Jurnal Kebijakan Ekonomi dan Keuangan

Determinants of labor absorption in ASEAN

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Abstract

Purpose – *This study aims to analyze the determinants of labor absorption in ASEAN countries.*

Methods – *This study uses panel data analysis in 10 ASEAN countries for the period 2000-2022.*

Findings – *This study concludes that GDP has a positive effect on labor absorption, inflation does not affect labor absorption, wages have a positive effect on labor absorption, and Foreign Direct Investment (FDI) shows a positive effect on labor absorption in ASEAN countries.*

Implication – *This study implies that there must be a systematic policy that is oriented towards creating an integrative system in increasing labor absorption in ASEAN countries with an orientation towards policies oriented towards economic growth supported by regulations in determining wages and regulations that are integrated with foreign investment.*

Originality – *This study contributes to the analysis of labor absorption in ASEAN using a panel data approach.*

Abstrak

Tujuan – Penelitian ini bertujuan untuk menganalisis determinant penyerapan tenaga kerja pada negara-negara di ASEAN.

Metode – Penelitian ini menggunakan analisis data panel pada 10 negara ASEAN untuk periode 2000 -2022.

Temuan – Penelitian ini menyimpulkan bahwa GDP memiliki efek positif terhadap penyerapan tenaga kerja, Inflasi tidak berpengaruh terhadap penyerapan tenaga kerja, upah memiliki pengaruh positif terhadap penyerapan tenaga kerja, dan Foreign Direct Investment (FDI) menunjukkan pengaruh positif terhadap penyerapan tenaga kerja pada negara di ASEAN.

Implikasi – Implikasi dari penelitian ini adalah harus adanya kebijakan yang sistematis dan berorientasi kepada terciptanya sistem yang integrative dalam meningkatkan penyerapan tenaga kerja pada negara ASEAN dengan orientasi pada kebijakan terorientasi pada pertumbuhan ekonomi yang didukung dengan regulasi dalam menentukan upah dan regulasi yang terintegrasi dengan investasi asing.

Orisinalitas – Penelitian ini berkontribusi terhadap analisis penyerapan tenaga kerja di ASEAN menggunakan pendekatan data panel.

Introduction

The determinants of labor absorption are complex and multifaceted, influenced by a range of economic, social, and institutional factors. Economic factors, such as economic growth,

investment, and industrialization, play a crucial role in creating job opportunities and stimulating labor demand. Social factors, such as demographic trends, education levels, and skills development, can also influence labor absorption by shaping the supply and quality of the labor force. Institutional factors, including labor market regulations, social protection systems, and governance structures, can further shape the labor market environment and affect labor absorption outcomes. Labor absorption is a condition of filled employment reflecting the number of people who have jobs, where labor absorption is spread across various sectors due to the demand for labor (Kuncoro, 2012)

The Association of Southeast Asian Nations (ASEAN) has emerged as a dynamic economic region, characterized by rapid growth and development. However, the area also faces significant challenges, including unemployment and underemployment, particularly among young people. Understanding the determinants of labor absorption in ASEAN member states is crucial for policymakers promoting inclusive economic growth and reducing poverty. Empirical research on the determinants of labor absorption in ASEAN has yielded mixed results, reflecting the diverse economic conditions and policy environments across member states. Some studies have found a positive relationship between economic growth and job creation, while others have highlighted the importance of structural transformation and industrial diversification. The role of education and skills development in promoting labor absorption has also been a subject of considerable research, with evidence suggesting that investments in human capital can enhance employment opportunities and productivity.

The condition of labor absorption is indicated by changes in economic conditions that have implications for the demand for labor in each country which is also determined by various other conditions such as investment, inflation and wage values in each country. Various forms of analysis and research are conducted to determine the relationship between labor conditions and various factors that influence them such as economic conditions, investments made by the state or private sector, the level of income owned by the community and inflation that occurs in a region. Various analyses develop from various sides, not only the main issues discussed but also the development of the analysis methodology used. A study by (Hui & Hashmi, 2007) in Singapore analyzed the influence of foreign workers on economic growth and concluded that there was an influence on labor productivity, an increase in the total birth rate (TFR) and the participation of elderly workers in achieving economic growth figures.

Labor flows in Asian countries are an important component of growth and wealth creation. The general trend of international labor mobility shows that labor flows tend to focus regionally. In Asia, there are some clear trends that countries such as China, India, the Philippines, and Indonesia tend to experience high labor outflows and thus export more of their labor to the region. (Thangavelu, 2012). (Mirza et al., 2014) who conducted a study of the effects of economic growth in China on developing countries, it showed that there was a slight decline in real wages for unskilled workers and an increase in real wages for skilled workers. For all categories of skilled workers, there was an increase in real wages driven mainly by the shift in production to services and high-skilled labour-intensive categories, which increased the skill premium.

Study by (Sulaiman et al., 2024) on economic growth and female labor force participation in ASEAN shows that trade openness has a negative impact on economic growth. However, female labor force participation, female longevity, female education, domestic investment, and foreign direct investment have positive long-term effects on economic growth. This study also highlights that the impact of female labor force participation on growth varies depending on female longevity. Another finding is that female labor force participation has a positive impact on economic growth but changes negatively when countries show high female life expectancy. Another study conducted by (Hondroyiannis & Papapetrou, 2001) in Greece examined demographic changes, labor force effort and economic growth using time series data with the Vector Error Correction Models (VECM) method which concluded that increasing old-age dependency ratio and decreasing fertility rate will worsen the overall economic performance.

Study conducted by (Suwito, 2024) found that in advanced industrial countries in the ASEAN 4 region, economic growth causes an increase in labor absorption. Likewise, (Utomo,

2022) found a positive influence between Gross Regional Domestic Product on labor absorption in Java. Research conducted by (Nasir et al., 2023) found that economic growth had a negative impact on labor absorption in the Special Region of Yogyakarta Province. Meanwhile, (Nurlaila Safitri & Suhartono, 2024) in his research showed that economic growth did not affect labor absorption in East Java Province.

A study conducted by (Ding et al., 2020) related to the synergy of the development of three sectors, namely the primary, secondary, and tertiary sectors on labor elasticity, the results show that the absorption capacity of the three sectors provides direction for the government and related departments to formulate industrial development policies. A study conducted by (Nguyen, 2021) in Vietnam related to the influence of Labor on Foreign Investment shows that labor has a positive effect on FDI in Vietnam. Another study by (Murakami et al., 2021) in Tajikistan on remittances, human capital, and labor supply concluded that sending migrants reduces the labor supply of lagging members and that receiving remittances reduces it respectively.

The study by (Hafiludin et al., 2024) on the impact of wages, investment, economic growth and internet users on labor absorption in all countries in the ASEAN region in 2014-2021. The results of the analysis show that investment, economic growth and internet users have a positive and significant effect on labor absorption in ASEAN in 2014-2021, while wages have a negative and significant impact on labor absorption in ASEAN in 2014-2021. Research in Indonesia conducted by (Siatan & Zuliansyah, 2023) for the case in Lampung Province related to the effect of economic growth on labor absorption concluded that GDP is related to the number of the working population. The number of residents has a positive relationship with the number of working populations. The number of residents who graduated from high school has a positive relationship with the number of working populations. The regional minimum wage has a positive impact on the number of working populations.

Given the economic conditions and the complex nature of the determinants labor absorption and competition between regions in the ASEAN region, this research aims to contribute to a more nuanced understanding of this topic. By examining the specific factors that influence labor absorption outcomes in ASEAN member states, this study provides valuable insights for policymakers and researchers seeking to promote inclusive economic growth, inflation, wage, and foreign direct investment.

Research Methods

This study analyzes the conditions of labor absorption that occurred in 10 countries in the Association of Southeast Asian Nations (ASEAN) region for the period 2000 - 2022. Data and explanations of the variables used in this study are shown in Table 1.

Table 1. Definition of Variable

Variable	Symbol	Unit	Definition	Sources
Variable Dependent				
Total Labor Force	LABOR	People	People ages 15 and older who supply labor for producing goods and services during a specified period.	WDI World Bank
Variable Independent				
Gross Domestic Product	GDP	U.S. dollars	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2015 prices, expressed in	WDI World Bank
Inflation	INF	Percent	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.	WDI World Bank
Wage	WAGE	Percent	Wage and salaried workers (employees) are those workers who hold the type of jobs defined as "paid employment jobs.	WDI World Bank
Foreign Direct Investment	FDI	U.S. dollars	Foreign direct investment refers to direct investment equity flows in the reporting economy.	WDI World Bank

The research model used in this study refers to the panel data model between countries in ASEAN in the period 2000 - 2022. This research model is shown in the following equation:

$$LABOR_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 WAGE_{it} + \beta_4 FDI_{it} + \varepsilon_{it} \tag{1}$$

Based on the econometric model in equation 1, the process carried out in this study is to estimate panel data to carry out the estimation process carried out by estimating the model that has been formed with three approaches, namely Common Effect (CE), Random Effect (RE) and Fixed Effect (FE). The model selection process is carried out to obtain the best model that will be a reference for the interpretation of the regression results. This process is carried out through 3 main tests, namely the Chow Test, the Lagrange Multiplier (LM) Test, and the Hausman Test.

Results and Discussion

The initial condition results of the data to analyze labor absorption in ASEAN are shown in Table 2, which provides an overview related to the data conditions for each variable. Based on the descriptive statistical results, it is shown that all variables in this study have a total of 230 observations with the condition that the average for the Labor variable is 29,529,113 with minimum and maximum values of 151,139 and $1.38E + 08$, respectively. The GDP value shows that the average is $2.13E + 11$, and the minimum and maximum values are $1.12E + 12$ and $4.98E + 09$, respectively. The value for the Inflation variable shows that the average is 4.642031, and the minimum and maximum values are 3.028775 and 57.07451, respectively. The Wage value shows that the average is 50.81010, and the minimum and maximum values are 46.78837 and 93.82960, respectively. The FDI value shows that the average is $1.02E+10$, and the minimum and maximum values are $3.22E+09$ and $1.49E+11$ respectively.

Tabel 2. Descriptive Statistic

	LABOR	GDP	INFLATION	WAGE	FDI
Mean	29529113	2.13E+11	4.642031	50.81010	1.02E+10
Median	19716408	1.69E+11	3.028775	46.78837	3.22E+09
Maximum	1.38E+08	1.12E+12	57.07451	93.82960	1.49E+11
Minimum	151139.0	4.98E+09	-2.314972	12.58602	-4.95E+09
Std. Dev.	34498813	2.28E+11	6.562327	25.00798	2.07E+10
Skewness	1.673528	1.660877	3.950984	0.321097	3.995970
Kurtosis	5.199487	6.266857	24.84709	1.849166	21.44629
Observations	230	230	230	230	230

The results of the further analysis were carried out by estimating based on the main model that had been determined. The output results of the estimation for all data in the panel data models are shown in Table 3. The estimation results for all models include the Common Effect (CE), Random Effect (RE), and Fixed Effect (FE) models. These results can be used as an initial comparison that shows the possible conditions of the variables when estimated with several panel models. Overall, the results of the CE, RE, and FE models show results that are not much different where in the CE results all determinants entered in the model, namely GDP, Inflation, Wage, and FDI have an influence on labor absorption in ASEAN. Meanwhile, the results for the estimation using RE and FE show that of all the determinant variables entered, only the Inflation variable has no effect on labor absorption in ASEAN. These results cannot be interpreted in detail because the process that must be gone through in panel data analysis is the model selection test shown in table 4 to select the best model.

Before interpreting the estimation results in more detail, in the panel data procedure, a model selection test needs to be carried out as a procedure to determine the best model as the basis for the analysis of the results. The model selection test process includes the Chow test, Lagrange Multiplier (LM) Test, and Hausman Test, the detailed output results of which are shown in Table 4. Based on the output results in Table 4, it shows the selection process for the panel data model which is an important part of selecting a model. The results of the first test, namely the Chow Test, show that the Cross-section F value is 1770.312365 with a Prob. of 0.0000, thus choosing the Fixed Effect model in the test. The next test is carried out by conducting the Lagrange Multiplier (LM)

Test with Breusch and Pagan, obtaining a Chibar value of 1125.63 with a Prob. of 0.000, thus choosing the Random Effect model in this test. The last step is to conduct a test with the Hausman Test which shows that the Chi. Sq. Stat. of 34.872402 with a Prob value of 0.0000, thus choosing the Fixed Effect model as the best model for this study.

Table 3. Result of All Panel Data Models

Variable	Common Effect		Random Effect		Fixed Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	16059548	0.0000	15097605	0.0005	14738710	0.0000
GDP	0.000144	0.0000	5.02E-05	0.0000	4.95E-05	0.0000
INF	436177.7	0.0000	28914.48	0.1167	28509.62	0.1220
WAGE	-298136.5	0.0024	85538.37	0.0000	95222.21	0.0000
FDI	-0.000393	0.0000	-7.38E-05	0.0000	-7.20E-05	0.0000
R-squared	0.864898		0.890230		0.998193	
Adj. R-squared	0.862496		0.888278		0.998084	
F-statistic	360.1007		456.1830		9178.009	
Prob(F-statistic)	0.000000		0.000000		0.000000	

Table 4. Result of Specification Test

Chow Test			
Effects Test	Statistic	d.f.	Prob
Cross-section F	1770.312365	(9,216)	0.0000
Cross-section Chi-square	992.294362	9	0.0000
LM Test			
	Chibar2(01)		Prob > chibar2
Breusch and Pagan	1125.63		0.0000
Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	34.872402	4	0.0000

Based on the results of the model selection test, it is concluded that the best model in this study is the fixed effect model. The results of the fixed effect model estimation are shown in Table 5 which is a reference for analyzing this study.

Table 5. Hasil Estimasi Model Fixed Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14738710	956893.9	15.40266	0.0000
GDP	4.95E-05	1.40E-06	35.36422	0.0000
INFLATION	28509.62	18361.57	1.552679	0.1220
WAGE	95222.21	20423.41	4.662404	0.0000
FDI	-7.20E-05	8.78E-06	-8.201993	0.0000
R-squared	0.998193		F-statistic	9178.009
Adjusted R-squared	0.998084		Prob(F-statistic)	0.000000

The best estimation results based on the selection of panel data models are shown in Table 4, concluding that the Fixed Effect model is the best model as the main result of this study to be interpreted as a model that analyzes labor absorption in ASEAN. The detailed output results for the fixed effect estimation results are shown in Table 5, where these results represent the main analysis of the results of this study. These results generally show that labor absorption in ASEAN is influenced by economic growth factors, income levels, and investment which show significant results. This is certainly an important part of understanding the condition of labor absorption in ASEAN because indications of internal and external effects are part of increasing this. Specifically, the effects of each variable show relationships that tend to vary.

The first result is shown for the GDP variable on labour absorption where the coefficient value is 4.95E-05 with a probability of 0.0000 so that it can be concluded that a positive and

significant effect is obtained. These results indicate that GDP has a positive effect on labor absorption in countries in Southeast Asia. Stable economic conditions and continuous improvement will have an impact on an increasingly better economic climate so increased production from various sectors will have an impact on the increasing demand for labor to be able to increase production capacity from various sectors that support economic growth. The results of the positive effect of GDP on labor absorption are in line with research conducted by (Siatan & Zuliansyah, 2023a) in Indonesia which shows that the higher the economic growth of a country will increase the increase in industrial production capacity which has impact on higher labor absorption. Another result that shows the same conditions as this study is (Utomo, 2022) found a positive effect between GRDP (Gross Regional Domestic Product) on labor absorption in Java.

The next result is shown in the Inflation variable which theoretically has a positive relationship with labor absorption. The results shown in this study indicate that there is no relationship between inflation and labor demand with a coefficient of 28,509.62 with a probability of 0.1220. This shows that the conditions that occur in ASEAN countries do not affect labor absorption due to inflation. This result is not following the initial assumption that inflation has a positive effect on labor absorption. This negative and insignificant result is in line with research conducted by (Nofrita & Marwan, 2022) which states that the inflation rate does not have a significant effect on labor absorption. These results differ from the theory and perception of monetarists who state that inflation can increase employment opportunities. (Phillips, 1958) also states that there is a strong relationship between the inflation rate and the unemployment rate, where a low unemployment rate indicates high labor absorption. Economic instability due to inflation can slow economic growth, reduce purchasing power, and affect people's income, especially for workers with fixed incomes (Lamatenggo et al., 2019).

The results for the Wage variable show that the coefficient value is 95.222.21 with a probability of 0.0000 so it can be concluded that the relationship between Wage and labor absorption has a positive and significant relationship. When income increases, it will have an impact on increasing demand for labor. This shows that when there is an increase in income levels, people will try more to find work which has an impact on increasing labor absorption in ASEAN countries. The results of the positive effect of wages on labor absorption are in line with research conducted by (Siatan & Zuliansyah, 2023b) in Indonesia. In addition, the results are in line with research conducted by (Hermawati & Irawan, 2024) where wages are one of the important factors influencing people's welfare and increasing wages have a positive domino effect that improves various aspects of people's lives. This increases the productivity and efficiency of the company, which in turn increases the company's competitiveness in the global market. Wage policy has an important role in determining labor absorption. This is due to the significant relationship between wages and the number of workers. If wage policies are implemented properly, labor absorption will also increase.

The last result that is a factor in labor absorption is Investment shown in the FDI variable. The estimation results for the FDI variable show that the coefficient value for this variable is -7.20E-05 with a probability of 0.0000 so it can be concluded that FDI has a negative and significant effect on labor absorption in countries in the ASEAN region. This result is in line with research conducted by (Nguyen, 2021) where the relationship between the labor force and FDI attraction is positive where countries in the early stages of development mainly use the competitive advantage of young and cheap labor, abundant and diversified natural resources, and many policy incentives to attract FDI flows. Therefore, a quick shift from unskilled labor to skilled labor by changing the growth model and improving the quality of human resource training helps to attract FDI into Vietnam. Based on (Nordin et al., 2019) the role of the labor market in moderating the growth effect of FDI in developed and developing countries fill this gap by assessing the role of labor market flexibility as an absorptive capacity in FDI-growth link in developing countries.

Conclusion and Implications

This study concludes that GDP has a positive effect on labor absorption in ASEAN countries. This shows the important role of a country's economic growth in the development of the labor market and has an impact on labor conditions. The next thing based on results of the study shows

that there is no effect of inflation on labor absorption, which has implications for the existence of monetary policy conditions that can be carried out by countries in ASEAN. Wage conditions have a positive effect on labor absorption in ASEAN which shows that policies related to determining wages for workers are an important part of the government. The results of Foreign Direct Investment (FDI) also show positive results on labor absorption, which has implications for policies related to increasing investment from abroad so that it can increase demand for labor in ASEAN countries. This study implies that there must be a systematic policy that is oriented towards creating an integrative system in increasing labor absorption in ASEAN countries with an orientation towards pro-growth policies supported by regulations in determining wages and regulations that are integrated with foreign investment.

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