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THE EFFECT OF FOREIGN DIRECT INVESTMENT AND INFLATION ON THE ECONOMIC GROWTH OF ASEAN COUNTRIES 2009-2020

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ABSTRACT

This study aims to analyze the effect of foreign direct investment and inflation on economic growth in ASEAN countries. The analytical method used is a quantitative approach with multiple linear regression panel data method based on secondary data from foreign direct investment, inflation, and economic growth variables in 2009-2020. The analysis results show that FDI has no significant impact on the economic growth variable, and the inflation rate has a significant positive impact on the economic growth variable.

Keywords: Economic Growth, Foreign Direct Investment, Inflation, REM

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh Foreign Direct Investment dan inflasi terhadap pertumbuhan ekonomi negara ASEAN. Metode analisis yang digunakan yaitu pendekatan kuantitatif dengan metode regresi linear berganda data panel berdasarkan data sekunder dari variabel Foreign Direct Investment, inflasi, dan pertumbuhan ekonomi pada periode 2009-2020. Hasil analisis menunjukkan bahwa FDI berpengaruh tidak signifikan terhadap variabel pertumbuhan ekonomi, tingkat inflasi memiliki dampak yang positif signifikan terhadap variabel pertumbuhan ekonomi.

Kata Kunci: *Pertumbuhan Ekonomi, Investasi Langsung Asing, Tingkat Inflasi, REM*

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Introduction

In general, the country's economy can be measured by looking at the growth and development of the country's economy. Economic growth is a measure of the increase in economic output. This quantitative change is measured in finite terms using the country's gross domestic product (GDP) percentage increase. In general, gross domestic product is an economic model that reflects the value of a country's output. In other words, a country's GDP is the total monetary value of goods and services produced by that country over a period of time. (Callen, 2012).

ASEAN is one of the regions with a fairly high economy. ASEAN has become the world's fifth-largest economy, with a combined GDP of US$2.9 billion. In 2020, ASEAN received US$70 billion in new investment, the most significant FDI inflow among other emerging market regions. If treated as a single entity, the ASEAN Economic Community (AEC) would be the third-largest economy in Asia and the fifth-largest in the world after the US, China, Japan, and Germany (HSBC Commercial Banking, 2021).

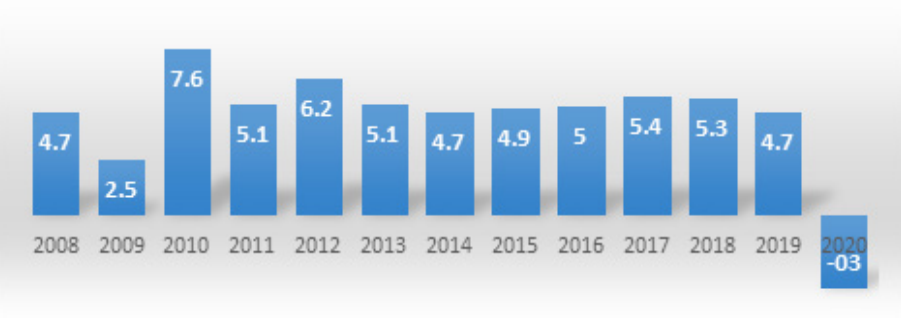

Figure 1: ASEAN Economic Growth Rate 2008-2020 (Percent)

Source: ASEANstats.org (2020)

Based on Figure 1 above, it can be seen that the economic growth rate of ASEAN countries fluctuates. ASEAN experienced recessions in 2009 and 2020. There was a decrease in 2009 of 47% from the previous year due to the aftermath of the global financial crisis (GFC) 2008. The global financial crisis (GFC), a period of extreme stress in global financial markets and banking systems, resulted in many countries experiencing economic recessions.

In 2020, all countries experienced another recession. ASEAN countries' economic growth experienced a drastic decline in 2020 by 170% from the previous year due to the COVID-19 Recession. The COVID-19 recession is a global economic recession caused by the COVID-19 pandemic. The recession began in most parts of the country in February 2020. After a year of global economic slowdown that led to stagnation in economic growth and consumer activity, COVID-19 lockdowns and other precautions taken in early 2020 pushed the global economy into crisis. Within seven months, every advanced economy had fallen into recession.

Economic growth and its determinants have been a major focus in recent decades, especially in developing countries such as ASEAN. Some of the determinants of economic growth include *foreign direct investment* and inflation. Investment is an engine of economic growth and can be in the form of domestic and foreign direct investment (Pegkas, 2015). FDI inflows contribute to economic growth through increased productivity by providing the host country with new investment, better technology, and managerial skills. Most countries expect FDI because it is considered the main stimulus for the country's economic growth.

On the other hand, inflation is generally used to describe a situation of high and sustained increases in the general price level of an economy. Where there is inflation, currencies lose purchasing power. Low inflation is essential for economic growth. High and sustained economic growth combined with low inflation is the most crucial objective of macroeconomic policy.

Foreign direct investment is very important for economic growth in every country, as it is seen as an engine of growth and provides much-needed capital for investment. The role of FDI is to increase competition in the host country's industry and can help local companies become more productive by adopting more efficient technology. FDI contributes to growth substantially because it is more stable than other forms of capital flows (Ajayi, 2006).

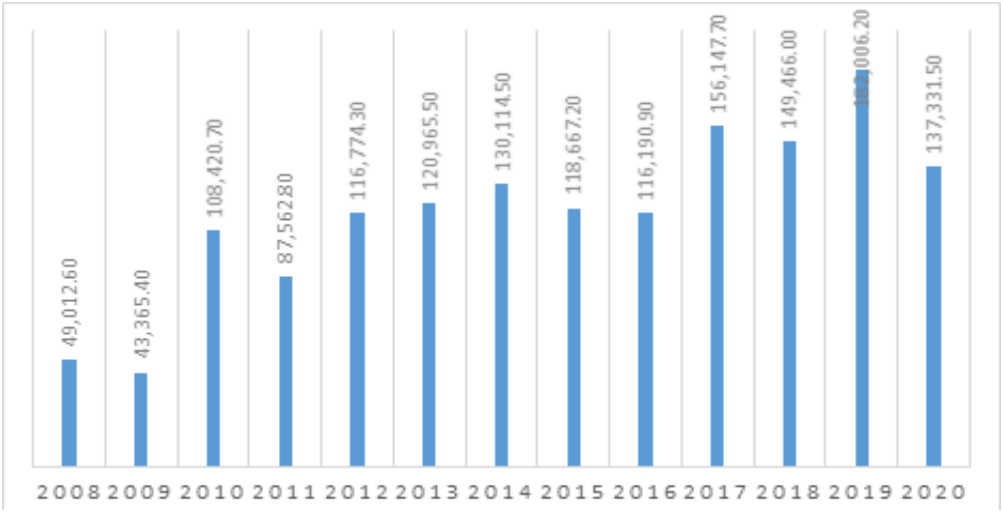

Figure 2: Foreign Direct Investment Inflows to ASEAN 2008-2020 (Million US$)

Source: ASEANstats.org (2020)

The development of FDI inflows to ASEAN, shown in Figure 2 above, fluctuated between 2008 and 2020. The years 2009-2010 highlighted the challenges faced by the ASEAN region after the 2008 global financial crisis, particularly fundamental changes in FDI locators that could affect ASEAN's attractiveness as an investment destination and the region's ability to manage volatile global capital flows. Adverse developments in developed markets (particularly in the Eurozone), the main source of foreign direct investment inflows in ASEAN, will pressure the global and regional investment climate.

Foreign Direct Investment inflows to ASEAN reached the highest level 2019 of US$ 182 billion. This achievement makes ASEAN the largest recipient of FDI in developing countries. As a result of the unprecedented COVID-19 pandemic, FDI decreased significantly to US$ 137 billion in 2020. However, compared to the decline in global FDI levels, ASEAN›s performance is still slightly better as the global FDI market share increased from 11.9 percent in 2019 to 13.7 percent in 2020.

The effect of inflation on economic growth is one of the interesting issues to debate and discuss in the historical process of economic development. An economy that does not achieve or grow well is always associated with important problems such as poverty, unemployment, low welfare, and high inflation rates. Inflation, on the other hand, has many negative influences on a country's economic growth. In general, it is recognized that high and fluctuating inflation is harmful to economic growth and requires welfare costs.

The functioning of economic life and the sustainability of equilibrium in an economy depends primarily on the orderly and stable structure of macroeconomic variables that make up the economy's structure in general. The economy's structure is sound, and as such, the performance of sustainable economic growth depends heavily on price stability. By general definition, price stability refers to a low and sustained rate of inflation that does not affect individual investment, consumption, and savings decisions and preferences. The important point is to prevent the general price level from rising or falling more than a certain limit value (Aydın, 2016).

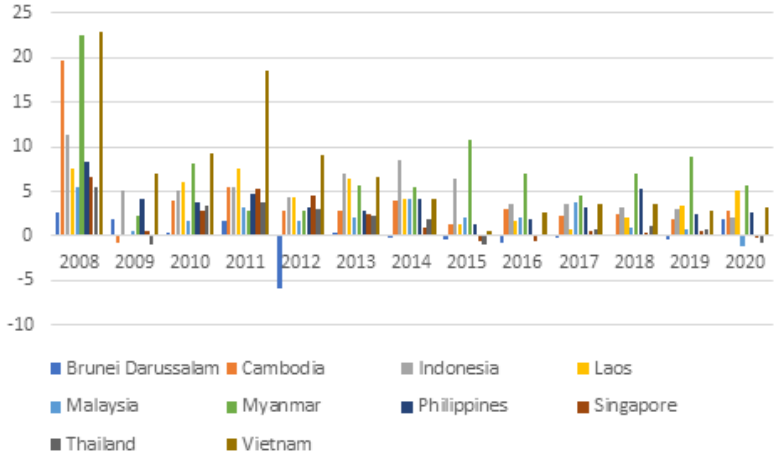

Figure 3: ASEAN Year-on-Year Average of Period 2008-2020 (Percent) Inflation Rate (Percent)

Source: ASEANstats.org (2020)

Inflation will make building prospective savings, investment, production, and consumption decisions challenging and an environment of heightened uncertainty that prevents economic growth. Savings planned to finance the development of a country where inflation is volatile will cause uncertainty regarding high inflation, thus obtaining more returns than for investment or production. It negatively impacts economic growth by causing real investment in the economy to shrink by reducing producer profits. In addition, inflation weakens their purchasing power. Generally, economies with high inflation rates have lower average growth rates than countries with price stability. Price stability, which influences investment and consumption, must be ensured for stable and sustainable growth. Overall, ensuring price stability will bring economic stabilization (Aydın, 2016).

Based on Figure 3 above, the inflation rate of ASEAN countries fluctuated between 2008 and 2020. In 2009, all ASEAN countries experienced a decrease in inflation rate (deflation) due to the global financial crisis of 2008. Countries that experienced a great decline were Singapore, Cambodia, Myanmar, and Vietnam. The global financial crisis caused the stock market to fall, and the country entered a great recession; the country also experienced a period of deflation throughout 2009. This crisis has led to a simultaneous decline in all economic activity sectors, such as employment, investment, and corporate profits. The devastating effects of the global crisis continued into 2009 and caused the deflationary rate to reach 2.3%. In recent decades, the instability of inflation rates in ASEAN has significantly inhibited economic growth and economic prosperity (World Bank, 2019). According to (Fischer, 1993), high inflation reduces growth by reducing investment and productivity growth. That is, a high inflation rate is detrimental to economic growth. Several studies have not found a negative impact of inflation on economic growth (Anidiobu et al., 2018).

If multiple waves of the COVID-19 virus will demand lockdowns to continue longer, the recession may become longer, compared to *a V-shaped* recovery. In this case, the tendency to marginal consumption may fall, as a higher risk of unemployment may increase the preference for just-in-case savings. In this context, Jordà et al. (2020) found suggestive evidence that the switch to savings just in case is typical of pandemic periods. Such increased risk aversion, similar to that observed after the Global Crisis, would further depress the equilibrium interest rate. As a result, the economy is moving toward a new equilibrium (or balanced growth path) with higher uncertainty and lower economic growth. However, several countries in ASEAN have chosen to aggressively cut interest rates to encourage economic growth that has begun to slow down due to the coronavirus pandemic (COVID-19).

The contribution of this research trying to improve and complement previous research on the effect of FDI and inflation on economic growth is to use case studies of 10 ASEAN Countries using FDI *inflows* and the Consumer Price Index as proxies for FDI and inflation rates. This research uses case studies from 2009 to 2020. This study is important to determine how the magnitude of the influence of FDI and inflation on economic growth, especially in ASEAN countries. This research will discuss how *foreign direct investment* and inflation influence economic growth. This study used panel data, which combines time series data with cross-section data and uses multiple linear regression. The author submits a study entitled "The Effect of *Foreign Direct Investment* and Inflation on ASEAN Economic Growth in 2009-2020".

Literature Review

Economic Growth

Economic growth theory refers to the increase in a country's national or per capita income. There are various measures of national income, each resulting from a different method of compiling estimates, but the most commonly used measure is Gross Domestic Product (GDP). Economic growth measures the rate of change in GDP over time. According to Kuznets, more than using GDP measures alone is needed, as it is important to examine economic growth more closely to assess whether this momentum can be sustained. Kuznets defines a new measure, modern economic growth, which is 'a long-term increase in the capacity to supply increasingly diverse economic goods to its population, this growing capacity based on technological progress and the institutional and ideological adjustments it demands' (Kuznets, 1973). Modern economic growth implies that social, institutional, and technological changes accompany and facilitate changes in the capacity to supply output.

Foreign Direct Investment

FDI is important in supporting a country's development, especially in developing countries and emerging markets. FDI is allocated to productive and well-managed assets so that the country can get many benefits, such as capital provision, job creation, increased market access and competition, and contributions to technology transfer and good governance.

The IMF's Balance of Payments Manual, fifth edition (BPM5) (IMF, 1993) defines Foreign Direct Investment as a category of investment that reflects the objective of establishing enduring interests by resident companies in one economy (direct investors) in a company (direct investment company) residing in an economy other than direct investors. Perpetual interest implies a long-term relationship between a direct investor and a direct investment company and a significant degree of influence on the company's management.

According to the neoclassical growth theory put forward by Harrod (2015), Domar (1946), and Solow (1956), FDI is a catalyst for economic growth because it increases physical investment. In the endogenous growth model presented in Romer (1986), Romer (1991), and Lucas (1988), FDI encourages economic growth by generating an abundance of technology and knowledge. These models show that FDI is an important factor contributing to economic growth in host countries.

In Harrod's (1939) and Domar's (1947) growth model, savings were an influential factor, encouraging capital accumulation and growth. Rostow (1959) provides evidence that austerity is necessary for development. Because increasing savings may be difficult in the short term, especially for developing countries, the *International Monetary Fund* (IMF) and World Bank have advised countries to borrow from abroad through loans, portfolio investment, and FDI to supplement domestic savings and achieve targeted growth rates. Governments and local governments looking to boost growth compete for FDI through tax incentives and subsidies.

When neoclassical growth theory (Solow, 1956; Swan,1956) replaced the Harrod-Domar theory, a new reason for the flow of funds from rich countries to developing countries was found: as returns on capital diminished, and lower capital stocks in developing countries were assumed, returns on capital should be higher in developing countries, attracting international capital from rich countries to poor countries, helping the laggards catch up to the terrains. This statement also provides theoretical support for developing countries to leverage foreign investment, including FDI (Bermejo & Werner, 2018).

In the neoclassical model, long-term growth can only result from exogenously driven technological advances and/or labor force growth. FDI can only affect economic growth if it increases technological progress. A mere injection of capital stock will cause long-term rate effects but only transitional growth. In endogenous growth theory, FDI contributes to growth directly through higher capital stocks and newer technologies and indirectly through increased human capital, infrastructure, institutions, and spillovers. Positive externalities can be managerial skills, organizational knowledge, and workforce training. FDI can also help host economies by accessing world markets (Iamsiraroj & Ulubaşoğlu, 2015).

The Relationship Between Inflation and Economic Growth

Inflation is a measure of purchasing power expressed as a percentage. It is the loss of purchasing power over time. Inflation is the rate at which the prices of goods and services increase over a certain period (generally one year). When inflation rises, consumer spending decreases because people cannot afford to buy and will choose to reduce or not buy.

According to the Department of Labor's definition of inflation, inflation is the overall general increase in the prices of goods and services in an economy. It indicates a decrease in the purchasing power of a country's currency, reducing its value. When the price of general goods and services rises, the amount of money owed will decrease. This is why the amount of money spent back then was much cheaper than the amount paid today for the same item.

Inflation reflects a broad rise in prices or a decrease in the value of money. This is generally the result of too much demand and limited availability of goods or services, leading to price increases. Price increases do not necessarily hurt the economy as a whole, and only consumers who make purchases experience price increases. Higher prices in one sector do not necessarily lead to general economic inflation. However, price increases across multiple categories will weaken consumer purchasing power.

The relationship between inflation and growth has theoretical models in the Keynesian and Neo-classical schools of thought. The Keynesian model focuses on the analysis of Aggregate Demand and Aggregate Supply. The model shows the aggregate supply curve sloping upwards instead of vertically in the short run. Due to the upward-sloping nature of the aggregate supply curve, any change in demand can result in changes in price and output. A positive adjustment path is formed between inflation and growth in the short-run equilibrium of the aggregate demand and aggregate supply curves. This adjustment then turns negative.

Based on the Neo-classical school of thought, Solow (1956), Tobin (1965), and Stockman (1981). First, Solow's model postulates that technological change is determined exogenously and is the primary explanation for long-term growth. Solow believed that inflation and growth showed no relationship because they were assumed to be exogenously determined (Ray, 1998).

Second, Mundell (1963) and Tobin (1965) explained the impact of inflation on economic growth based on neoclassical growth theory. They argue that rising nominal interest rates caused by inflation make investment preferable to consumption. This, in turn, will lead to increased capital accumulation, leading to economic growth. It is famous for the Mundell-Tobin Effect. Tobin (1965) followed Solow (1956) and included the assumption of money as a store of value in an economy. According to Tobin's model, rising inflation rates in an economy motivate people to save money instead of interest-bearing assets, stimulating economic growth. Tobin's model suggests a positive relationship between inflation and growth.

Third, Stockman (1981) postulates a model that assumes that money complements capital. When there is an increase in inflation, the purchasing power of money decreases, leading to low capital accumulation and a decrease in output growth. Stockman (1981) developed a model of long-run equilibrium growth assuming a "cash-in-advance constraint." His theory contradicts the conclusions of the Mundell-Tobin Effect. In Stockman's (1981) model, investment and real money balance are complementary, but in Mundell's (1963) and Tobin's (1965) models, both variables are substituted. According to this theory, the individual will receive a return on investment in the form of money in the future. Investment and the balance of real money will be reduced by inflation. As a result, inflation will have a negative impact on economic growth. This significantly justifies the inverse relationship between inflation and economic growth (Sattarov, 2011).

The well-known Keynesian model consists of the Aggregated Supply (US) curve and the aggregate demand (AD) curve, which explain the relationship between economic growth and inflation. This model implies that, in the short run, the US curve is not vertical but rather sloping upward. Keynes in Dornbusch et al. (1996), that in the short run, changes in aggregate demand affect price levels and output. This is true because labor, monetary and/or fiscal policy and expectations are factors that drive inflation and output in the short run. When the US curve is vertical, as in the long run, changes in aggregate demand only affect the price level. This is because turnover is assumed to be smoothed, and output returns to its potential level.

Aggregate demand and aggregate supply produce an "adjustment path". At first, the relationship between inflation and economic growth was positive. The problem of time inconsistencies can explain this. Manufacturers believe that the price level of their merchandise has increased, while other manufacturers in the market operate at the same price level as before. However, the reality is that the overall price level is indeed increasing.

Blanchard & Kiyotaki (1987) argue that the relationship between inflation and economic growth is positive because firms may have agreed to futures contracts. Enterprises are forced to increase production to meet previously agreed-upon demand even if the price level has increased.

The Relationship between Foreign Direct Investment and Inflation

A high inflation rate indicates tension in a country's economic environment and shows the government's reluctance to have a stable monetary policy. Risk-averse foreign investors and high inflation rates can decrease FDI in the host country as investors are unwilling to risk the returns they expect from their investments (Kadongo, 2011). Given the high level of uncertainty, investors are bound to demand high price levels to offset their exposure to inflation risks that are bound to lower investment volumes. So, to encourage investment, inflation rate stability is the key (Gastanaga et al., 1998).

Nwankwo (2006) emphasizes the weakness of macroeconomic strategies as deflecting FDI flows from Africa. He pointed out that poor monetary and fiscal policies lead to unsustainable budget deficits and increase inflationary pressures, thereby increasing production costs in the local country and thus creating exchange rate instability. Thus, the region becomes a risky destination for FDI and becomes too risky as an FDI destination. The flux of macroeconomic variables, evidenced by high inflation and extreme budget shortfalls, limits the country's ability to attract FDI.

In both developed and developing countries, the main goal of policymakers is to reduce poverty and achieve sustained economic growth caused by low inflation (Pesaran et al., 2001). High economic growth can improve the living standards of the poor. Empirical and theoretical studies present varied views on the relationship between economic growth and inflation. Despite this, a large number of studies still confirm that high inflation has a negative impact on economic growth. Distortions and uncertainties caused by high inflation in an economy further hinder sustainable economic growth through that economy's spending and investment. In addition, the international competitiveness of a country is greatly reduced by the high price level; This makes exports more expensive, causing balance of payments problems.

Foreign Direct Investment serves as an important channel through inflation that indirectly affects economic growth for the betterment of society (Pesaran et al., 2001). A country experiencing low inflation is a sign of economic stability that implies an increase in FDI returns and signifies the ability of the central bank to carry out appropriate monetary policy as well as the government's readiness to balance the state budget. Therefore, a low inflation rate in a country increases FDI.

Research Method

Data Types and Sources

The type of data in this study is quantitative data and in the form of secondary data. The type of regression data used in this study is panel data (combined data), a combination of *time series* data from 2009 to 2020, and *cross-sectional* data covering ten countries in ASEAN (Southeast Asia). Data sources are obtained from various kinds of literature studies in the form of journal literature, theses, and others from the internet and related institutions, namely the ASEAN Investment Report, ASEAN Statistical Yearbook, International Monetary Fund (IMF), and World Bank Report.

Model Specifications

In this study, the analysis model explains the relationship between the dependent and independent variables. The analysis model is a multiple linear regression model with panel data. The multiple linear regression model is as follows:

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 INF_{it} + \varepsilon_{it} \quad (1)$$

Where:

GDP = GDP

FDI = *Foreign Direct Investment*

INF = Inflation Rate

β0 = Intercept

β1, β2 = Parameter

ε = error term

i = Regional Indicator

t = Time Indicator

Estimation Techniques

According to (Gujarati, 2004), there are three types of panel analytic models used: (1) Pooled Least Square (PLS), (2) Fixed Effect Model (FEM), and (3) Random Effect Model (REM) or Error Correction Model (ECM).

Pooled Least Square (PLS)

Researchers can collect all combined observational data between *time series* and *cross-sections* and run a regular least squares regression model for this model. The most straightforward approach, however, ignores the space and time dimensions of the collected data and estimates only regular OLS regression. *Pooled Least Square* can also be called the Common Effect Model.

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it} \quad (2)$$

Fixed Effect Model (FEM)

Fixed Effect Regression (FEM) model. The term "fixed effect" is because, intercepts may differ between individuals. However, each individual's interception is the same over time, which can be done with dummy variable techniques, in particular, dummy differential intercepts.

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it} \quad (3)$$

Random Effect Model (REM)

In REM, the authors assume that each observation has an intercept value and that the intercept value for each individual is random. It can be taken from a larger population randomly. Each observation has the same intercept average, but unlike in FEM, time-invariant regressors can be used in REM. Random Effect Model also considers error, i.e., error term ui, as an interpretation of the difference in intercept value. The Random Effect Model (REM) can also be called the Error Correction Model (ECM).

$$\begin{aligned} Y_{it} &= \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it} + u_{it} \\ &= \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \omega_{it} \end{aligned} \quad (4)$$

Regression Data Panel Selection Method

To choose the most suitable model, there are several tests that can be done, such as:

Test Chow

The Chow test is a test to establish the right model between PLS and FEM. The hypothesis is:

H0: Select PLS Model

H1: Select FEM

If the probability value of F in FEM is < α (1%, 5%, or 10%), then H0 is rejected, and the proper model is FEM.

Test Hausman

The Hausman test is a statistical test to establish the right model between FEM and REM. The hypothesis is:

H0: Select REM

H1: Select FEM

If the probability value χ2 is less than α (1%, 5%, or 10%), then H0 is rejected, and the proper model is FEM.

Lagrange Multiplier Test

Test (LM) is a test to establish the right model between REM and PLS. The first step is to perform the LM test and then compare the probability value of χ2 against α (1%, 5%, or 10%). The hypothesis is:

H0: Select PLS Model

H1: Select REM

If the probability value of the LM test is less than α (1%, 5%, or 10%), then H0 is rejected, and the correct model is REM.

Statistical Testing and Model Precision Measurement

T-Test

The t-test is used to test whether two samples have the same mean or to compare the mean of two different sets. It is used to determine whether the average of one group differs significantly from another group. T-tests can be paired and normal. They are usually used to calculate numerical data. The assumption is a sample of the normal distribution. The sample average is equal to 0.

$H0 : \beta i = 0$

$H1 : \beta i \neq 0$

If t0 or t counts < t table, then H0 is accepted, and H1 is rejected, or it means that the independent variable cannot explain *its dependent* variable or is insignificant, or the model used is not precise, so vice versa. Looking at the probability value (p-value) of each variable is one method that can be done in the t Test. The independent variable may describe *its dependent* variable or be significant if its probability value is less or less than the confidence level of α (1%, 5%, or 10%) because it is within the rejection region of H0.

F-Test

The F test determines whether two samples have the same variant. It is usually used to compare two standard deviations from two samples and check for variability. The F test is always performed as a one-sided test because variance cannot be negative. The F test can be applied to large sample populations. The same assumption applies: Both samples have the same variant.

H0 : β1 = β2 = ... = βn = 0

H1: At least one of the parameters (β) is not equal to zero.

If F0 or F counts > F table, then H0 is rejected, and H1 is accepted. If this is the case, it can be said that variations from regression models can explain variations in their independent variables and vice versa. In addition, looking at the probability value F is also one of the decisions of the F test. The variation of the regression model can explain the variation of the independent variable if the probability value (p-value) < α (1%, 5%, or 10%).

Coefficient of Determination (R2)

In linear regression analysis, the coefficient of determination describes the proportion of variance of the dependent (bound) variable that the independent (free) variable can describe. In other words, the coefficient of determination assesses how well the data point is approached with the regression prediction, thus measuring the strength of the linear relationship between the described and the explanatory variables. Therefore, it is sometimes referred to as model goodness. Most of the time, the coefficient of determination is denoted as R^2, called “R squared”.

The coefficient of determination, or R-squared value, is a value between 0.0 and 1.0 that expresses what proportion of variance in Y (dependent variable) can be described by X (independent variable):

If R^2 = 1, then it has a perfect match, which means that the values of Y are completely determined (that is, without errors) by the values of X, and all data points lie precisely on the approximate best match line.
If^{R2} = 0, then our model is no better at predicting the value of Y than a model that always returns the average value of Y as a prediction.

Result and Discussions

Descriptive Statistical Variables

Table 1: Descriptive Statistics *2009-2020*

Descriptive Statistics	GDP (%)	FDI (%)	Inflation (%)
Mean	4.53	21.91	2.98
Maximum	14.53	25.51	18.68
Minimum	-9.57	-18.83	-1.26
Std. Deviation	3.67	4.05	2.86
Number of Observations	120	120	120

Descriptive statistics present core information related to variable data used in research. The forms of statistical variables presented in this study are the average, standard deviation, maximum value, and minimum value of all variables in this study, namely economic growth

(Y), Foreign Direct Investment (X1), and inflation rate (X2) during the research period 2009 to 2020.

Table 1 shows that of the 120 observations taken, the average GDP value was 4.53%, FDI was 21.91%, and inflation was 2.98%. The maximum value of GDP is 14.53%, FDI is 25.51%, and inflation is 18.68%. The minimum GDP value is -9.57%, FDI is -18.83%, and inflation is -1.26%. Standard Deviation of GDP is 3.67%, FDI is 4.05%, and inflation is 2.86%. The number of observations was 120 from 2009 to 2020.

Results of Estimation and Proof of Hypothesis

CEM vs FEM Test (Chow Test)

The Chow test is a test to establish the suitable model between PLS and FEM. If the probability value of F in FEM is < α (1%, 5%, or 10%), then H0 is rejected, and the proper model is FEM.

Table 2: Chow Test

Fixed Effect Model		
F test that all u_i=0	F(9, 108) = 2.31	Prob > F = 0.0205

The table above shows that probability values less than 0.05 or 5% can be concluded that the hypothesis is rejected, so the appropriate model is FEM which was used as a model in this study.

FEM vs REM Test (Hausman Test)

The Hausman test is a statistical test to establish the suitable model between FEM and REM. If H0 is accepted, then the best choice is REM; otherwise, if we receive H1 is accepted, then the best choice is FEM. If the probability value $\chi 2$ is less than α (1%, 5%, or 10%), then H0 is rejected, and the proper model is FEM.

Table 3: Hausman Test

Chi^2 (Hausman Statistic)	**Prob>chi2**
5.89	0.0526

The table above shows that probability values of more than 0.05 or 5% indicate that the hypothesis is accepted, so the accepted model is REM.

Final Model: Random Effect Model (Based on model selection with Hausman Test)

Table 4: Final Model: Random Effect Model

R-Square		**Numb. Of Observation = 120**		
Within = 0.0476		Numb. Of Groups = 10		
Between = 0.7057		Wald chi2(2) = 17.34		
Overall = 0.1885		Prob > chi2 = 0.0002		
Variable	**Coef.**	**Std. Error**	**z**	**P > |z|**
Foreign Direct Investment	0.1160362	0.0780541	1.49	0.137
Inflation	0.4335708	0.1149911	3.77	0.000
C	0.6957568	1.764981	0.39	0.693

Statistical Testing and Hypothesis Measurement

Test T (Partial)

The t-test is used to determine whether two samples have the same mean or to compare the mean of two different sets.

If t0 or t counts < t table, then H0 is accepted, and H1 is rejected, or it means that the independent variable cannot explain *its dependent* variable or is insignificant, or the model used is not precise, so vice versa. Looking at the probability value (p-value) of each variable is one method that can be done in the t Test. The independent variable may describe *its dependent* variable or be significant if its probability value is less or less than the confidence level of α (1%, 5%, or 10%) because it is within the rejection region of H0.

The table above shows that t calculated on the FDI variable shows a value of 0.137 greater than 0.05, which means that the hypothesis is rejected and that FDI does not have a partial significant effect on the economic growth variable. Conversely, the inflation variable has a value of 0.000, smaller than 0.05, which means that the hypothesis is accepted and that the inflation variable has a partially significant effect on the economic growth variable.

Test F (Simultaneous)

The F test determines whether two samples have the same variant. The F-test usually compares two standard deviations from two samples and checks for variability. If F0 or F counts > F table, then H0 is rejected, and H1 is accepted. If this is the case, it can be said that variations from regression models can explain variations in their independent variables and vice versa. In addition, looking at the probability value F is also one of the decisions of the F test. The variation of the regression model can explain the variation of the independent variable if the probability value (p-value) < α (1%, 5%, or 10%). The tested data has results such as table 4.4 above has a calculated F value or F-statistic: 17.34 with p value or Prob(F-statistic): 0.0002 < 0.05 then H1 is accepted or which means that simultaneously all free variable (x) have a significant effect on variable bound (y).

Coefficient of Determination (R^2)

The coefficient of determination (*Adjusted R2*) shows the independent variable in explaining the dependent variable; the greater the *R-squared,* the greater the influence of the independent variable in explaining the dependent variable. An *R-squared* value of 1 means there is a perfect match. The table above shows that in adjusted R2, it is 0.0, 476, or 4.76%. In this case, it means that 4.76 % of economic growth can be explained by *Foreign Direct Investment* variables and inflation (100% - 4.76%), while 95.24% it is explained by other variables not included in this study. Based on the value of the coefficient above, the regression equation is formed as follows:

Hypothesis Proof

1. FDI variables have an insignificant relationship to economic growth.
2. Variable Inflation has a significant negative relationship to economic growth. The data results show that the inflation variable has a significant positive influence of 0.434% on the economic growth variable.

Discussion

Foreign Direct Investment to Economic Growth

Foreign Direct Investment is a category of international investment that reflects the objective of obtaining profits by investors in one economy in a company living in another country. FDI can be seen as an alternative economic strategy adopted by companies that invest to set up factories or buy assets of existing foreign companies. It seeks to supplement or replace international trade by producing (and selling) goods and services in countries other than where the company was first established.

The results showed that FDI variables had no significant influence on economic growth. However, if supported by other factors, FDI has a significant influence on economic growth. FDI is a vehicle for adopting new technologies, and therefore, the training required to prepare the workforce to work with new technologies shows that FDI is concerned with human capital.

The influence of FDI, which shows an insignificant influence on economic growth, is supported by research conducted by Borensztein et al. (1998). The research of Borensztein et al. (1998), who empirically examined the relationship between FDI and economic growth in developing countries, showed that FDI allows for technology transfer and higher growth when the host country has a minimum stock of human resources. Their results also show that the main way FDI increases economic growth is by increasing technological advances, not increasing total capital accumulation in the host country. Thus, FDI contributes to economic growth only when adequate absorption capabilities of advanced technologies are available in the host economy.

The most powerful finding of the study is that the effect of FDI on economic growth depends on the level of human capital available in the host economy. FDI and human capital have a strong complementary effect on income growth rates. This result is in line with the assumption that the flow of advanced technology brought by FDI can increase the growth rate of the host economy simply by interacting with the country's absorption. At very low levels of human capital, the contribution of FDI to growth is close to nil and will increase rapidly at higher levels of human capital.

Research conducted by Alvarado et al. (2017) also showed the same results. In general, the results show no clear direction for the influence of FDI on economic growth. When regression includes the level of development countries achieve, FDI positively affects high-income countries. In contrast, it is insignificant in upper-middle-income countries, and in lower-middle-income countries, it is negative. In general, the results found in this study can be justified due to the region's low capacity for technology absorption due to low technological development and lack of human resources. In this case, absorption capacity plays an important role in determining whether the influence of FDI on output is positive or negative. An economy with low technological absorption capacity related to foreign capital inflows cannot generate productive relationships with local small and medium enterprises.

Research conducted by Carkovic & Levine (2002) also found that the exogenous component of FDI does not exert a strong and positive influence on economic growth. The econometric specifics that allow FDI to influence growth differently depend on national income, education level, domestic financial development, and openness to international trade. According to the United Nations (2001), countries that typically attract large amounts of FDI have good economic conditions, a certain high level of education, a high level of

macroeconomic and political stability, favorable growth prospects, and a favorable investment environment.

Inflation to Economic Growth

Inflation is the overall, continuous, and rapid increase in the prices of goods and services in an economy. This can impact people's purchasing power, especially those with fixed incomes. When the price of goods and services rises, the value of money owned will decrease because it is eroded by inflation.

The results show that the inflation rate positively impacts economic growth. Increased inflation means that the growth rate of output increases by stimulating capital accumulation, which will increase economic growth.

The inflation rate positively affects the economic growth of ASEAN countries. This means that an increase in the inflation rate in ASEAN countries will increase economic growth in the country concerned. This indicates that inflation and economic growth are interrelated. Increasing inflation must also be accompanied by other macroeconomic policies so that economic growth will increase *sustainably.*

ASEAN has had high and stable economic growth for a sustained period and has adopted consistent policies, leading to low and stable inflation rates. Macroeconomic policy is balanced and more consistent over time in ASEAN countries. Thus, ASEAN countries generally have lower inflation rates than other emerging markets (Jiranyakul & Opiela, 2010).

The effect of inflation shows a positive relationship with economic growth; this is contrary to the research of Ehigiamusoe et al. (2019), who conducted research in West African countries in 1980-2014 with the results of inflation variables having a negative relationship with GDP variables. The research results by Barro (2013) also showed the same results. Research examining performance in 100 countries also showed negative (inverse) results from the impact of inflation on economic growth. Thanh's (2015) research also stated a statistically significant negative relationship between inflation and growth for inflation rates above the 7.84% threshold, where inflation began to hamper economic growth in ASEAN-5 countries, especially in 1980-2011.

The Mundell-Tobin theory supports inflation and shows a positive relationship with economic growth, which states that inflation should have a positive relationship with the economy. Neo-classical growth explains the relationship between inflation and economic growth differently. Mundell (1963) has explained the effect of inflation on economic growth. According to him, inflation can permanently increase the growth rate of output by stimulating capital accumulation because, in response to inflation, households will hold less money balance and more in other assets. Tobin (1965) also supported Mundell's idea that inflation positively affects economic growth. The argument is that inflation causes individuals to convert money into other assets, increasing capital intensity and driving economic growth.

Conclusion

The economic growth rate of ASEAN countries fluctuates. There were two recessions in the period 2008-2020. There was a decline in 2009 caused by the aftermath of the global financial crisis (GFC) 2008. ASEAN countries' economic growth experienced a drastic decline again in 2020 due to the COVID-19 Recession. FDI inflows to ASEAN from 2009 to 2010 after the 2008 global financial crisis, especially fundamental changes in FDI locators that could

affect ASEAN's attractiveness as an investment destination and the region's ability to manage volatile global capital flows. FDI in 2020 saw a significant decline due to the impact of the COVID-19 pandemic. The development of the inflation rate of ASEAN countries in 2009-2020 fluctuated. In 2009, all ASEAN countries experienced a decrease in the rate of inflation (deflation), which had a major impact on economic growth.

The result shows that the FDI variable has an insignificant effect on economic growth variables, meaning that FDI variables are not too important in changes in economic growth; the inflation rate significantly impacts economic growth variables. That is, the inflation rate variable is important in changes in the economic growth rate. The inflation rate has a significant positive impact on economic growth variables. When the inflation variable increases, the economic growth variable will also increase. The general conclusion is that the main factor affecting economic growth is the inflation rate.

The results of this research can add literature studies to research related to economic growth and become a consideration for the government in economic growth and development. For policymakers, strong and effective macroeconomic policies to stabilize the economy and revive the private sector must be pursued to promote sustainable growth. Policymakers should pursue policies that ensure price stability to create an environment conducive to short- and long-term growth. Many important structural reforms in various sectors need to be implemented to enhance their economies' competitiveness further and promote the country to become more attractive to foreign investors. High-income countries in the region can encourage FDI inflows to boost and stabilize economic growth. Lower-middle-income countries in the region should promote fiscal instruments that allow FDI to be targeted to more specialized sectors where they generate productive relationships with local productive structures and technology transfer rather than focusing on capital to exploit natural resources.

Future research on FDI and inflation on economic growth should utilize more frequency of data and cover longer data periods to produce more conclusive empirical evidence. Researchers should also consider macroeconomic factors, such as exchange rates, fiscal deficits, and money supply, relevant to economic growth to provide more strategic economic policies to increase the economic growth of ASEAN countries.

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