

## The Equilibrium Analysis of Domestic Consumption and Import (A Case Study in Indonesia)

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### Abstract

This article aims to explain the influence of domestic import and production, price level, and income per capita to domestic consumption. Furthermore, the influence of domestic consumption, domestic product, exchange rate, and income per capita to domestic import is also analyzed. The data time series of this research is between 1980 to 2017. This research utilizes the Two Stages Least Square Model. This research discovers four important facts, the first being the significant influence of domestic import, domestic production, and income per capita on domestic consumption. Secondly, the significant influence of domestic production, exchange rate, and income per capita on domestic import. Due to these facts, it is suggested that the Indonesian government to reduce domestic import and increase domestic production, while simultaneously setting a low local price, thus increasing local consumption

**Keywords:** *domestic consumption, domestic import, 2SLS (two stages least square)*

### Introduction

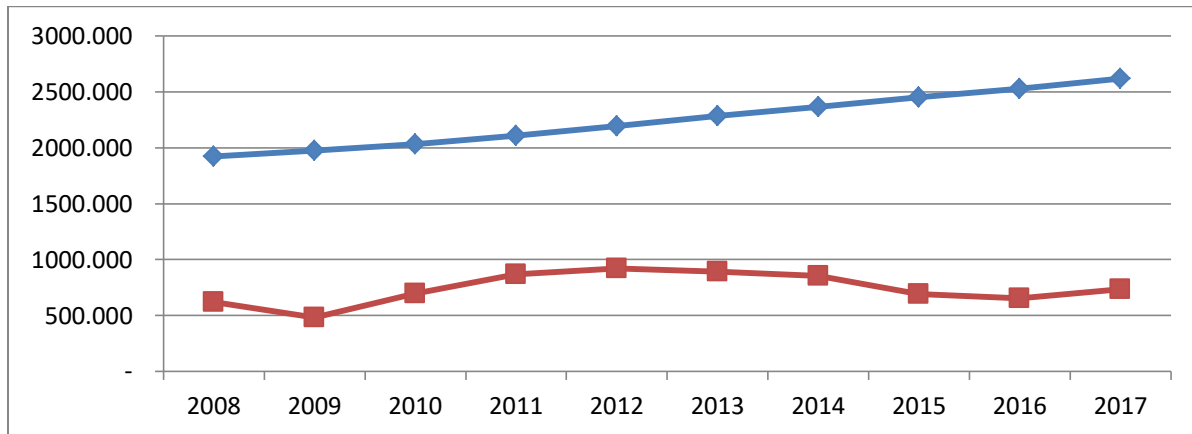
Indonesian consumers (domestic consumers) who buy imported products and vice versa, international consumers that buy Indonesian domestic products is a common thing. Competition in international trade between products is very sharp, where, apart from the price and quality of the product, another important determinant is the product's ability to compete.

Consumption, defined as expenditures/expenses made by the household towards products and services with the intent to fulfill the needs of the individuals, or in other words, used income. Unused income is therefore considered savings. Consumption is considered as one of the important components in aggregated request, (Dumairy, 2004).

Another important factor is import, the amount of import is influenced by the level of production, national income, and its rate of development. If national income and production were to increase, therefore the rate of import will also increase, whether it is consumption, production, or raw materials. International trade exists due to the fact that no one country in the world has the ability to produce all products and services on their own in order to fulfill the needs of their citizens.

The relevant condition is shown in graph 1. Graph 1 shows the connection between domestic consumption and domestic import from 2008 to 2017.

**Graph 1: Domestic Consumption and Domestic Imports, the period of 2008 to 2017**



Source: World Bank

Based on the information given by the graph above, we can see the percentage of consumption and the development of imports in Indonesia from 2008 until 2017. In Indonesia, consumption also plays an important role which is dominant in the economy of a country where the contribution from consumption towards the Indonesian economy is huge and dominantly increasing at an average rate of 10% in the last 8 years since 2010, this is due to the increase of the Indonesian population the needs of the citizens for products and services also increases. Domestic consumption from 2008 until 2017 is constantly increasing, in line with the import variable which also increases from 2008 until 2017, yet the increase of import from 2008 until 2017 fluctuates.

The highest increase in domestic consumption occur 2013, which was 4,33 percent. This increase in domestic consumption is to be fathomed by the fact that social programs conducted by the government has gone smoothly each year. These programs include the distribution of “Raskin” (a government program which provides rice for the poor), BLSM and developing/building infrastructures in rural areas, (Neraca.co.id). While the lowest development of consumption occurred in 2009, which was 2,76 percent, possibly caused by the decreasing global economy influenced by the global economic crisis during the late 2000s, (Indonesia-investments.com).

## Methods

This research utilizes the descriptive and associative methodology, due to the fact that the writer will describe and analyze the relation between the influence of a particular variable towards other variables or exogenous variables towards endogen variables. This research will also utilize a model which measures the two way relations and also the indirect relations between a particular variable and other variables. This occurs in the case of Y variable influenced by X variable and vice versa. In this mode, there will be more than one equation. If the parameter of the equation is estimated by Ordinary Least Square (OLS) then the result obtained will not only be bias, but will also be inconsistent, due to the increase of samples, resulting in a condition where the estimated results will not be an actual result.

The OLS method cannot be implemented in order to estimate the similarities which are connected in the simultaneous equation system. If there is an independent variable which possess a correlation with disturbance, the estimator will not be consistant.

According to Gujarati (2003), there are more than one dependent variable and similarity in the simultaneous Equation model. One of the unique features of simultaneous equation model is that the independent variable in a particular equation can appear as a variable that can explain other variables in the system.

The structural equation can be rewritten as followed:

$$Y_1 = \alpha_0 + \alpha_1 Y_2 + \alpha_2 X_1 + \alpha_3 X_2 + \alpha_4 X_4 + \mu_{1t} \dots \dots \dots (1)$$

$$Y_2 = \beta_0 + \beta_1 Y_1 + \beta_2 X_1 + \beta_3 X_3 + \beta_4 X_4 + \mu_{2t} \dots \dots \dots (2)$$

Note:

- Y<sub>1</sub> = Domestic Consumption
- Y<sub>2</sub> = Domestic Import
- X<sub>1</sub> = Domestic Product
- X<sub>2</sub> = Price Level
- X<sub>3</sub> = Exchange Rate
- X<sub>4</sub> = Income per Capita

**Identification Test**

While the identification test with order conditions can be rewritten as followed:

Equation (1) :  $K - k = 4 - 3 > m - 1 = 1 - 1 \rightarrow 1 = 1$  (Exactly identified)

Equation (2):  $K - k = 4 - 3 > m - 1 = 1 - 1 \rightarrow 1 = 1$  (Exactly identified)

From the result of the identification test utilizing the order condition test towards the above two equations, we are able to conclude that all equations that appears in this research are equations which utilize the Two Stages Least Square Method (TSLS). Thus, the estimation of coefficient will not be bias because this is one of the advantages of the TSLS method.

The TSLS method is in reality an estimation of two steps, which uses OLS, where of course, particular conditions apply.

Technique utilized (Nachrowi, 2006) in order to estimate the OLS:

First Step: Estimating the parameter between endogen variable and all exogen variables, using OLS. Thus we are then able to obtain the result of the endogen variable estimation.

Second Step: In the second step, we once again utilize the OLS in order to obtain the estimation of parameters. This is achieved through including the endogen variable, yet this variable is changed with the endogen variable result estimation.

**Reduce Form**

After finishing the identification test using the order condition, then the next step is to commence the reduce form process all each and every one of the equations found above this paragraph. The reduce form process is done in order to determine the exogenous variable (predetermine) in the simultaneous equation. Even if there are any reduce form process from all equations, is as follows:

a.  $Y_1 = \pi_a + \pi_b X_1 + \pi_c X_2 + \pi_d X_3 + \pi_e X_4 + \pi_f v \dots \dots \dots (3)$

From the consumption equation above, we are able to identify that the exogenous variable in this research are imports, domestic production, price level, and income per capita.

b.  $Y_2 = \pi_g + \pi_h X_1 + \pi_i X_2 + \pi_j X_3 + \pi_k X_4 + \pi_l v \dots \dots \dots (4)$

From the import equation above, we are able to see that the exogenous variable in this research are consumptions, domestic production, exchange rates, and income per capita.

## Results and Discussion

### A. Two Stages Least Square Model

Two Stage Least Squared is an estimation made through the utilization of OLS, which of course has its conditions. The estimation of the Two Stage Least Square model can be seen in table 1 and 2.

#### 1. Equation 1 (Domestic Consumption)

**Table 1 Two Stage Least Square Model of Domestic Consumption (Y1)**

Dependent Variable: Y1  
 Method: Two-Stage Least Squares  
 Date: 08/03/19 Time: 22:22  
 Sample: 1980 2017  
 Included observations: 38  
 Instrument specification: X1 X2 X3 X4  
 Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2101.665	335.7414	6.259774	0.0000
Y2	7.537034	2.563785	2.939807	0.0060
X1	2.14E-08	5.98E-09	3.569882	0.0011
X2	-12.31299	6.439702	-1.912043	0.0646
X4	-7.009457	2.098681	-3.339934	0.0021
R-squared	0.661887	Mean dependent var		1574.079
Adjusted R-squared	0.620904	S.D. dependent var		497.6183
S.E. of regression	306.3876	Sum squared resid		3097821.
F-statistic	23.74656	Durbin-Watson stat		1.230285
Prob(F-statistic)	0.000000	Second-Stage SSR		245410.9
J-statistic	2.74E-38	Instrument rank		5

**Source: Eviews 10 (2019, diolah)**

Based on Table 1.1 we can write the estimation model of this research as follows:

$$Y1 = 2101.665 + 7.537034 (Y2) + 2.140008 (X1) - 12.31299 (X2) - 7.009457 (X4) + \mu_1 t \dots \dots \dots (5)$$

From Equation (5) we can see that:

Import (Y2) has a positive and significant influence towards consumption (Y1) with the coefficient regression as big as 7.537034. What this means is that when an increase of import occurs (Y2) on the size of 1 unit thus consumption will increase (Y1) as much as 7.537034 units.

Domestic Production (X1) has a positive and significant influence towards consumption (Y1) with a regression of coefficient as much as 2.140008. What this means is that, if there is an increase of domestic production (X1) as much as 1 unit, thus there will be an increase of consumption (Y1) as much as 2.140008 units.

Price level (X2) has a negative and insignificant influence towards Consumption (Y2) with a regression coefficient of -12.31299. This is due to the fact that if there is a decrease in Price Levels (X2) in 1 unit, then the increase of consumption (Y2) will be 12.31299 units.

Income Per Capita (X4) has a negative and insignificant influence towards consumption (Y1) with a regression coefficient of -7.009457. What this means is that, if a decrease of income per capita (X4) as much as 1 unit occurs, thus consumption (Y1) will increase as much as -7.009457 units.

## 2. Equation 2 (Import)

**Table 2 Two Stages Least Square Domestic Import Model (Y2)**

Dependent Variable: Y2

Method: Two-Stage Least Squares

Date: 08/03/19 Time: 22:22

Sample: 1980 2017

Included observations: 38

Instrument specification: X1 X2 X3 X4

Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	182.1985	214.8428	0.848055	0.4025
Y1	-0.326620	0.218828	-1.492584	0.1450
X1	-2.38E-09	6.89E-10	-3.454038	0.0015
X3	0.028474	0.012800	2.224565	0.0331
X4	0.900594	0.168861	5.333351	0.0000
R-squared	0.967257	Mean dependent var		351.2368
Adjusted R-squared	0.963288	S.D. dependent var		260.5143
S.E. of regression	49.91520	Sum squared resid		82220.39
F-statistic	246.7572	Durbin-Watson stat		0.858687
Prob(F-statistic)	0.000000	Second-Stage SSR		51895.80
J-statistic	0.000000	Instrument rank		5

**Source: Eviews 10 (2019)**

Looking at table 1.1 we are able to write the estimation model of this research as follows:

$$Y2 = 182.1985 - 0.326620 (Y1) - 2.3800009 (X1) + 0.028474 (X3) + 0.900594 (X4) + \mu_{1t} \dots \dots \dots (6)$$

From Equation (6) we can see that:

Consumption (Y1) has a negative and insignificant influence towards import (Y2) with a regression coefficient of -0.326620. What this means is that, if there is a decrease in consumption (Y1) as much as 1 unit, thus import (Y2) will increase by -0.326620 units.

Domestic Production (X1) has a negative and significant influence towards import (Y2) with a regression coefficient of -2.3800009. What this means is that if a decrease of domestic production (X1) as much as 1 unit, then import (Y2) will increase by -2.3800009 units.

Exchange Rate (X3) has a positive and significant influence towards import (Y1) with a regression coefficient of 0.028474. Thus, if there is an increase in the exchange rate (X3) as much as 1 unit, therefore, import (Y1) will increase as much as 0.028474 units.

Income per Capita (X4) has a positive and significant influence towards import (Y2), with a regression coefficient of 0.900594. Thus, if there is an increase of income per capita (X4) as much as 1 unit, therefore import (Y1) will increase by 0.900594 units.

## Conclusion

Based on the results of this research and the extensive discussion about the balance of consumption and domestic consumption, we can conclude that consumption and import cannot be separated. We can identify

that import is one of the factors which determine consumption. Apart from this fact, domestic production, price, and income per capita influences domestic consumption, which then partially influences consumption significantly and positively. Domestic Production has a significant and positive influence. Price levels has a negative and insignificant influence, and income per capita has a negative and significant influence.

Consumption has a partial negative and insignificant influence towards import, domestic production has a negative and significant influence towards import, where a decrease in domestic production will also decrease the sum of import, while exchange rates and income per capita will have a positive and significant influence towards import, where the exchange rate and income per capita will result in an increase of imports in Indonesia.

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