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The Effect of Labor Force, Minimum Wage, and Per Capita Income on Unemployment Rate in Five Southeast Asian Countries

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Abstract

This study aims to analyze the factors that affect the unemployment rate in five Southeast Asian countries, namely the labor force, minimum wage, and income per capita both partially and simultaneously. The type of data used in this research is secondary data with descriptive quantitative method. The objects in this study are five countries that are included in the emerging market category in Southeast Asia. This study uses panel data by combining time series data and cross section data for 8 years, starting from 2016-2023. The independent variables used are labor force, minimum wage, and per capita income, while the dependent variable is the unemployment rate. The analysis model in this study is the Fixed Effect Model (FEM) using Eviews 12 as an estimation tool. The regression results show that partially, the labor force and income per capita have a negative and significant effect on the unemployment rate, while the minimum wage has a positive and significant effect on the unemployment rate. Simultaneously, labor force, minimum wage, and per capita income together affect the unemployment rate in five Southeast Asian countries.

Keywords: unemployment rate; labor force; minimum wage; per capita income.

1. Introduction

One issue that continues to be an economic problem is the high level of unemployment in a country. Unemployment is not only a phenomenon that will have an impact on individual aspects, but will also have an impact on economic aspects. Southeast Asia is one of the regions that is not immune from this problem. Southeast Asia is a region that consists of 11 countries with different economic levels. The economic levels are divided into developed countries, emerging market countries, and developing countries. Emerging market countries are indicated to countries that are experiencing rapid economic growth, industrialization, and modernization so that they are declared as transitional economies [1]. Indonesia, Malaysia, the Philippines, Vietnam, and Thailand are Southeast Asian countries in this category. Therefore, in this study, researchers are interested in making emerging market countries in Southeast Asia as countries to be studied.

Table 1. Unemployment Rate of Indonesia, Malaysia, Philippines, Vietnam, and Thailand 2019-2023 (%)

Year	Indonesia	Malaysia	Philippines	Vietnam	Thailand
2019	3.6	3.3	2.2	1.7	0.7
2020	4.3	4.5	2.5	2.1	1.1
2021	3.8	4.6	3.4	2.4	1.2
2022	3.5	3.9	2.6	1.5	0.9
2023	3.4	3.9	2.2	1.6	0.9

Source: World Bank (2023)

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Based on Table 1, it can be seen that despite being in the same group category, namely emerging market countries, the five countries have different unemployment rates. In the last five years, the lowest unemployment rate is owned by Thailand, which amounted to 0.7% in 2019, while the highest unemployment rate is in Malaysia, which amounted to 4.6% in 2021[2]. It can also be seen from the table above that the unemployment rate of the five emerging market countries in Southeast Asia is still relatively high, so the unemployment problem in the five Southeast Asian emerging market countries needs to be studied further to find out what factors cause the increase and difference in the unemployment rate.

Unemployment is part of the labor force. The labor force consists of people who are willing to work and able to do work [3]. As the number of the labor force increases, it is necessary to expand employment opportunities. If not, this will lead to an increase in the number of unemployed in a region. According to the World Bank report (2023), the highest number of labor force in five Southeast Asian countries is owned by Indonesia, which is 140 million people [4].

In addition to the labor force, wages are often associated with the problem of unemployment. Wages are the minimum payment that must be paid by the employer [5]. The determination of the minimum wage must be balanced so that workers receive proper compensation. Minimum wage data in 2023 shows that Malaysia is a country that sets the highest minimum wage reaching $359 [6].

Another factor that is considered to be the cause of high and low unemployment rates in a country is per capita income. The higher the per capita income, the better the prosperity of the people. High human resources can be shown by high per capita income [7]. Data from the World Bank shows that the highest per capita income in five Southeast Asian countries is still led by Malaysia, which touched $11,691 in 2023, while the lowest per capita income is owned by the Philippines at $3,667 [8]. Based on the description of the problem above, the researcher wants to know whether these factors really have an influence on the high and low unemployment rate in Southeast Asian countries.

2. Literature Review

2.1. Athur Lewis Theory

According to this theory, there are two structures in a country's economy, the modern capitalist sector and the backward subsistence sector. The underdeveloped subsistence sector has an excess supply of workers and lower wage rates than the modern capitalist sector, so urban entrepreneurs utilize these workers in developing modern industries. During this process, the excess supply of workers in the underdeveloped subsistence sector will decrease because they are absorbed into the modern capitalist sector, so it does not cause an increase in unemployment [9].

2.2. Fei Rannis Theory

This theory deals with a surplus labor country with a resource-poor economy, where most of the population works in the agricultural sector amidst severe unemployment and high population growth rates. Under conditions of excess labor, this can be overcome by the transfer of labor from the agricultural sector to the industrial sector [10].

2.3. Neo-classical Standard Theory (Competitive Market) by Cahuc and Michel

This theory states that labor is divided into two types, namely skilled and unskilled labor. Skilled labor certainly has higher productivity than unskilled labor. When the minimum wage increases, companies will more strictly choose skilled labor. This certainly causes an increase in labor supply and a decrease in labor demand by companies, so that it can cause the unemployment rate to increase [11].

2.4. Marx's Iron Wage Theory

Marx stated that if the wage rate of workers rises, thus raising wages above the subsistence level, then they will have more children. These children will increase the number of workers as they enter the labor force, up to the point where the wage rate falls, bringing workers back down to the subsistence level [12].

2.5. Todaro Theory

This theory states that one measure of a country's development progress is its per capita income. In other words, a high per capita income reflects a prosperous society, so that the achievement of this prosperity leads to a reduction in unemployment [13].

2.6. Okun Theory

The level of development progress in a country is measured by the level of GDP growth, both overall and per capita. Okun's Law states that there is a negative relationship between economic growth (GDP) and unemployment [14].

3. Method

This research uses descriptive research with a quantitative approach. Descriptive quantitative research is a type of research

that collects and analyzes data systematically and planned using numbers or statistics. The data used in this research is secondary data. The data that researchers collect are data on unemployment rates, labor force, minimum wages, and per capita income in five Southeast Asian countries (Indonesia, Malaysia, Philippines, Vietnam, and Thailand) which come from the annual publications of the World Bank and the International Labor Organization (ILO) starting in 2016 to 2023.

The data analysis technique used in this study is panel data regression analysis. Panel data regression is a regression method that combines cross section data and time series data. Cross section is data in a year consisting of several objects. While the time series is data on an object consisting of several time periods. The mathematical equation model in this study is:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (1)$$

4. Results and Discussion

4.1. Descriptive Statistic

Descriptive statistical analysis is a statistic used to analyze data by providing an overview or descriptive of data seen from the average, maximum, minimum, and standard deviation values of the sample data used. The dependent variable in this study is the unemployment rate in five Southeast Asian countries, while the independent variables in this study are the labor force, minimum wage, and per capita income in Indonesia, Malaysia, the Philippines, Vietnam, and Thailand. The data description in this study is as follows:

Table 2. Descriptive Statistics of Research Variables

	Unemployment Rate (%)	Labor Force (People)	Minimum Wage (U.S. Dollar)	Per Capita Income (U.S. Dollar)
Mean	2.580000	58305386	194.0000	5504.370
Median	2.550000	44203311	169.8500	3854.800
Maximum	4.600000	1.41E+08	359.0000	11691.40
Minimum	0.700000	15327169	93.00000	2741.100
Std. Dev	1.227296	40750769	66.80824	2907.369

Source: Eviews (Processed)

Based on the table above, it can be seen that:

- The maximum value of unemployment rate variable is 4.6% which is Malaysia's unemployment rate in 2021. Meanwhile, the minimum value of unemployment rate variable is 0.7% which is Thailand's unemployment rate in 2016. Then the average value (mean) of the unemployment rate variable is 2.58% and the median value or the middle value of the unemployment rate variable is 2.55%.
- The maximum value of the labor force variable is 141 million people, which is the number of labor force in Indonesia in 2023. While the minimum value of the labor force variable is 15 million people which is the number of labor force in Malaysia in 2016. Then the average value (mean) of the labor force variable is 58 million people, and the median value or the middle value of the labor force variable is 44 million people.
- The maximum value of the minimum wage variable is $359 which is the Malaysian minimum wage value for 2023. While the minimum value of the minimum wage variable is $93 which is the value of Indonesia's minimum wage in 2016. Then the average value (mean) of the minimum wage variable is $194, and the median value or middle value of the minimum wage variable is $169.
- The maximum value of the per capita income variable is $ 11691 which is the value of Malaysia's per capita income in 2023. While the minimum value of the per capita income variable is $2741 which is the value of Vietnam's per capita income in 2016. Then the average value (mean) of the per capita income variable is $5504, and the median or middle value of the per capita income variable is $3854.

4.2. Model Selection Test

The results of the model specification test that have been carried out are as follows:

4.2.1. Chow Test

The Chow test is conducted to choose whether the Common Effect Model or Fixed Effect Model is more appropriate to use.

Table 3. Chow Test Results

Effect Test	Prob
Cross-Section F	0.0000
Cross Section Chi-Square	0.0000

Source: Eviews (Processed)

Based on the Chow test shown in table 3, the significance value of the Cross section Chi square and Cross section F is 0.000 <0.05, then H_0 is rejected and Ha is accepted, which means that the Fixed Effect Model is better used.

4.2.2. Hausman test

The Hausman test is conducted to choose whether the Fixed Effect Model or Random Effect Model is more appropriate to use.

Table 4. Hausman Test Results

Test Summary	Signifikansi
Cross-Section Random	0.0000

Source: Eviews (Processed)

Based on the Hausman test shown in table 4, the significance value of the random cross section is 0.000 <0.05, then H0 is rejected and Ha is accepted, which means that the Fixed Effect Model is better used.

4.3. Classical Assumption Test

Based on the model specification test that has been carried out, the selected model is the Fixed Effect Model (FEM). Therefore, the classic assumption tests that will be used are only multicollinearity and heteroscedasticity tests [15].

4.3.1. Multicollinearity test

The multicollinearity test is conducted to test whether the regression model finds a correlation between the independent variables.

Table 5. Multicollinearity Test Results

X1	X2	X3
1	-0.59	-0.56
0.59	1	0.87
0.56	0.87	1

Source: Eviews (Processed)

Based on the Multicollinearity test shown in table 5, it can be seen that the correlation coefficient value between variables <0.90, it can be concluded that it is free from multicollinearity symptoms.

4.3.2. Heteroscedasticity test

The heteroscedasticity test is used to determine whether the residuals of the model formed have a constant variant or not.

Table 6. Heteroscedasticity Test Results

Variable	Prob.
X1	0.7041
X2	0.6013
X3	0.0944

Source: Eviews (Processed)

Based on the heteroscedasticity test shown in table 6, the significance value of each independent variable> 0.05, it can be concluded that it is free from symptoms of heteroscedasticity.

4.4. Regression Model Estimation

$$Y = 7.7624 - 7.0126\ LF + 0.0086\ MW - 0.0005\ PCI \quad (2)$$

The explanation of the above equation is as follows:

- The constant value is 7.7624. This means that if the labor force variable (X1), minimum wage (X2), and income per capita (X3) remain constant, then the unemployment rate (Y) increases by 7.7624%.
- The coefficient value of labor force variable (X1) is -7.0126. This means that if the value of the labor force variable (X1) increases by one hundred million people, the unemployment rate variable (Y) will decrease by 7.0126%. Vice versa, if the value of the labor force variable (X1) decreases by one hundred million people, the unemployment rate variable (Y) will increase by 7.0126%.
- The coefficient value of the minimum wage variable (X2) is 0.0086. This means that if the value of the minimum wage variable (X2) increases by one hundred dollars, the unemployment rate variable (Y) will increase by 0.0086%. Likewise, if the value of the minimum wage variable (X2) decreases by one hundred dollars, the unemployment rate variable (Y) will decrease by 0.0086%.
- The coefficient value of income per capita variable (X1) is -0.0005. This means that if the value of the income per capita variable (X3) increases by one thousand dollars, the unemployment rate variable (Y) will decrease by 0.0005%. Vice versa, if the value of income per capita variable (X3) decreases by one thousand dollars, the unemployment rate variable (Y) will increase by 0.0005%.

4.5. Hypothesis Test

Statistical tests are carried out to determine whether there is an influence between each independent variable on the dependent variable individually.

Tabel 7. T Test Results

Variable	Coefficient	Std. Error	*t-Statistic*	Prob.
C	7.762439	1.787613	4.342349	0.0001
Labor Force (X1)	-7.01E-08	3.20E-08	-2.191857	**0.0358
Minimum Wage (X2)	0.008694	0.003113	2.792712	***0.0087
Per Capita Income(X2)	0.000505	0.000248	-2.038388	**0.0498

Source: Eviews (Processed)
Notes: ***significant at 1%, **significant at 5%.

Based on the results of the t test, the effect of the independent variable on the dependent variable is as follows:

- The t-test result on the labor force variable (X1) obtained a t-value of 2.191857 > 2.0243942 and a significance value of 0.0358 < 0.05, then H0 is rejected and Ha is accepted, meaning that the labor force variable has a negative and significant effect on the unemployment rate in five Asian countries.
- The result of t test on minimum wage variable (X2) obtained t value of 2.792712 > 2.0243942 and significance value of 0.008758 < 0.05, then H0 is rejected and Ha is accepted, meaning that minimum wage variable has positive and significant effect on unemployment rate in five Southeast Asian countries.
- The result of t test on income per capita variable (X3) obtained t value of 2.038388 > 2.0243942 and significance value of 0.0498 < 0.05, then H0 is rejected and Ha is accepted, meaning that income per capita variable has negative and significant effect on unemployment rate in five Southeast Asian countries.

The F test is used to determine whether the independent variables (free) together have an influence on the dependent variable (bound).

4.6. Coefficient of Determination Test (R2)

The coefficient of determination (R2) test is carried out to measure the strength of the model in explaining the variables. Based on table 8, the R-squared value is 0.917671. This shows that the variation of the independent variables of labor force, minimum wage, and per capita income can explain the variable of unemployment rate in Indonesia, Malaysia, Philippines, Vietnam, and Thailand as much as 91.17%, while the remaining 8.83% is explained by other variables that are not included in this

study.

Tabel 8. F Test Results

Cross-section fixed (dummy variables)	
R-squared	0.932448
Adjusted R-Squared	0.917671
F-statistic	63.10162
Prob(F-statistic)	0.000000

Source: Eviews (Processed)

4.7. Discussion

4.7.1. Effect of Labor Force on Unemployment Rate in Five Southeast Asian Countries

Based on the t-test results, the labor force variable is considered to have a significant influence on the unemployment rate in five Southeast Asian countries in the period 2016-2023. The statistical value of the labor force variable is 2.191857 > the t table value of 2.0243942 with a negative direction and the significance value of the labor force is 0.0356 <0.05, meaning that the number of labor force has a negative influence on the unemployment rate. In other words, if the labor force increases, unemployment will decrease, and vice versa.

This situation can be proven through data on the labor force and unemployment rates in five Southeast Asian countries found on the World Bank website. In 2022, the data in five Southeast Asian countries shows an increase in the number of labor force and a decrease in the unemployment rate simultaneously. For example, in Indonesia, the number of labor force in 2022 increased from 134 million to 138 million. Meanwhile, the unemployment rate has decreased to 3.5%. So it can be concluded that an increase in the labor force will lead to a decrease in the unemployment rate.

In this study, it was found that the labor force has a negative influence on the unemployment rate. The results of this study are in line with previous research by [16] which states that if the labor force increases, then unemployment will decrease. The condition of increasing population will cause an increase in the number of labor force as well. This will make it easier for companies to get labor. In addition, an increase in the number of labor force is not a problem but an opportunity. The high number of labor force in one sector can be transferred to other sectors, so it does not cause an increase in unemployment. So, although the number of workers in the five Southeast Asian countries has increased, the increase can be offset by the absorption of labor in other sectors that require more workers.

4.7.2. The Effect of Minimum Wage on Unemployment Rate in Five Southeast Asian Countries

Based on the results of the previous data analysis, it is found that the minimum wage has a significant influence on the unemployment rate in five Southeast Asian countries. Based on the t-test results, it can be seen that the minimum wage variable shows a t-statistic value of 2.792712 > t table 2.0243942 and a significant figure of 0.008758 < 0.005, which means that the minimum wage has a positive influence on the unemployment rate. In other words, if the minimum wage increases, the unemployment rate will also increase.

An increase in the minimum wage will cause companies to pay more to workers. To reduce future losses, companies will certainly be more selective in choosing prospective workers. This will cause the labor force to compete to improve their abilities to be selected by the company. The skilled labor force will certainly be selected while others will be eliminated so that it can cause the number of unemployed to increase.

This condition occurs in one Southeast Asian country, Malaysia, which provides the highest wage level among other Southeast Asian countries, which is $359 in 2023, but actually has the highest unemployment rate, which reaches 3.9%.

The results of this study are also in accordance with research conducted by previous researchers [17], who stated that the minimum wage has a positive influence on the unemployment rate. The high unemployment rate can occur if the company chooses to reduce the number of workers due to the increase in the minimum wage that must be paid to workers, thus causing an increase in the number of unemployed.

4.7.3. The Effect of Per Capita Income on the Unemployment Rate in Five Southeast Asian Countries

Based on the results of the data analysis that has been conducted, it is found that per capita income has a significant influence on the unemployment rate in five Southeast Asian countries. The per capita income variable has a t-statistic value of 2.038388 > t table value of 2.0243942 with negative direction and significance value of 0.0498 > 0.05. It can be concluded that per capita income has a negative and significant influence on the unemployment rate. Therefore, if per capita income increases, it will cause the unemployment rate to decrease.

This result is also in line with the research conducted by [18], which states that per capita income and unemployment rate have a negative relationship. If a country's per capita income is high, it can reflect a prosperous life, so that this prosperity can cause a decrease in the unemployment rate. This happened in several Southeast Asian countries, one of which is Indonesia, which from 2020 to 2023 continued to experience an increase in per capita income, and also experienced a decrease in the unemployment rate in the same year.

4.7.4. The Effect of Labor Force, Minimum Wage, and Per Capita Income on Unemployment Rate in Five Southeast Asian Countries

Based on the results of the F-test conducted previously, it can be seen that the independent variables (labor force, minimum wage, and per capita income) have a Prob (F-Statistic) value of 0.000000 and a significance value of 0.00000 <0.05, which means that the variables of labor force, minimum wage, and per capita income simultaneously or together have a significant effect on the unemployment rate in five Southeast Asian countries. This result is in accordance with the hypothesis that there is a simultaneous influence between the independent variable and the dependent variable.

5. Conclusion

Based on the results of research conducted in five Southeast Asian countries for 8 years (2016-2023) regarding the influence of the labor force, minimum wage, and income per capita on the unemployment rate, the conclusions of this study are as follows:

- The labor force has a negative and significant influence on the unemployment rate in five Southeast Asian countries for the period 2016-2023. This means that if the labor force increases, it can cause the unemployment rate to decrease.
- Minimum wage has a positive and significant influence on the unemployment rate in five Southeast Asian countries for the period 2016-2023. This means that if the minimum wage increases, the unemployment rate will also increase.
- Per capita income has a negative and significant influence on the unemployment rate in five Southeast Asian countries. This means that if per capita income increases, the unemployment rate will decrease.
- Labor force, minimum wage, and per capita income together (simultaneously) have an influence on the unemployment rate in five Southeast Asian countries.

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