKI)	-1200,43**	0,0108	-0,3549
F-Value	16,92		
Pr > F	0,0001		
R^2	0,7149		
Durbin Watson	1,8290		

Source : Attachment 2 (Data Processed)

Note : *) Real on trust level about 98,92%; 99,41% and 99,97%

The results of partial testing the exchange rate of Rupiah against the US dollar (ER), soybean consumption (DK) and the price of soybean import have a very significant influence on the trust levels about 98,92%, 99,41% and 99.97% to Indonesia's soybeans import (MK), while the soybean price at the consumer level (PKK) variable does not significantly influence to Indonesia's soybean import. Based on the Analysis results, it can be seen that Indonesia's soybeans consumption (DK) and the exchange rate of Rupiah against the United States Dollar (ER) are very responsive to Indonesia's soybeans import (MK). If Indonesia's soybeans

consumption (DK) and the exchange rate of Rupiah against the US Dollar (ER) increase, then it will be responded by the increase of Indonesia's soybeans import (MK), while the reducion of the price of soybeans import (HKI) has been responded by the increase of Indonesian soybean import.

From the analysis results that has been done, the influence of soybean prices at the consumer level (PKK) to Indonesia's soybeans import (MK) is about -25,7493, which means if the soybean prices at the consumer level increase by IDR 1 / kg, Indonesia's soybean imports will decrease by 25,7493 tons. The influence of Indonesia's soybean consumption (DK) to Indonesia's soybean imports (MK) is about 0,7215, which means if Indonesia's soybean consumption (DK) increases by 1 ton, Indonesia's soybean imports (MK) will increase by 0,7215 tons per year. The influence of the exchange rate of the Rupiah against the United States Dollar (ER) to Indonesia's soybean imports (MK) is about 128,3618, which means if the exchange rate of Rupiah against the US Dollar (ER) increases by Rp. 1 / $, Indonesia's soybean import (MK) increased by 128,3618 tons.

Furthermore, the influence of imported soybean prices (HKI) Indonesia's soybean import (MK) is about -1200,43, which means if the prices of soybean import increase by 1 U $ per ton, Indonesia's soybean import decrease by 1200,43 tons. This result shows that the increase in the price of soybean import was responded by a reduction soybean import, so that resulted in the increase of import soybean price in the domestic market.

Based on the calculation results on the elasticity value, it can be interpreted that in the short run elasticity of Indonesia's soybean consumption (DK) is elastic. This result shows if there is an increase of Indonesia's soybean consumption (DK) by 1% then in the short run influence the soybean import about 1,0507%. Thus the Indonesia's soybean consumption (DK) is a variable that greatly determines soybean import (MK), while for soybean prices at the consumer level (PKK), the exchange rate of Rupiah against the US Dollar (ER) and the prices of soybean import (HKI) to Indonesia's soybean import is elastic where the value of elasticity in the short run is less than 1 (one), which is -0,0885; 0,6450; and -0,3549. This result shows if there is an increase in PKK, ER and HKI, then in the short run influences the Indonesia's soybean import increase by less than 1 (one) percent. Even in this case, soybean prices at the consumer level (PKK) and the price of soybean import (HKI) increased by 1%, then soybean import decreases about 0,0885 % and 0,3549 %.

IV. Conclusion and Suggestion

Conclusion

Significant factors that influence Indonesia's soybean production are soybean harvest area and soybean prices at the producer level, while corn and rice prices at producer level do not significantly influence to Indonesia's soybean production; The significant factors that influence the Indonesia's soybean consumption such as soybean prices at the producer level, national soybean offers and per capita income, while the soybean import and population numbers do not significantly influence to Indonesia's soybean consumption, and the significant factors that influence Indonesia's soybean import such as soybean consumption, the exchange rate of Rupiah against the United States Dollar and the price of soybean import, while the soybean prices at the consumer level do not significantly influence to Indonesia's soybean imports. The size of the volume of import is highly dependent on domestic soybean consumption, the increase of the exchange rate of Rupiah against the US Dollar and the price soybean import.

In the short run, response of soybean harvest area, soybean prices at the producer level, corn and rice prices at the producer level to Indonesia's soybean production are inelastic which are 0,9512; 0,1436; -0,1072 and 0,0789. Likewise, the response of soybean prices at the producer level, national soybean offer, per capita income, soybean imports and population number to Indonesia's soybean consumption are inelastic which are -0,282; 0,7800; 0,1244; 0,0534 and 0,4554, while the response of soybean consumption to soybean imports is elastic at 1,0507. The response of soybean price at the consumer level, the exchange rate of Rupiah against the US Dollar and the price of soybean import to Indonesia's soybean import are inelastic, which are -0,0885; 0,6450; and -0,3549.

Suggestion

Based on the conclusions that have been stated, then the implication of results of this research that the government should pay attention to efforts to increase the area of soybeans which have shown reduction progress so far, to ensure the availability of soybean consumption in Indonesia the government must be able to increase soybean production in Indonesia through efforts to increase the planting area and productivity as well as import policies that do not harm domestic soybean farmers, and the government should reduce the quantity of soybean imports because if the import prices increase as a result of the weakening of the Rupiah against the US Dollar then the price of soybean import becomes expensive so it is less affordable by consumers and industries that based on soybean raw materials.

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