



Quantitative Assessment of Unemployment among Youths in Malaysia

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Abstract The youth unemployment rate is three times greater than the total unemployment rate in Malaysia, also it is moving more fluctuated and growing every year after a significant rise in 2015. Hence this study aims to determine the relationship between the influential factors and the youth unemployment rate and to examine which factors can serve as future indicators of youth unemployment rate in Malaysia. The annual basis of secondary data from 1992 to 2019 and the analysis methods are used Pearson correlation and multiple linear regression. The correlation results show that inflation rate, trade openness and urbanization are negatively correlated with youth unemployment rate, while Foreign Direct Investment (FDI), migration and exchange rate are positively correlated. Also, the regression results indicate only four factors which are FDI, trade openness, exchange rate, and urbanization are significant to the youth unemployment rate. Thus, they can serve as the future indicators of youth unemployment rate in Malaysia. More specifically, FDI and exchange rate are positively significant correlated with youth unemployment rate, whereas trade openness and urbanization are negatively significant related with youth unemployment rate.

Keywords: Unemployment rate, Pearson correlation, multiple linear regression.

Introduction

Tan *et al.* [17] defined unemployment as the people who are employable and actively looking for a job but are yet to get a job. It is also one of the measures of health economy to the country, a high unemployment rate reveals a country is having an unhealthy economy, thus unemployment issue is crucial to all countries, especially the developing countries with a large population. To lower the total unemployment rate, it is important to focus on the youth unemployment rate because youth unemployment rate is higher in many countries, compared to the total unemployment rate. As shown in Figure 1 that obtained from Anthony [2], among the ASEAN countries, Singapore had the least youth unemployment rate at 4.6%, followed by Thailand at 5.9%, Vietnam at 7%, Philippines at 7.9%, and Indonesia at 15.6%. In the most populated countries, i.e., China and India, the rates reached at 10.8% and 10.5%, respectively. However, Malaysia was ranked as the third highest in youth unemployment rate among the ASEAN countries and the rate of 10.8% in 2017, it was compatible with China.

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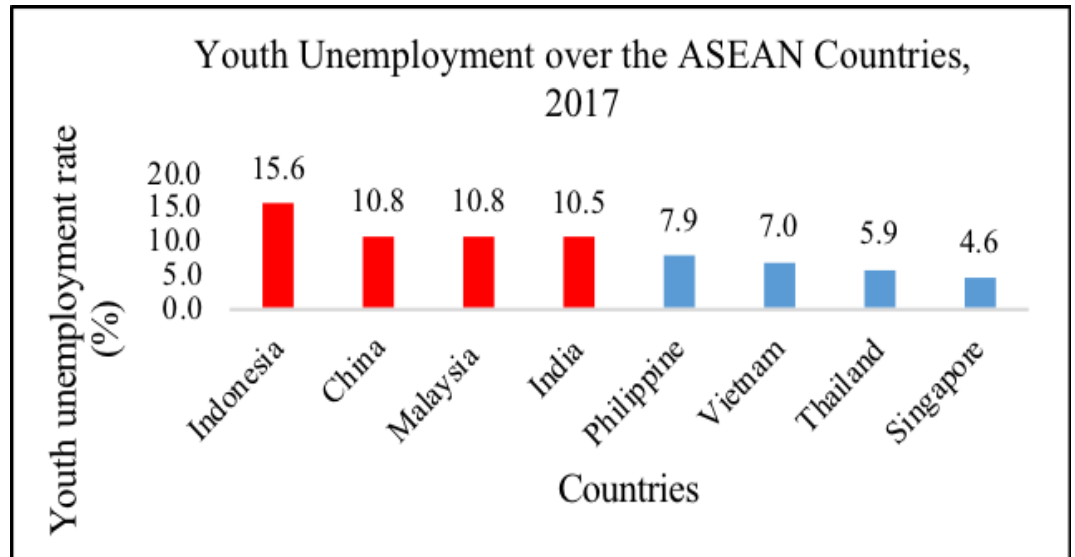


Figure 1. The youth unemployment rate in ASEAN countries, 2017

In particular, the statistical data that published by the World Development Indicator (WDI) showed the youth unemployment rate in Malaysia were three times greater than the total unemployment rate, on average from 1991 to 2019 as illustrated in Figure 2. Based on that figure, the youth unemployment rate was rising every year after a sharp increase in 2015. Also, youth unemployment rate fluctuated more compared to the total unemployment rate. Therefore, the study aimed to determine the relationship between the influential factors and the youth unemployment rate, also to examine which factors can serve as future indicators of youth unemployment rate in Malaysia.

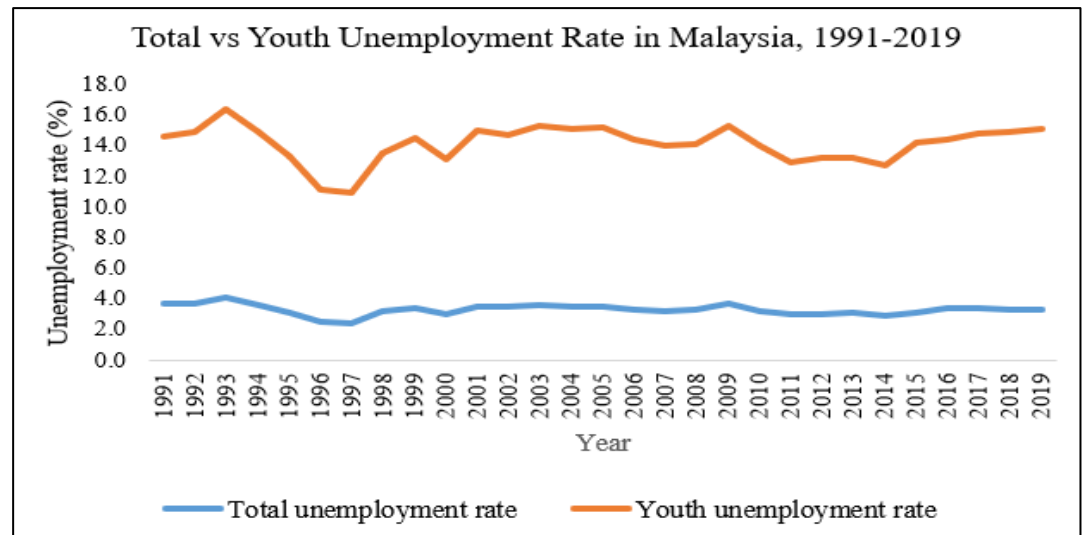


Figure 2. Comparing total and youth unemployment rate in Malaysia, 1991-2019

1. Inflation Rate

To tackle the youth unemployment rate in the country, it is important to identify the causal factors, such as inflation rate because Philip Curve Theory denoted a close relationship between inflation and unemployment. Also, a good economy of a country always assumes high inflation and less unemployment because rising general price level will increase the production activity, and this will reduce the unemployment rate [17]. Moreover, Choudhry *et al.* [6], Michael and Geetha [13], Aurangzeb and Asif [3] also highlighted the rise of inflation rate will expand the economy, then more job opportunities are created to decrease the unemployment rate. Therefore, the inflation rate is one of the determinants to stimulate economic growth and to control the unemployment rate.

2. Foreign Direct Investment (FDI)

FDI was another crucial factor that was considered to solve the problem of unemployment in the country. This is because the rising FDI is possible to increase the job creations which can help to reduce the unemployment rate [17]. In particularly, Malaysia is one of the biggest exporters in electronic products and appliances that attract many foreign investments in different sectors [17]. Hence, many job opportunities are generated in different fields and economic sectors to solve the unemployment issue in the country [17]. But the increase of FDI will also raise the unemployment rate because foreign investment modernizes a country with using technology and innovation more than labor intensive method [13], [5]. So, the job opportunities are lower when FDI increases, because of these different findings of the studies, the study will investigate this factor to carry out the influential factors of youth unemployment rate in Malaysia.

3. Migration

Migration is associated with urbanization because mass migration will raise the urbanization, and this will reduce the youth unemployment rate [19]. The reason is because the youths are more likely to migrate to another place when there are more job opportunities to enhance their available skills. For example, the migration to Kuala Lumpur by the Malaysians is rising since 1980s. Additionally, the negative correlation is also found in Germany because when job supply is larger than the job demand can help to develop the businesses, so this will contribute to develop the industry as well. Then, it will expand the economy of the country, increase employment, and reduce unemployment [7]. Therefore, migration is an important factor to be identified the relationship between the migration and the youth unemployment rate in Malaysia.

4. Trade Openness

Trade openness is the ease of regulations across borders that encourage more trade relations between the foreign firms. This increases the inflow of foreign capital that will enhance a country's competitiveness lead to higher production and create more job opportunity. So, the unemployment rate will reduce when the government implements trade liberalization [14]. Moreover, [9] also obtained a negative significant relationship between the trade openness and the unemployment rate in developing countries. The was also because trade liberalization improved productivity, that brought economic growth and to generate more jobs, then reduced the unemployment rate.

5. Exchange Rate

Exchange rate is also one of the factors that driving the unemployment rate in Malaysia. The increase in the exchange rate led to appreciation of local currency and depreciation of foreign currency. This causes the local goods are more expensive, then it will reduce the exports and raise the imports. When imports are greater than exports will bring an economic contraction that causes employment to fall and unemployment to rise, so an increase in the exchange rate will also raise the unemployment rate [3]. Furthermore, a significant positive relationship between exchange rate and unemployment rate in Malaysia because the exchange rate affected the income shocks, money shocks and interest rate shocks which will then affect on the unemployment rate [4]. Therefore, exchange rate is also crucial to examine its impact on the youth unemployment rate in Malaysia.

6. Urbanization

Urbanization is the population that living in the city or urban area, and it is related to migration because the youths are more likely to migrate to the city that has more opportunity and greater prospects [17]. Generally, the increase of urbanization will reduce the unemployment rate because urban areas have more jobs than the rural areas, also the urbanization in Malaysia was rising every year from 66% in 2004 to 76% in 2018 [17]. On the other hand, urbanization is a dominant factor to determine urban growth and there is a strong relationship between the internal rural-urban migration, urbanization, and unemployment rate in Africa [18]. Besides, unemployment is one of the major consequences by urbanization in Nigeria, the reason is because many Nigeria migrants from rural areas remain jobless in urban areas [12]. Also, the urban unemployment rate was higher than the national unemployment rate in Nigeria [12]. Thus, urbanization is also important to determine the effect on youth unemployment rate in Malaysia.

Apart from that, various studies assessed the unemployment rate in Malaysia using multiple linear regression. For instance, the multiple linear regression was applied to investigate the factors that influenced directly on the youth unemployment rate in Malaysia. The factors that have been identified were urbanization, inflation, GDP and FDI. Then, the results showed that only GDP and FDI were significant to the youth unemployment rate in Malaysia [17]. In addition, multiple linear regression was employed to determine the significant factors to unemployment rate in Malaysia. The outcomes revealed inflation rate and population growth were significant to the unemployment rate in Malaysia,

while GDP was insignificant [16]. Other than the national studies, multiple linear regression was used to analyze the impact of urbanization, industrialization, labor force level, labor force elasticity and minimum wage rate on the unemployment rate in Indonesia. The findings presented only labor force level has a significant effect on the unemployment rate in Indonesia, whereas other factors are not significant [15]. Therefore, this study will also apply multiple linear regression to examine the influential factors of youth unemployment rate in Malaysia and the factors that have significant effect can use to serve as the future indicators of youth unemployment rate in Malaysia.

Literature review

This section discusses the reviews of previous studies that had identified some factors that influenced youth unemployment rate, which involved inflation rate, FDI, migration, trade openness, exchange rate and urbanization. The reviews were summarized in Table 1 as follows:

Table 1. Factors that affected youth unemployment rate

Factors	Authors	Description
Inflation rate	[6], [13], [3].	<ul style="list-style-type: none"> Inflation rate had a significant negative impact on youth unemployment. This was supported Philips Curve Theory where the rise of inflation rate would create more job opportunities due to economic growth, therefore youth unemployment would decrease.
FDI	[13], [5].	<ul style="list-style-type: none"> FDI had a significant positive relationship with youth employment. The reason was FDI would modernize a country by expanding in terms of technology and innovation which would reduce job creation. Thus, youth unemployment would increase when FDI rose.
Migration	[7], [19].	<ul style="list-style-type: none"> The impact of migration on youth unemployment was significantly negative. Higher job supply helped to develop the businesses and industry which contributed to expand the economy, increase the employment, and reduce the unemployment.
Trade openness	[14], [9].	<ul style="list-style-type: none"> The trade openness was linked significantly negative with youth unemployment. Trade openness generated higher production which created more jobs because it encouraged the participation of foreign firms and improved the competitiveness of the country. Therefore, unemployment rate could reduce when trade openness was imposed.
Exchange rate	[3], [4].	<ul style="list-style-type: none"> Exchange rate had a significant positive effect on youth unemployment. Exchange rate increases implied local currency appreciated, while foreign currency depreciated, so the price of local good became more expensive, this reduced the exports than the imports and contract the economy and employment, then raise the unemployment rate.
Urbanization	[12].	<ul style="list-style-type: none"> Urbanization had a significant positive relationship with youth unemployment. The urbanization was brought by the rural-urban migration in Nigeria and the migrants from rural areas remained unemployed, then this caused the unemployment rate more serious.

Methodology

This section describes data and sampling method, and analysis methods using correlation and multiple linear regression to achieve both objectives of the study. This study has one dependent variable which is youth unemployment rate and six independent variables which are inflation rate, FDI, migration, trade openness, exchange rate and urbanization. Furthermore, the study performed all tests by using Eviews version 11.

Data and sampling method

The study uses secondary data, and the data is yearly basis with 28 years from 1992 to 2019. Also, all data is obtained from World Development Indicators (WDI) except net migration data is taken from United Nations Department of Economic and Social Affairs Population Dynamics. Besides, FDI, urbanization, and migration are represented by the data of net FDI, share of urban population, and net migration, respectively. Meanwhile, exchange rate is measured in Ringgit Malaysia (RM) per United States Dollar (USD).

Diagnostic tests

The diagnostic testing is used to perform several tests to check whether the model of the study is Best Linear Unbiased Estimator (BLUE), also to ensure the results were reliable and valid [10,21]. This implies the model should not suffer from the problems of multicollinearity, heteroscedasticity, and autocorrelation. Furthermore, diagnostic tests are also used to check the model normality and the suitability of the variables used in the model. In addition, unit root test also applies in diagnostic testing to check the stationarity of the data. Moreover, each of the diagnostic tests is tested by the hypothesis statement according to 5% significance level. The null hypothesis is not rejected when probability value is greater than the significance level of 5%, otherwise the null hypothesis is rejected when probability value is lower than the significance level of 5%. The hypothesis statement of each diagnostic test is displayed in Table 2 below.

Table 2. Hypothesis statement of diagnostic tests

Tests	Null hypothesis (H_0)	Alternative hypothesis (H_1)
Breusch-Pagan Test	The model is homoscedasticity	The model is heteroscedasticity
Breusch-Godfrey Test	The model has no autocorrelation	The model has autocorrelation
Jarque-Bera Test	The modal is normally distributed	The model is not normally distributed
Ramsey RESET Test	The model has no specification error	The model has specification error
Augmented Dicker-Fuller (ADF) Test	The series is non-stationary	The series is stationary

Correlation

To identify the relationship between the variables can apply different method based on the normality of the modal. If the data is normally distributed, then Pearson Correlation can be used to determine the relationship between the variables [1, 8]. However, the not normally distributed data, in other word is non-parametric data should employ Spearman or Kendall Correlation to determine the relationship between the variables [8]. Additionally, the strength of the relationship between the variables is determined by the correlation coefficient (r) as following Table 3.

Table 3. Correlation coefficient

Coefficient (r)	The strength of the relationship
1	Perfect
0.7 – 0.9	Strong
0.4 – 0.6	Moderate
0.1 – 0.3	Weak
0	Zero

(Source: Akoglu, 2018)

Multiple linear regression

Multiple linear regression is a statistical technique used to predict the outcomes. It is also known as multiple regression and the model of this method has more than one independent variable [10]. Furthermore, this method can be used to determine which causal factors can serve as future indicators of youth unemployment rate through the probability of each variable or t-statistic. Either probability value or t-statistic is used to determine the significant impact of the factors on youth unemployment rate. When the factor is significant, then it can serve as a future indicator. With this, the significant impact of a factor is based on its probability value less than the significance level of 5% or its t-statistic greater than the critical value that obtain from t-distribution table [21]. The multiple linear regression model of the study is shown in equation (1) below.

$$YUE = \beta_0 + \beta_1 INF + \beta_2 FDI + \beta_3 MIG + \beta_4 OPEN + \beta_5 EXC + \beta_6 URB + \varepsilon \quad (1)$$

YUE denotes as youth employment rate is the dependent variable, then β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the coefficients of six independent variables and *INF, FDI, MIG, OPEN, EXC, URB* are the independent variables which imply inflation rate, FDI, migration, trade openness, exchange rate and urbanization. Lastly, ε is the error term which is the other factors that are not include in the model. The study has six influential factors that affect the youth unemployment rate in Malaysia, thus Table 4 exhibits the six hypotheses for those influential factors.

Table 4. Hypothesis statement of influential factors

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- Hypothesis 1: Inflation rate has a significant negative relationship with youth unemployment rate.
Hypothesis 2: FDI has a significant positive relationship with youth unemployment rate.
Hypothesis 3: Migration has a significant positive relationship with youth unemployment rate.
Hypothesis 4: Trade openness has a significant negative relationship with youth unemployment rate.
Hypothesis 5: Exchange rate has a significant positive relationship with youth unemployment rate.
Hypothesis 6: Urbanization has a significant negative relationship with youth unemployment rate.
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Results and discussion

This section describes the results of all diagnostic tests as well as the results of multiple regression to determine whether or not the objectives of the study are achieved.

Results of Diagnostic Tests

The results that are shown in Table 5 imply all the probability value of each diagnostic test is greater than 5% significance level. Therefore, the null hypothesis of each test is failed to reject, so the model is free from multicollinearity, heteroscedasticity, serial correlation, and specification error problems. Also, the model is normally distributed, and most variables are stationary at first difference.

Table 6 reveals none of the factors is strong correlation with youth unemployment rate because inflation rate, trade openness and urbanization have a weak negative relationship with youth unemployment rate, while FDI and migration are weak positively correlated with youth unemployment rate. Lastly, there is a moderate positive relationship between the exchange rate and youth unemployment rate. Hence, the first objective of the study is achieved, and the results are similar to the previous studies [6, 13, 3, 5, 4, 14, 9].

Results of Multiple Linear Regression

The study has achieved all the assumptions of multiple linear regression as described in the results of diagnostic tests. Hence, the multiple linear regression can proceed to achieve the second objective of the study, the results of multiple linear regression are presented in Table 7.

Table 7. Multiple linear regression results

Variables	Coefficients	Standard error	t-statistic	Probability	Hypothesis
Intercept	13.3998	2.6195	5.1154	0.0001	-
<i>INF</i>	-0.0643	0.0809	-0.7942	0.4364	Not supported
<i>FDI</i>	0.0000	0.0000	3.4663	0.0024	Supported
<i>MIG</i>	0.0006	0.1000	0.0062	0.9951	Not supported
<i>OPEN</i>	-0.0236	0.0006	-3.6752	0.0015	Supported
<i>EXC</i>	2.0772	0.3308	6.2793	0.0000	Supported
<i>URB</i>	-0.1870	0.0376	-4.9754	0.0001	Not supported

$R^2 = 0.7949$ Adjusted $R^2 = 0.7232$ F-statistic = 11.0753 Durbin-Watson statistic = 2.52

The above table forms an equation (2) as follows.

$$YUE = 13.40 - 0.06 INF + 0.00 FDI + 0.00 MIG - 0.02 OPEN + 2.08 EXC - 0.19 URB \quad (2)$$

$$n = 29, \quad R^2 = 0.7949$$

The above equation is explained below:

- $\beta_0 = 13.40$, when all factors equal to zero, the youth unemployment rate is 13.40.
- $\beta_1 = -0.06$, when inflation rate increases by one, the youth unemployment rate will reduce by 0.06, while holding all other factors constant.
- $\beta_2 = 0.00$, when FDI increases by one, the youth unemployment rate will increase by very small number, while holding all other factors constant.
- $\beta_3 = 0.00$, when migration increases by one, the youth unemployment rate will increase by very small number, while holding all other factors constant.
- $\beta_4 = -0.02$, when trade openness increases by one, the youth unemployment rate will reduce by 0.02, while holding all other factors constant.
- $\beta_5 = 2.08$, when exchange rate increases by one, the youth unemployment rate will increase by 2.08, while holding all other factors constant.
- $\beta_6 = -0.19$, when urbanization increases by one, the youth unemployment rate will reduce by 0.19, while holding all other factors constant.

Next, the probability value from Table 7 implies only four factors are significant to the youth unemployment rate, while only three hypotheses are supported.

Hypothesis 1: Inflation rate has a significant negative relationship with youth unemployment rate.

This hypothesis is not supported because p-value = 0.4364 is greater than 5% significance level. Therefore, inflation rate is insignificantly negative relationship to the youth unemployment rate, and it cannot serve as the future indicator of youth unemployment rate in Malaysia. This result is violated with [6, 13, 3].

Hypothesis 2: FDI has a significant positive relationship with youth unemployment rate.

This hypothesis is supported because p-value = 0.0024 is smaller than 5% significance level. Thus, FDI is significant to the youth unemployment rate, and it can serve as the future indicator of youth unemployment rate in Malaysia. This result is similar with [13, 5].

Hypothesis 3: Migration has a significant positive relationship with youth unemployment rate.

This hypothesis is not supported because p-value = 0.9951 is greater than 5% significance level and the result shows a positive correlation between migration and youth unemployment rate. Therefore, migration is insignificantly positive correlated to the youth unemployment rate, and it cannot serve as the future indicator of youth unemployment rate in Malaysia. This finding is against the study of [7, 19].

Hypothesis 4: Trade openness has a significant negative relationship with youth unemployment rate.

This hypothesis is supported because p-value = 0.0015 is smaller than 5% significance level. Thus, trade openness is significant to the youth unemployment rate, and it can serve as the future indicator of youth unemployment rate in Malaysia. This outcome is same with [14, 9].

Hypothesis 5: Exchange rate has a significant positive relationship with youth unemployment rate.

This hypothesis is supported because p-value = 0.0000 is smaller than 5% significance level. Therefore, exchange rate is significant to the youth unemployment rate, and it can serve as the future indicator of youth unemployment rate in Malaysia. This finding is identical with [3, 4].

Hypothesis 6: Urbanization has a significant negative relationship with youth unemployment rate.

This hypothesis is not supported because the result signifies a negative relationship between urbanization and youth unemployment rate although its p-value = 0.0001 is smaller than 5% significance level. Hence, urbanization is significantly negative linked to the youth unemployment rate, meanwhile it can serve as the future indicator of youth unemployment rate in Malaysia. This result is different with [12].

Conclusions

Both objectives of the study have been achieved. The first objective is achieved by using Pearson Correlation, while second objective is used multiple linear regression. The results presented only four factors, namely FDI, trade openness, exchange rate and urbanization are significant because of their probabilities are smaller than 5% significance level. Therefore, to reduce the youth unemployment rate, the government of Malaysia and policymaker are suggested to decline FDI and exchange rate and to raise trade openness and urbanization. In the meantime, fresh graduates are encouraged to keep improving themselves from time to time by learning other skills such as communication skills, analytical skills, computer skills, participating in leadership activities or any programs that can boost their confidence. The youths also need to be well-prepared when seeking a job. As newly inexperienced graduates, they need to research the company before getting to an interview because highly knowledgeable is required for a job interview. With this, they can also consult with the seniors or experienced people to acquire tips and prepare for their resume, cover letter and interview session. Likewise, the Ministry of Education, university, and the potential employers also play an important role to help the youths in improving them in terms of the employability skills, so that they can be qualified and perform excellently in their career. Finally, the examined factors were only part of the factors that affected youth unemployment rate, thus future study was recommended to include other factors such as interest rate, money supply, crime rate and industrialization that might be the potential indicators of youth unemployment rate in Malaysia.

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