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THE EFFECT OF FOREIGN DIRECT INVESTMENT, INFLATION, AND LABOR FORCE PARTICIPATION RATE ON NATIONAL INCOME OF ASEAN COUNTRIES IN 2010-2020

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ABSTRACT

Capital availability is necessary to support economic growth in order to reach its potential. Sources of capital supply might come from various sources owned by the state or foreigners. One of the foreign capital supplies comes from foreign direct investment (FDI). Recently, FDI is known to be one of the factors driving the national income of various countries in the world, including ASEAN countries. This study examines the influence of FDI, inflation, and the labor force participation rate (TPAK) on GDP in ASEAN countries. This study used secondary data in the form of panel data from eleven ASEAN countries for the period 2010 to 2020. The analytical method involved using the static panel analysis with the best model in the form of a fixed effect model (FEM) equipped with descriptive statistical analysis for each variable in this study. The results confirmed that FDI has a positive and significant effect on GDP. Meanwhile, inflation and TPAK has a negative and significant impact on nominal GDP in ASEAN countries over the time span of observation. For this reason, the governments of each country need to formulate strategies and policies to encourage investment improvement and economic stability. This is important to support each country's economy to achieve its best potential.

KEYWORDS *Economic growth; Foreign Direct Investment (FDI); GDP nominal; Inflation; Labor Force Participation Rate (TPAK)*

INTRODUCTION

The main role of a country is to bring prosperity and welfare to its people. To achieve this, a country's economy is expected to develop over time. In macroeconomics, an economy is categorized as developing if the national income of a country increases and grows from one period to another.

This increase is very important to ensure that the state becomes an institution or institution that is able to bring prosperity to its people. In calculating national income, many countries use the *gross* domestic product (GDP) income approach.

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In driving national income, we understand that the factors of production owned by a country, be it natural resources, human resources, and capital, are the main factors in driving the economy. the more factors of production owned by a country, the greater the potential for a country to increase its gross domestic product.

However, sometimes the capital resources owned by the government and the domestic community are not able to fund all the necessary financing needs. This condition usually occurs due to the condition of domestic savings which is still low so that it is not possible to make adequate investments. To cover this gap, additional funds are needed, which generally come from abroad in the form of foreign grants, foreign debt, or foreign investment. These conditions generally occur in developing countries with labor-intensive industrial models. They need a lot of additional funding injections to ensure that their industries are able to develop optimally.

FDI is considered a component of growth acceleration that has received great attention in developed countries and even in developing and less developed countries over the past few years (Iqbal et al., 2014). On the other hand, it is also an opportunity for countries with excess capital to benefit by investing in countries that need additional capital. Shkodra *et al.* (2022) stated that there is a positive and significant relationship between FDI and GDP growth in Southeastern Europe. Although in Bosnia and Herzegovina and Kosovo the opposite result was found. In addition to production factors, national income (GDP) is also very likely to be affected by inflation. inflation is considered as one of the important factors that affect the economic growth of a country.

The Central Bureau of Statistics (BPS) defines GDP as the sum of added value generated by business units in a particular country or region, or the sum of the value of final goods and services produced by all economic actors. GDP at current prices describes the value added of goods and services calculated using prices prevailing each year. GDP at constant prices represents the value added of goods and services calculated using prices in a particular year as the base year. In encouraging GDP, developing countries still rely heavily on foreign *direct* investment (FDI) and their human resources. The same applies to inflation in developing countries. Inflation in developing countries has a tendency to positively affect the unemployment rate.

Schneider and Frey (1985) found a positive and significant relationship between FDI and growth. FDI is one of the main driving forces to stimulate growth as it is an important vehicle for technology transfer that contributes to growth more than domestic investment (Chaudhury et al., 2020; Gokmen, 2021; Hong, 2014; Krasniqi, 2018; Nistor, 2014; Oyegoke & Aras, 2021; Pegkas, 2015; Silajdzic & Mehic, 2015). The positive impact of FDI on economic growth has been found to be through increased human capital development; quality of economic, political and social environment; penetration and development of financial systems. Institutional quality is also likely to affect absorptive capacity, thereby mediating the impact of FDI on economic growth.

In contrast, Nigh (1986) and Balasubramanyam *et al.* (1996) were among the studies that reported no significant effect of FDI on economic growth. Hanafy *et al.* (2018) found that the effect of FDI on economic growth is independent of the minimum threshold level of human capital quality. Bornschier, Chase-Dunn and

Rubinson (1978) studied the effect of investment and foreign aid on economic growth using annual data from 76 least developed countries for the period 1960-1975 with the OLS method. The results show that both have a cumulative effect of reducing the relative rate of economic growth. The effect of FDI and foreign aid in the long run will be greater than the short run effect. Researchers still debate whether the interpretation of the direct effect of FDI on economic growth is inconclusive, while the significance of host country absorptive capacity is generally emphasized (Bashir, 1999).

ASEAN is a regional cooperation organization whose members are mostly developing countries with high population growth rates that still have limited capital to manage their potential. ASEAN has abundant human resource potential. But on the other hand, its members face capital problems and fluctuating inflation.

GDP in ASEAN Countries 2010-2020 (Million USD)
Source: World Bank, 2022 (processed)

The movement of national income figures of ASEAN member countries tends to fluctuate in the last 10 years between 2010-2019. Significant changes occurred in 2019 to 2020. The changes that occurred in all ASEAN countries occurred due to economic turmoil caused by the Covid-19 pandemic. Figure 1 shows that almost all countries in ASEAN experienced a decrease in GDP due to the Covid-19 pandemic in 2020.

Furthermore, the development of foreign direct investment (FDI) in ASEAN member countries based on data tends to grow and continue to improve. Only in 2019-2021 there was a significant change in the amount of incoming FDI due to the Covid-19 pandemic. This is as shown in Figure 2 below.

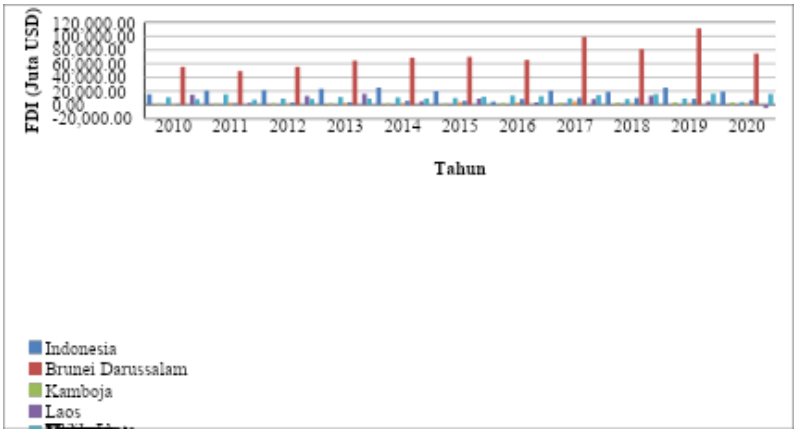

Figure 2. *Foreign Direct Investment* in ASEAN Countries 2010-2020 (Million USD)

Source: World Bank, 2022 (processed)

Then the number of workers also tends to fluctuate from 2010-2020. this condition shows that human resources in ASEAN countries are abundant even though the unemployment rate in some ASEAN member countries is also still high. the following is data on labor participation in 11 ASEAN member countries. Kargi (2014) in his research states that there is a linear relationship between GDP and the number of labor force in Turkey.

Figure 3: Labor Force Participation Rate in ASEAN Countries, 2010-2020 (Percent)

Source: World Bank, 2022 (processed)

Furthermore, data on inflation rates in ASEAN which tend to fluctuate from 2010-2020. proven based on the following graph.

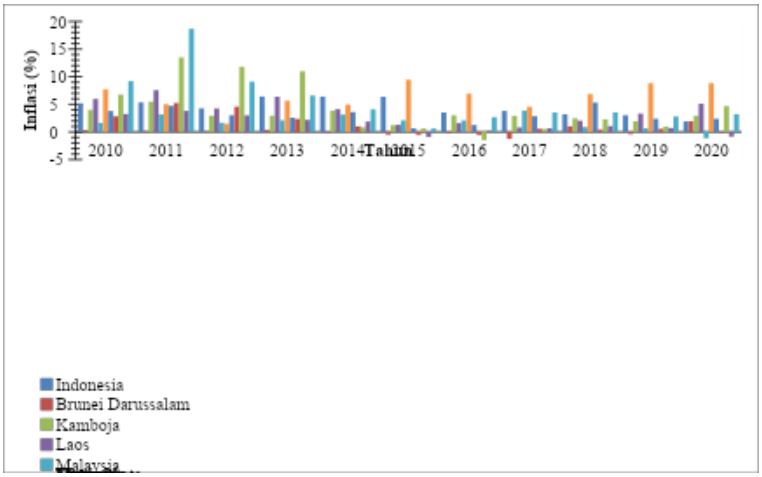

Figure 4. Inflation Rate in ASEAN Countries in 2010-2020 (Percent)
Source: World Bank, 2022 (processed)

Many literatures have examined and analyzed the impact of foreign direct investment on economic growth in the context of countries. Some of them are studies conducted by Hamoudi and Aimer (1999) in Libya in 2000-2015 found that foreign direct investment significantly affects economic growth. Many literatures provide views on the effect of FDI on a country's economic growth. The empirical evidence generated from the studies that have been conducted so far is rather mixed, reporting a positive, neutral, or even negative relationship of FDI with growth. Iqbal *et al.* (2013) in their study found that there is a positive relationship between FDI and GDP in Pakistan in the period 1983 - 2012, although Pakistan has not had enough FDI flows over the last few decades. In line with these findings, Farkas (2012) also concluded that FDI has a positive relationship with GDP and the extent of the positive effect depends on the absorption capacity of the host country, the level of human capital and financial market development. Hameed and Bashir (1999) conducted a study in MENA countries and found that FDI has an effect on GDP, but the impact varies by region and may change over time. With the different opinions generated by previous studies, this study will examine "How FDI, inflation, and labor force participation rate (TPAK) affect GDP in ASEAN countries in 2010-2020".

RESEARCH METHOD

The method used in this research is a quantitative method using secondary data obtained from the World Bank. The data that will be used in the analysis is panel data that combines *cross section* and *time series* data from eleven countries in ASEAN in 2010-2020. Data analysis was conducted using Eviews 10. GDP variable is used as the dependent variable, while FDI, inflation, and labor force participation rate are used as independent variables.

The data analysis method used in this study is the static panel data regression method. Static panel analysis was chosen for several reasons, namely: (1) it is able to identify and control the problem of *heterogeneity* (*unobserved individual*

heterogeneity) of variables that are not contained in the model; (2) it provides complete information, efficient, high variability, more degrees of freedom, and reduced collinearity between variables; (3) it identifies and calculates results that are not identified by *time series* or *cross section*; and (4) it is able to examine more deeply about dynamic problems that are more complex than *time series* or *cross section* (Baltagi, 2005).

The basic form of regression used in this study analyzes the effect of FDI, inflation, and labor force participation on GDP as follows:

$$GDP=a+b1FDI+b2Inflation+b3TPAK \qquad (2)$$

The first test conducted by researchers is to analyze using descriptive statistics and multicollinearity tests. Descriptive analysis is used to summarize, describe, and also draw conclusions as quantitative information that has been collected (Kaur et al., 2018; Lee, 2009) while the multicollinearity test is used to determine whether or not there is a perfect correlation between variables. If the correlation value between variables shows a number greater than 0.80, then these results indicate the presence of multicollinearity symptoms (Ajija et al., 2011). Furthermore, researchers will conduct tests to determine the best model to be used in the study. In determining the best model, researchers used the Chow test and the Hausman test in determining the best model between the *common effect, random effect,* and *fixed effect models* used in regression.

RESULT AND DISCUSSION

Descriptive Statistical Analysis

Based on descriptive statistical analysis as shown in Table 1, it can be seen that the nominal GDP value of ASEAN countries in the 2010-2020 time period has an average value of 243,257.99 million USD with the highest and lowest GDP values of 1,119,099.87 million USD (Indonesia 2019) and 881.83 million USD (Timor Leste 2010), respectively. The inequality of nominal GDP values among ASEAN countries is thought to be due to differences in economic capacity and the lack of cointegration in the economies of each ASEAN country (Subagja and Mubarok, 2015). In general, the trend of nominal GDP acquisition in eleven ASEAN countries in the last eleven years tends to be stagnant. Significant increases in nominal GDP are only seen in a few countries, namely Indonesia, the Philippines, Thailand and Vietnam. Timor Leste and Indonesia are the countries with the lowest and highest nominal GDP values, respectively, with an average nominal GDP from 2010-2020 of USD 1,483.82 million and USD 945,243.89 million, respectively.

Table 1 also shows that the value of FDI in ASEAN countries has an average of 12,112.62 million USD. The highest FDI *net inflows* were owned by Singapore in 2019 amounting to 111,479.51 USD. Meanwhile, the lowest FDI net inflows reached -4,058.77 million USD *(net outflows)* achieved by Thailand in 2020. The negative minimum value is thought to occur because in 2020. The negative *net inflows* value can occur because Thailand achieved a sharply corrected economic

performance in the first quarter of 2020, until it grew negatively to touch the lowest record since the *global financial crisis* (Bank Indonesia 2020). In general, the eleven ASEAN countries experienced a fluctuating trend in FDI receipts where there were five countries with an increasing trend, four countries with a stagnant trend, and two countries with a decreasing trend.

Furthermore, inflation in the eleven ASEAN countries generally shows a declining trend in the last eleven years. An increasing trend in inflation is only found in two of the eleven countries observed, namely Brunei Darussalam and Myanmar. The highest inflation reached 18.68 percent and was found in Vietnam in 2011. Meanwhile, the lowest inflation of -1.47 percent occurred in Timor Leste in 2016. However, in general, over the past eleven years, Brunei Darussalam and Myanmar were found to be the ASEAN countries with the lowest and highest inflation rates, respectively, with average inflation rates of 0.12 percent and 6.39 percent.

The labor force participation rate (LFPR) of the eleven ASEAN countries over the past eleven years has shown a stagnant trend with an average of 77.57 percent. The ASEAN countries with the highest and lowest TPAK are Thailand (70.27 percent) and Cambodia (87.26 percent), respectively. Indonesia's TPAK ranked second with an average over the past eleven years of 82.35 percent. The lowest TPAK achievement occurred in Thailand in 2019 with a TPAK value of 66.96 percent. Meanwhile, the highest TPAK achievement occurred in Cambodia in 2011 with a TPAK value of 89.40 percent.

Table 1. Descriptive Statistics of the Variables Used in the Study

	Nominal GDP (Million USD)	FDI (Million USD)	Inflation (%)	TPAK (%)
Mean	243.257,99	12.112,62	3,28	77,57
Median	233.449,97	4.058,77	2,91	78,02
Maximum	1.119.099,87	111.479,51	18,68	89,40
Minimum	881.83	(4.058,77)	-1,47	66,96
Std. Dev.	272.884,77	20.857,16	3,18	5,04
Skewness	1,46	2,78	1,58	0,07
Kurtosis	4,79	10,65	7,21	2,69
Observations	121	121	121	121

Source: Results of research data processing (2022)

Best Model Selection

The first step in panel data analysis is to select the best model from three alternative models that may be used in static panel analysis. The best model selection is done by Chow and Hausman tests. The Chow test results in Table 2 show a probability of 0.000 which means the test results are significant. Based on the Chow test results, it appears that the model that better explains the effect of FDI on economic growth in ASEAN is the *fixed effect model* (FEM).

Table 2. Chow and Hausman Test Results

Test	Test Hypothesis	Test Results	Conclusion
Chow	H0: *Pooled Least Squares* (PLS) H1: *Fixed Effect Model* (FEM)	Prob. Chi-Sq. 0.0000	Significant, reject H0, FEM is better than PLS
Hausman	H0: *Fixed Effect Model* (FEM) H1: *Random Effect Model* (REM)	Prob. Chi-Sq. 0.0000	Not significant, do not reject H0, FEM is better than REM

Source: Results of research data processing (2022)

Furthermore, in the Hausman test, it can be seen that between the *fixed effect* and *random effect of* the existing alternative models, it is proven that the FEM is a better model. The Hausman test results show a probability of 0.0000 which means that the test is not significant, so it is concluded that FEM is better than REM. Thus, this study will use FEM to explain the effect of FDI, inflation, and TPAK on GDP in ASEAN.

Multicollinearity Test

Multicollinearity testing is conducted to ascertain whether there is an exact relationship between the independent variables used to explain the dependent variable in the study. Multicollinearity testing is important to do because if it is found that there is an exact relationship between the independent variables in the model, it will interfere with the ability of the independent variables to explain their effect on the dependent variable, causing *spurious regression* (Juanda, 2009).

Table 3. Correlation between Variables in the Study

	GDP	FDI	Inflation	TPAK
GDP	1	0,3423	-0,0497	0.0850
FDI	0.3423	1	-0.1731	0.1328
Inflation	-0.0498	-0.1731	1	0.2215
TPAK	0.0850	0.1328	0.2215	1

Source: Results of research data processing (2022)

Based on Table 3, it is found that there is no multicollinearity problem in the model because the correlation between independent variables in the model is low (weak). This is indicated by the overall correlation value which is in the range of 0.04 to 0.34 (less than 0.5). Thus, it can be concluded that the model is free from multicollinearity problems.

Panel Data Regression

Based on the selection of the best model that has been done, it is concluded that the best model that is appropriate to explain the effect of FDI, inflation, and TPAK on GDP in ASEAN countries in the period 2010-2020 is FEM. The model estimation results are shown in Table 4 below.

Table 4. Model Estimation Results

Dependent Variable: Log(GDP)				
Independent Variable	**Coefficient**	**Std. Error**	**t-statistic**	**Prob.**
Log(FDI)	0,175006	0,027345	6.399918	0,0000***
Inflation	-0,037636	0,005467	-6,884302	0,0000***
TPAK	-0,028028	0,008731	-3,210113	0,0018***
Constant (c)	23,58006	0,946450	24,91422	0,0000***
R-squared				0,994377
Prob. (F-stat)				0,000000

Notes: *** significant at 1% error rate
Source: Results of research data processing (2022)

The estimation results shown in Table 4 can be written into equation form as follows.

$$logGDP=23.58+0.18log\ FDI\ -0.04\ Inflation-0.03\ TPAK$$

The estimation results in Table 4 show that the three independent variables used in the model are significant at the error rate (α) of 1 percent and have an influence on the nominal GDP of ASEAN countries in 2010-2020. The positive coefficient generated by the log variable (FDI) indicates that FDI has a positive influence on the nominal GDP of ASEAN countries, while the negative coefficient on the inflation and TPAK variables shows the opposite effect. The *R-squared* value of 0.99 indicates that 99 percent of the diversity of the dependent variable (log (GDP)) can be explained by the three independent variables used in the model.

Discussion

Effect of FDI on GDP

Table 4 shows that the FDI variable has a positive influence on nominal GDP. The estimated coefficient of 0.18 means that when there is an increase in FDI by 1 percent, the nominal GDP of ASEAN countries will also increase by 0.18 percent, *ceteris paribus*. The positive effect of FDI on GDP is consistent with the findings of Schneider and Frey (1985). FDI becomes one of the main driving forces to stimulate growth because it is able to encourage technology transfer that contributes to the increase of national income more than domestic investment (Barro and Sala-i-Martin, 1995; Williams and Williams, 1998; Borensztein, De Gregorio and Lee, 1998; Hong, 2014; Nistor, 2014; Silajdzic and Mehic, 2015; Pegkas, 2015; Nixha, 2017; Krasniqi, 2018; Saswata and Chaudhury, 2020; Chaudhury, 2020; Oyegoke, 2021; Gokmen, 2021).

The positive effect of FDI on national income is also due to FDI being able to encourage increased human resource development (Borenstein *et al.*, 1998; Xu, 2000; Li and Liu, 2005); the quality of the economic, political and social environment (Choe, 2003); as well as the penetration and development of the financial system (Hermes and Lensink, 2003; Durham, 2004; Alfaro *et al.*, 2006). FDI is able to provide economic benefits in terms of accelerating technology

adoption, improving labor skills, and transferring skills to the host country (Iqbal *et al.*, 2013).

Effect of Inflation on GDP

Based on Table 4, it is known that the inflation variable has a negative and significant effect on the nominal GDP of ASEAN countries in 2010-2020 with an estimated coefficient of -0.038. This can be interpreted that if there is an increase in inflation by 1 percent, *the* nominal GDP of ASEAN countries will decrease by 0.038 percent, *ceteris paribus.* The negative effect of inflation on nominal GDP in ASEAN countries is expected because high inflation can destroy the indexation system which increases relative prices and marginal costs. Rising relative prices can jeopardize growth in the long run (Khan & Senhadji, 2000; Shin *et al.*, 2013; Hoang, 2020).

Although most ASEAN countries are experiencing a downward trend in inflation, their respective inflation rates tend to fluctuate and exceed their targets (e.g. Indonesia's inflation target is 3±1 percent, but the eleven-year average is 4.49 percent), leading to greater uncertainty in the economy. Hasanov and Omay (2010) found that inflation causes uncertainty about the future inflation rate itself and the growth rate of output. This uncertainty will ultimately harm real economic activity, leading to a decline in national income.

Effect of TPAK on GDP

The estimation results in Table 4 show that the TPA variable is proven to have a negative and significant effect on nominal GDP in ASEAN countries in the observation period 2010-2020. The estimated coefficient of -0.028 means that every 1 percent increase in the labor force participation rate (TPAK) will result in a decrease in nominal GDP of ASEAN countries in the period 2010-2020 by 0.028 percent. The negative effect of an increase in TPAK on nominal GDP is expected because the increase in TPAK is not accompanied by an increase in the performance of workers. This makes performance in the labor market weak, with slow job growth and a highly skilled workforce that is underutilized (Allen, 2016). Kargi (2014) describes the labor force participation rate as a paradox, which coalesces with women's low participation in the labor force and low employment in the agricultural sector as a whole. In other words, Kargi (2014) points out that increasing quantity does not necessarily improve quality. This is in line with Haque *et al.* (2019) who found that increases in total labor force participation and female labor force participation have a positive relationship with Bangladesh's national income in the short run, while the effect becomes negative in the long run.

The negative effect of TPAK on nominal GDP gain is in line with the Solow Growth Theory which states that an increase in population will result in a decrease in capital per labor. This will then cause output per labor to also fall, causing national output/income to fall. The decline in output per effective labor can occur especially if the increase in population that increases TPAK is not accompanied by an increase in the availability of capital that encourages the growth of technology adoption.

CONCLUSION

Based on the previous explanation, this study concludes that net FDI inflows have a positive and significant influence on nominal GDP gains for ASEAN countries in the 2010-2020 period. Therefore, it is important for ASEAN countries to maintain economic, social, and political stability in order to attract more investors in the midst of open global economic flows. One of the main indicators that investors consider in investing in a country is the Ease of Doing Business (EoDB) rating, which reflects the conduciveness of the investment climate.

Meanwhile, inflation is shown to have a negative and significant effect on nominal GDP, in line with previous research which shows that the declining inflation trend in most ASEAN countries in the last eleven years can be a stimulus for economic growth. However, inflation fluctuations that are not in line with the targets set by each country may signal economic instability. Therefore, maintaining real exchange rate stability is an important step to control inflation and reduce economic uncertainty.

In addition, this study also found that TPAK (Labor Force Participation Rate) has a negative and significant effect on nominal GDP, which indicates that the increase in the number of workers due to population growth must be balanced with an increase in human resource capacity and worker quality. The government of each country also needs to ensure a balance between the growth of the labor force and the availability of capital, so that an increase in TPAK does not reduce national productivity due to a decrease in output per worker.

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