

## Research Paper

# Determinants of Foreign Direct Investment in the APEC Region (Case Studies in 5 Countries, namely Australia, Japan, Singapore, Brunei Darussalam, and Indonesia for the Period 2012-2019)

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**Abstract.**

Foreign direct investment (FDI) is an important factor in the development of a country and plays a crucial role in the growth and development of a country's economy. FDI can be a source of capital in developing countries to help fund various sectors that are underfunded, this FDI also creates many new jobs so that the unemployment rate can be reduced. The entry of foreign investment is usually accompanied by technology transfer. One of the areas targeted by investors is the member countries of the Asia Pacific Economic Cooperation (APEC). This study aims to determine the effect of inflation, interest rates, and trade openness on FDI (case studies in five APEC member countries, namely Australia, Japan, Singapore, Brunei Darussalam, and Indonesia, period 2012-2019). The analytical method used in this study is the panel data regression analysis method with the seemingly unrelated regression (SUR) model using STATA 16 software for data regression and Eviews 10 to test stationary data. The stationary test of the data in this study uses the Augmented Dickey–Fuller (ADF) method at the first difference because the data level is not stationary. The results of research conducted using the SUR Model show that inflation has a negative and significant effect on FDI, interest rates have a positive and significant effect on FDI, and trade openness has a significant and negative effect on FDI.

**Keywords:** foreign direct investment, inflation, interest rates, seemingly unrelated regression, trade openness

## 1. Introduction

Economic development efforts carried out by developing countries are generally focused on the condition of the people, how to improve and enhance a decent standard of living. In this economic development, large funds are needed to achieve development goals. Indonesia as a developing country needs investment to support their economic growth. Meanwhile, domestic sources of funds are often unable to meet domestic

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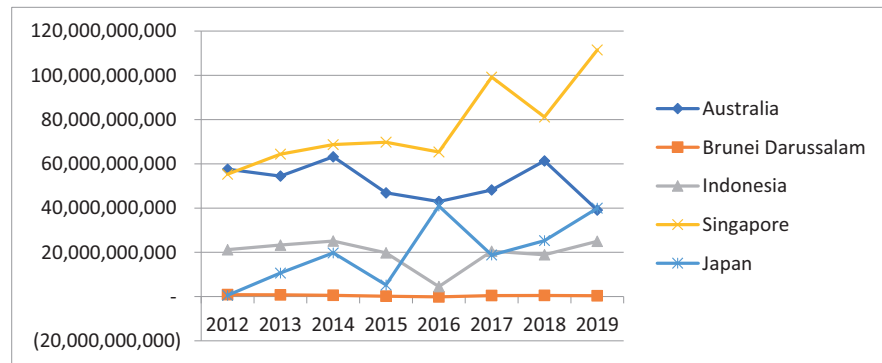
investment needs. The problem of limited funds makes the need for development financing which is supported by other sources of funds.

Foreign Direct Investment (FDI) is one of the economic indicators that the government always pays special attention to. In addition to being long-term, foreign direct investment will usually also bring technology from the country of origin to the destination country, so that this type of foreign investment is needed to support sustainable economic growth. The benefits derived from foreign direct investment (FDI) in the form of physical capital, expertise and technology are expected to improve the management of natural resources properly so as to increase the required job opportunities. In addition, the large number of processed resources will increase state revenue from the tax sector, as well as increase the amount of technology transfer.

One of the factors that influence FDI is interest rates. The amount of interest rates of a country is also have an effect on the amount of foreign direct investment into the economy. According to Nopirin (2011) that new entrepreneurs will increase their investment spending if the expected profit from the investment is greater than the interest rate that must be paid for the investment fund which is the cost of using the funds (cost of capital). So the lower the interest rate, entrepreneurs will be more motivated to invest, because the cost of using funds is also getting smaller. The results of the research on the Analysis of Factors Affecting Foreign Direct Investment (FDI) in Singapore in 2004-2019, namely there is a significant positive effect on the GDP variable on FDI in Singapore and there is a significant negative effect on the Lending Interest Rate variable on FDI in Singapore. Meanwhile, the inflation and trade openness variables do not have a significant effect on FDI in Singapore.

The determining factor for a country in conducting foreign direct investment (FDI) is the clarity of the existing market system in that country. Singapore is a country with the largest foreign direct investment receipts in ASEAN and is an economic center in Southeast Asia. This is because the market system in Singapore is clear. Having an open and pro-business economic system with low tax levies makes Singapore an investment destination.

In order to determine the effect of FDI in APEC countries, it is first necessary to look at the determining factors in APEC countries. Researchers chose five APEC countries (Australia, Japan, Singapore, Brunei Darussalam, and Indonesia) because they are examples of developing and developed countries. In addition, the five countries are included in the 12 countries that are the founders of APEC. Based on this explanation, the researcher is interested in conducting further research on the variables that affect the entry of foreign direct investment into five countries in APEC.



Source: World Bank, processed

Figure 1: Graph of FDI 5 APEC Countries 2012-2019.

Based on World Bank data for 2012-2019, the State of Indonesia has the fourth highest percentage of FDI inflows with 5 other countries being the object of research. This situation is much better than Brunei Darussalam which is in the last position. While the three countries that are above Indonesia are Singapore, Australia and Japan. Investment inflows in Singapore are higher than other countries, this is because Singapore is one of the easiest cities in the world to do business. This is evident from the 2019 UNCTAD World Investment Report which states that Singapore received the fourth largest FDI inflow in the world in 2018 with a total of USD 7.65 billion. Followed by Australia in second position. It is no wonder that Australia is one of the the strongest economy in the world, with an efficient government sector, highly competitive business sector, and abundant resources make FDI inflows in Australia high. In the third position is Japan which has the highest FDI, this is because when viewed from an economic perspective, Japan is one of the most developed countries in the world with the second highest GDP in the world. Then followed by Indonesia and Brunei Darussalam in the fourth and fifth positions. In addition to being still in developing countries, Indonesia and Brunei Darussalam have not been able to manage the results of natural wealth properly because of their unfulfilled human resources. This is because when viewed from an economic perspective, Japan is one of the most developed countries in the world with the second highest GDP in the world. Then followed by Indonesia and Brunei Darussalam in the fourth and fifth positions. In addition to being still in developing countries, Indonesia and Brunei Darussalam have not been able to manage the results of natural wealth properly because of their unfulfilled human resources. This is because when viewed from an economic perspective, Japan is one of the most developed countries in the world with the second highest GDP in the world. Then followed by Indonesia and Brunei Darussalam in the fourth and fifth positions. In addition to being still in developing countries, Indonesia and Brunei Darussalam have not been able

to manage the results of natural wealth properly because of their unfulfilled human resources.

## 2. Literature Review

### 2.1. Basic Theory

#### 2.1.1. Investation

Generally, investment is defined as a decision where a fund is placed in one or more assets for a certain period of time which is expected to result in an increase in investment value (Harianto and Sudomo in Respati, 2020).

Investment can also be interpreted as spending made by investors to be used related to sources such as production support equipment and supplies that can provide a profit from the investment.(Andi Adiyudawansyah, 2012)

Fixed business investment (business fixes investment) involves the company buying equipment for the production process. Residential investment (Residential investment) includes residents who buy new housing to live in or can also be rented out. Inventory investment includes goods that have been placed by the company including semi-finished goods, finished goods, and equipment. The types of investment above are three forms of investment expenditure.(Mankiw, 2007).

#### 2.1.2. Foreign Direct Investment

Foreign direct investment or direct foreign private investment is a direct investment funds that are directly used to conduct business or provide product facilities such as buying raw materials, buying land and opening factories.(Todaro, 2000). The advantage of direct foreign investment is that the company's management activities not only move raw materials and products. Subsidiaries are usually the designation for companies located in other countries for the applicable organizational structure, which is usually the same as the core company.

According to Law no. 25 of 2007 concerning investment, investment consists of domestic investment (domestic investment) and foreign direct investment, better known as Domestic Investment (PMDN) and Foreign Investment (PMA).

Foreign Direct Investment with multinational companies (multinational corporations) is closely related because a multinational company is a very large company from more

than one country whose task is to run and control its business operations. There are two characteristics of multinational companies, namely the size of the company is very large and the second is that its business operations are usually managed centrally by its leaders at its head office domiciled in the country of origin.

### **2.1.3. Inflation**

According to (Irham, 2014) inflation mean is the structuralist theory which says that slow export activities, high population growth and income per capita compared to the amount of production resulted in high wages which results in high production costs.

(SYofyan, 2014) The rising goods and services, the increase in the wages of labor obtained from production and the price of materials are the result of an increase in inflation. When inflation occurs, increasing output prices is one of the efforts companies can take. Inflation also results in low trading activities because when inflation occurs, people's purchasing power decreases, this will have an impact on investors' losses. For this reason, investors do not want to invest in countries where inflation is occurring to reduce the risk of loss.

### **2.1.4. Interest rate (interest rate)**

The interest rate is the annual interest payments on loans expressed as a percentage of the loan are referred to as interest rates (CASE, 2007). According to (Todaro, 2000) The interest rate is the borrower must issue a nominal amount that exceeds or is different from the amount borrowed to the lender. The difference in payments is usually expressed as a percentage of the total amount borrowed. The interest rate is used to determine the investor's decision to invest his money or choose to save only. The interest rate can be used as a reflection of the cost of capital needed by investors when borrowing from the bank. Low interest rates can be an incentive for investors to want to invest and even increase their capital when carrying out their investment activities.

### **2.1.5. Open trade**

In trading activities there are no difficulties encountered and smooth inter-country capital is one of the meanings of economic openness (Agustin et al., 2021). Economic openness results in financial trade openness. The wider market reach, high competition, economic efficiency, and high employment absorption are one of the positive consequences of

economic openness through financial trade openness. Trade openness or financial trade openness is defined as there are no restrictions in carrying out trading activities which include buying and selling activities between parties or countries (No et al., 2006). Trade barriers caused by high financial trade openness are reduced quotas, subsidies and tariffs so that foreign investors take advantage of the comparative advantage of their investment destination country by re-exporting or returning imported goods to their country of origin or to other countries. So it can be concluded that there will be many investors who will carry out investment activities directly to the country if the level of trade openness in a country is high (Septiantoro, 2020).

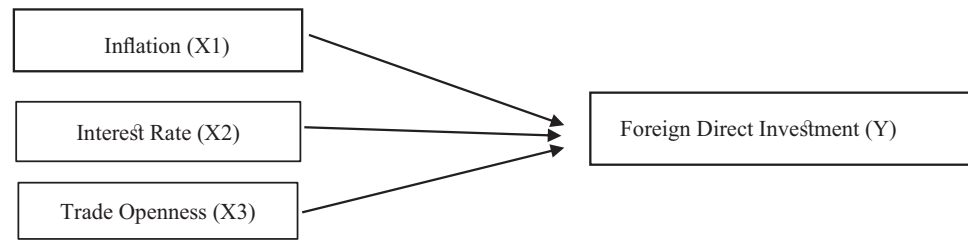
## 2.2. Previous Research

Study (Agustin et al., 2021) entitled "Analysis of Factors Affecting Foreign Direct Investment (FDI) in Singapore in 2004-2019" The purpose of this study was to determine the effect of GDP (Gross Domestic Product), Inflation, Trade Openness, and Lending Interest Rate on Foreign Direct Investment (FDI) in Singapore in the period 2004-2019 using a quantitative analysis method, namely multiple linear regression analysis. The independent variables in this study are GDP (X1), inflation (X2), Trade Openness (X3), Lending Interest Rate (X4). While the dependent variable is Singapore's Foreign Direct Investment for the period 2004-2019. The results of this study are that there is a significant positive effect on the GDP variable on FDI in Singapore and there is a significant negative effect on the Lending Interest Rate variable on FDI in Singapore.

Study (Nurriadianis & Adi, 2021) entitled "Analysis of Foreign Direct Investment in ASEAN-5". This research examines whether economic growth, interest rates, and inflation affect foreign direct investment. The test was carried out using panel data analysis with the Random Effect Model. The results obtained from this study indicate that only economic growth has a significant positive effect on foreign direct investment, while interest rates and inflation have no effect on foreign direct investment in ASEAN-5. It is hoped that this study can be useful for determining policies regarding foreign direct investment internationally and be useful for readers and academics.

## 2.3. Framework

Based on the statement above, the following framework can be formed:



**Figure 2:** Thinking Framework.

## 2.4. Hypothesis

Based on the explanation of the theory above, the hypotheses that can be made in this study are:

H1 = Inflation effectsignificantly to Foreign Direct Investment (FDI).

H2 = Interest rate effectsignificantly to Foreign Direct Investment (FDI).

H3 = Trade Openness is influentialsignificantly to Foreign Direct Investment (FDI).

## 3. Methods

This study uses a quantitative approach using secondary data in the form of panel data whose research object uses FDI in five APEC countries from 2012-2019 including Australia, Japan, Singapore, Brunei Darussalam, and Indonesia which is expressed in the form (billion US\$) as a variable bound, and used 3 independent variables, namely inflation, interest rates, and trade openness. The inflation rate used is obtained in the measurement of the Consumer Price Index (CPI) and is expressed in the form (%), the interest rate using the Lending Interest Rate is the loan interest rate expressed in the form (%), and the trade openness obtained from the calculation of total exports is totaled with total imports then divided by GDP and expressed in the form (%). Data from all variables used in this study were obtained by using library research data collection techniques. Research data obtained from the official website of the World Bank. Here are the steps that will be used:

### 3.1. Unit Root Test

Stationary test is a test that must be done before the regression analysis of the data used in the study. This test is done by testing each variable to find out whether the variable is stationary or not. There are several ways that can be used to perform the

stationarity test, so in this study the unit root test used was Augmented Dickey Fuller (ADF). The formula for the Augmented Dickey Fuller (ADF) test can be stated as follows:

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_{t-1+i} + \varepsilon_t$$

(1)

**Equation 1 -- Augmented Dickey Fuller (ADF)**

where:

$Y_t$  = form of first difference

$\alpha_0$  = intercept

$\gamma$  = the variable tested is stationary

$\beta$  = lag length

$\varepsilon$  = error term

The ADF test was carried out with the null hypothesis  $\gamma = 0$ . Whether or not the data or variables used were stationary, it could be seen in the ADF statistical value obtained from the t value of calculating the  $\gamma$  coefficient with the critical statistical value of Mackinnon. If the absolute value of the ADF statistic > the critical value of Mackinnon, then  $H_0$  is rejected so that the data is stationary and otherwise the data is not stationary or can be seen by looking at the probability value, if the probability value is < 0.05 then the data is stationary.

**3.2. Panels Seemingly Unrelated Regression**

The Seemingly Unrelated Regression (SUR) method was first discovered by Arnold Zellner in 1962, he stated that SUR is part of the Generalized Least Square (GLS) method where GLS is a substitution of OLS which is a multivariate regression model which is included in multiple linear regression. The SUR model consists of several unrelated equations, meaning that the dependent or independent variables exist in one system where the system of linear equations in several regression equations can be solved in the same set of equations that will produce parameters efficiently. In a study conducted to analyze the effect of independent variables on the dependent variable, the SUR (Seemingly Unrelated Regression) panel weighing approach was used using STATA 14 software.

$$Y_{1t} = \beta_0 + \beta_{11} X_{11,t} + \dots + \beta_{1K_1} X_{1K_1,t} + e_{1t}$$

$$Y_{2t} = \beta_{20} + \beta_{21} X_{11,t} + \dots + \beta_{2K_2} X_{2K_2,t} + e_{2t}$$



$$Y_{Gt} = \beta_{G0} + \beta_{G1} X_{G1, t} + \dots + \beta_{GK_2} X_{GK_2, t} + e_{Gt}$$

(2)

**Equation 2 -- SUR (Seemingly Unrelated Regression)**

Information:

t = 1, 2, 3...n.

## 4. Discussion Result

This section presents the results of research to determine the effect of inflation, interest rates, and trade openness on foreign direct investment. Panel data is the data used in this study panel data itself is a combination of time series and cross section data. This study uses data from 2012-2019 from 5 APEC countries. The data analysis technique used is the unit root test and Seemingly Unrelated Regression (SUR).

### 4.1. Unit Root Test

The variable stationarity test was carried out using the Unit Root Test using the Augmented Dickey-Fuller Test (ADF) method at the 1st Difference level by comparing the ADF statistic with the critical values of Mac Kinnon at significant degrees of 1%, 5% and 10% or it can be seen from the probability value.

TABLE 1: The results of the Augmented Dickey Fuller (ADF) test at the 1st Difference.

Variable	Statistical Value	ADF	Prob.	Information
lnFDI	-7.251106		0.0006	Stationary at 1st Difference
INFLATION	-6.876777		0.0209	Stationary at 1st Difference
INTEREST_RATE	-5.827628		0.0120	Stationary at 1st Difference
TRADE_OPENNESS	-4.956115		0.0027	Stationary at 1st Difference

Source: Eviews 10 data processing results

The results of the stationarity test show that the variables of FDI, inflation, interest rates, and trade openness are stationary at the 1st difference level (prob < 0.05) so that the data used is in the form of 1st difference for modeling Seemingly Unrelated Regression (SUR).

TABLE 2: Selection of the Best Model.

InFDI	CEM	FEM	BRAKE	SUR
INFLATION	0.178 (.146084)	0.055 (-.2164368)	0.131 (-.161262)	0.209 (.146084)
INTEREST_RATE	0.000 (-1.34497)	0.524 (-.2348821)	0.189 (-.4000478)	0.000 (-1.34497)
TRADE_OPENNESS	0.002 (-.0109187)	0.501 (.0070022)	0.840 (.00111718)	0.000 (-.0109187)

Source: Stata 14 data processing results

## 4.2. Best Model Selection

Table 2. Shows the results of panel data model calculations for Common Effects, Fixed Effects, Random Effects, and Seemingly Unrelated Regression (SUR). Then from the three models, the best model is the Seemingly Unrelated Regression (SUR).

## 4.3. Panels Seemingly Unrelated Regression

TABLE 3: Seemingly Unrelated Regression (SUR) Test Results.

InFDI	Coef.	Std. Err.	Z	P> z	95% Conf. interval
INFLATION	.146084	.116282	1.26	0.209	-.0818246 .3739926
INTEREST_RATE	-1.34497	.1170405	-11.49	0.000	-1.574365 -1.115574
TRADE_OPENNESS	-.0109187	.0017738	-6.16	0.000	-.0143953 -.007442
_cons	29.40117	.6379712	46.09	0.000	28.15077 30.65157

Source: Stata 14 data processing results

### *Effect of Inflation on Foreign Direct Investment*

Based on the estimation of the SUR model, it signifies that the inflation variable (X1) has no significant effect on Foreign Direct Investment in the five APEC countries because the probability value is > 0.05. It's the same with research conducted (Agustin et al., 2021) and (Amirsyah, 2020) which shows the results that the inflation variable has no significant effect on Foreign Direct Investment. The results of this study are acceptable because inflation conditions in a country are not the only factor that becomes a barrier for foreign investors to invest in investment destination countries. Inflation does not affect foreign investors because the price increase is higher than the production costs incurred, so investors still earn profits. These results are not in accordance with the research hypothesis and also the inflation theory, namely cost-push inflation, an increase in production costs resulting in a decrease in aggregate supply is the cause of this. Where the increase in production costs will also increase prices and people's purchasing power will decrease which causes the level of risk of business failure to increase.

### *The Effect of Interest Rates on Foreign Direct Investment*

Based on the estimation of the SUR model, it shows that the variable Interest Rate (X2) has a negative and significant effect on Foreign Direct Investment in the five APEC countries, this is evidenced by the probability value of  $<0.05$  or equal to (0.000). The coefficient value is (-1.34497) meaning that if the prevailing interest rate in a country increases by 1% it will reduce investor interest in investing so that the amount of FDI decreases by (1.3449%). The Marginal Efficiency of Investment curve describes that investors will invest if the rate of return on capital is higher or equal to the interest rate. In a study conducted (Agustin et al., 2021) and Dewi and Triaryati (2015) stated that interest rates have a negative effect on FDI. An increase in interest rates will have an impact on investment, where investment will decrease and a decrease in interest rates will have a positive impact because investment will increase and investors will be attracted to invest due to low interest rates. The results of this study are in accordance with the research hypothesis which states that the interest rate variable has a significant effect on Foreign Direct Investment and the Classical Model also assumes that the higher the interest rate, the smaller the desire to invest because entrepreneurs will increase their investment spending, where the interest rate here is cost of capital or the cost of using the funds to invest. The theory put forward by J.M. Keynes stated that when interest rates are high it will make investors choose to put their funds in the money market rather than being used for investments that will bear the losses. However, Keynes also stated that interest rates are not the only factor that affects investment, there are other factors that affect investment, namely the investment economic situation is strongly influenced by profits or rates of return, and is not too influenced by interest rates.

#### *Effect of Trade Openness on Foreign Direct Investment*

Based on the estimation of the SUR model, it shows that the Trade Opportunity (X3) variable has a significant effect on Foreign Direct Investment in the five APEC countries, this is evidenced by the probability value  $<0.05$  or equal to (0.000) meaning the high Trade Openness of a country, indicating that trade barriers in If the country is decreasing and the market reach in a country is getting wider, it can be concluded that many investors will invest directly in that country so that it will increase FDI in that country. This is in accordance with research conducted by (Ying & Park, 2018) which states that the Trade Openness variable has a significant effect on FDI. However, the results of the study are different from the results of the research conducted (Agustin et al., 2021) and (Mitsalina Putri Adani, 2021) states that the Trade Openness variable has no significant effect on FDI, this is because the effect of Trade Openness on FDI depends on the investor's motives. Foreign investors whose motives are to enter the local market are not a problem with trade barriers to export-import.

## 5. Conclusion

From the data analysis that has been done using the Seemingly Unrelated Regression method in this study it can be concluded that:

1. Inflation has no significant effect on Foreign Direct Investment in the five APEC countries (Australia, Japan, Singapore, Brunei Darussalam, and Indonesia).
2. The Lending Interest Rate has a negative and significant effect on Foreign Direct Investment in five APEC countries (Australia, Japan, Singapore, Brunei Darussalam, and Indonesia).
3. Trade Openness has a significant effect on Foreign Direct Investment in five APEC countries (Australia, Japan, Singapore, Brunei Darussalam, and Indonesia).

From the results of the analysis above, the government's policies in maintaining a stable economy through Interest Rates and Trade Openness are as follows:

1. Policies that must be carried out by the government so that economic openness is wider, namely, the government must ensure a legal and business system that can support business development through legal certainty and also simple regulations.
2. The government policy that must be carried out by the government to maintain interest rate stability is the Inflation Targeting Framework (ITF), which is a framework that is directed at the inflation target as a manifestation of the commitment and accountability of the central bank. In addition, the creation of sound financial institutions through supervision and regulation.
3. The policy that must be implemented by the government in encouraging the entry of FDI is to maintain the stability of political, social and economic conditions and the government must be firm in dealing with corruption issues.
4. Basically, the entry of FDI in a country if the conditions of infrastructure, logistics and governance in the country are running well, the presence of technology can also increase the level of productivity and competitiveness so that this can attract foreign investors.
5. To support all government policies, all stakeholders are expected to be involved.

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