JPEKA: Jurnal Pendidikan Ekonomi, Manajemen dan Keuangan
Homepage : https://journal.unesa.ac.id/index.php/jpeka
e-ISSN : 2579-5716

Vol. 10, No. 1, Mei 2026
Page 71-84

JPEKA: Jurnal Pendidikan Ekonomi, Manajemen dan Keuangan

Effect of Schooling Years, Minimum Wages, and Population Growth on Open Unemployment in Bojonegoro

Syifaul Fuaadhilah Kholis[1*], Heny Musfidah[1], Dhiah Fitrayati[1], Shochrul Rohmatul Ajija[2]
[1*]Universitas Negeri Surabaya, Surabaya, Indonesia
[2]Universiti Sains Malaysia, Malaysia

DOI: https://doi.org/10.26740/jpeka.v10n1.p71-84

Sections Info

Article history:
Submitted: March 28, 2026
Final Revised: April 23, 2026
Accepted: April 23, 2026
Published: April 27, 2026

Keywords:
Average length of schooling
Minimum wage
Population growth rate
Open unemployment
Bojonegoro

ABSTRACT

Objective: *This study aims to analyze the effect of Average School Length, Minimum Wage, and Population Growth Rate on the Open Unemployment Rate in Bojonegoro Regency for the 2005–2024 period. The research uses a quantitative approach with secondary data obtained from the Central Statistics Agency and related literature.* ***Method:*** *The analysis was performed through multiple linear regression using time series data with a series of classical assumption tests, including normality, multicollinearity, heteroscedasticity, and autocorrelation tests.* ***Results:*** *Show that some variables of population growth rate do not have a significant influence on the Open Unemployment Rate. Meanwhile, the variables of average length of school and minimum wage have a significant and positive influence on the Open Unemployment Rate, which means that these two variables have the potential to lower the open unemployment rate. At the same time, the three independent variables have been proven to have a significant influence on the Open Unemployment Rate. An Adjusted R-Squared (R^2) value of 0.687 indicates that 68.7% variation in the Open Unemployment Rate can be explained by Average School Length, Minimum Wage, and Population Growth Rate.* ***Novelty:*** *These findings emphasize the importance of controlling population growth and expanding employment opportunities, especially for highly educated graduates who dominate open unemployment in Bojonegoro. The results of the research are expected to be the basis for local governments in formulating more targeted employment and education policies.*

INTRODUCTION

The prosperity of life in an area can be measured through the unemployment rate in that area. The higher the unemployment rate, the clearer it is that the region still faces serious problems in providing jobs and equal employment opportunities for its people (Mokoagow & Mardiana, 2023). This condition reflects the lack of optimal economic development and the low ability of the region to utilize existing human resources (Saleh et al., 2020). The Open Unemployment Rate in Bojonegoro Regency is dominated by educated graduates. This is proven that graduates from higher education are 14.79% followed by graduates from high school by 11.55%. Meanwhile, graduates from Vocational High School are 9.95%. From the magnitude of this figure, it shows that the number of educated unemployed is a serious problem in Bojonegoro Regency (BPS of Bojonegoro Regency, 2025). This condition shows that there is still an inequality between the availability of labor with an educational background and the needs of the job market in Bojonegoro Regency (Rahmawati & Imaningsih, 2025). This is evidenced by the high unemployment rate among educated graduates in Bojonegoro Regency which is an indicator that so far vocational education has not been fully able to answer the demands of skills relevant to the world of work (Zeleke, 2022). Thus, this is an indication of the need to improve the quality of education and strengthen the relationship between

vocational schools and industry so that graduates have better competitiveness (Yoto et al., 2024). Workers with elementary school education still dominate in Bojonegoro Regency. This proves that most people still work in the traditional, labor-intensive, and farm labor sectors with relatively limited productivity (Anderson & Ponnusamy, 2023). However, on the other hand, highly educated workers become minorities, thus posing new challenges in efforts to improve the quality of human resources. For this reason, policies to increase access to education, skills training, and job creation are needed so that the employment structure in Bojonegoro Regency becomes more balanced (Lutz et al., 2021).

The problem of the Open Unemployment Rate in Bojonegoro Regency shows a lack of alignment with the important points in the 8th SDGs, namely Decent Work and Economic Growth. In this point, it aims to reduce unemployment through the creation of decent and inclusive jobs, as well as support sustainable economic growth (Bilek-Steindl et al., 2022). Judging from the high unemployment rate in Bojonegoro Regency, which is dominated by educated graduates, this is directly contrary to the principles of the SDGs to create a fairer and more prosperous world.

Table 1. Secondary Data of Bojonegoro Regency 2005-2024

Year	Average School Length (X1)	Minimum Wage (X2)	Population Growth Rate (X3)	Open Unemployment (Y)
2005	6.10	435,000	0.33	10.78
2006	6.50	515,000	0.35	9.84
2007	6.20	575,000	0.38	8.63
2008	6.30	647,500	0.42	7.65
2009	6.40	730,000	0.45	5.50
2010	5.51	825,000	0.38	3.29
2011	5.70	870,000	0.45	5.70
2012	5.80	930,000	0.44	3.42
2013	5.90	980,000	0.38	5.81
2014	6.14	1,140,000	0.40	3.21
2015	6.64	1,311,000	0.34	5.01
2016	6.65	1,410,000	0.31	3.95
2017	6.71	1,582,620	0.28	3.64
2018	6.77	1,720,461	0.37	4.11
2019	7.09	1,858,614	0.36	3.56
2020	7.33	2,016,780	0.71	4.92
2021	7.38	2,066,782	0.61	4.82
2022	7.43	2,079,568	0.61	4.69
2023	7.45	2,279,568	0.50	4.63
2024	7.59	2,371,026	0.48	4.42

Source: (BPS of Bojonegoro Regency, 2024)

Based on the data in Table 1 during the period 2005-2024, indicates that the average length of school during the period is 6.58 years which is equivalent to the 1st grade of junior high school. With a trend that shows that a consistent increase from 6.10 in 2005 to reach 7.59 in 2024. The minimum wage will increase significantly every year until 2024. This shows that the value of wages has continued to grow rapidly in the last 20 years. The population growth rate is relatively stable, until 2020 showed the highest population growth value of 0.71%. The variable open unemployment rate shows that the unemployment rate was highest in 2005 at 10.78%, but over time it shows a steady decline in the unemployment rate in the range of 3-4%.

Average School Length

The average length of schooling is an indicator that shows the number of years of formal education that has been taken by the population which is then calculated on average the population aged 25 years and above (Gaol et al., 2024) . The average length of school is an important indicator to assess the quality of education in an area, because the higher the number, the higher the level of formal education that has been completed by the population. However, on the other hand, if the RLS rate is decreasing, it shows that people in a region are not able to complete formal education completely. The observed correlation is driven by the incidence of student dropout, a phenomenon directly precipitated by the escalating financial burden of education (Hoque et al., 2022).

Minimum Wage

The minimum wage is the minimum amount of monthly income that employers must provide to workers as compensation for work or services that have been completed. This amount is determined in the form of money based on an employment agreement between the employer and the employee, and includes allowances intended for workers and their families (Putra et al., 2022). The determination of the minimum wage itself is aimed at increasing the income of workers who still receive substandard wages, as well as providing protection against the practice of giving unsuitable wages by employers to workers or laborers (Lestari & Nilasari, 2025). According to Sumarsono (2009) in (Putra et al., 2022), the wage system in Indonesia is based on three main roles of wages, namely: (a) ensuring that workers and their families can live a decent life, (b) being a form of appreciation for individual work contributions and (c) serving as an encouragement or motivation to increase work productivity.

Population Growth Rate

Population growth rate is one of the demographic indicators that describes the percentage change in the number of people in an area in each period, which is usually calculated annually (Wang & Conesa, 2022). The dynamics of population change refers to the change in the number of people inhabiting an area, which is influenced by births, deaths, and migrations (Gu et al., 2021).These dynamics can result in changes in the population of the population in an area (Putri & Nurwati, 2021). Population growth can expand the productive age group and economic markets, but it also increases the number

of non-productive populations, burdens infrastructure and increases pressure on natural resources and the environment (Setiawan & Bay, 2024).

The relationship between Average School Length and Open Unemployment Rate is in line with the Harris & Todaro (1970) which reveals that increased investment in education can occur in conjunction with high open unemployment rates. This can happen because individuals with higher education graduates have high expectations of the wages they will receive. However, what happened in Bojonegoro is that formal sector employment opportunities are increasingly limited so that most individuals prefer to be unemployed to wait for a job that matches their qualifications rather than working in the informal sector. From here, the phenomenon of educated unemployment in Bojonegoro Regency was created.

The relationship between the Minimum Wage and the Open Unemployment Rate is in line with Mankiw (2006) in (Salsabila et al., 2024), stating that the establishment of minimum wage standards can reduce the number of workers that are able to be absorbed by various sectors of work, thus risking increasing the open unemployment rate. This is in line with the Efficiency Wage Theory which states that the practice of wage fixing and its impact on productivity and unemployment, however, this efficient wage can also result in long-term unemployment and wage rigidity (Weiss, 2018).

The relationship between the Population Growth Rate and the Open Unemployment Rate reflects the 'Malthusian Trap', in which uncontrolled population growth exceeds the economy's ability to provide resources and jobs (Ashraf & Galor, 2011). In developing countries, this imbalance is often reflected in the persistent gap between the supply of labour and the absorption of the economy, resulting in high open unemployment rates (Dao, 2012).

Research conducted by Parluhutan et al. (2022) shows that minimum wage, education level, and population growth have a simultaneous effect on the Open Unemployment Rate in Provinces on the island of Sumatra. Another researcher Tumilaar et al. (2022) found that the number of populations, education and minimum wage influence the Open Unemployment Rate in Regencies East Kalimantan Province. In contrast to previous research, research that focuses on Bojonegoro district is very necessary because it sees the high GDP of the oil and gas sector, but the fluctuating unemployment and poverty rates are a challenge. That way, it needs to be questioned again whether the economic growth of oil and gas production can absorb local workers or create unemployment again due to skill mismatches.

RESEARCH METHOD

This part consists of type or design of the research, subjects or object of the research, definitions of variables, and data analysis techniques. The method used in this study is a quantitative method with secondary data sources. The secondary data taken from this study is sourced from the Central Statistics Agency of Bojonegoro Regency and literature relevant to this study. In this study, we analyze the Average School Length, Minimum Wage, and Population Growth Rate as independent variables against the Open Unemployment Rate as a bound variable in Bojonegoro Regency in 2005-2024. The analysis in this study uses multiple regression analysis of time series data including t-

test, F test, determination coefficient, normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The test uses the SPSS 24 application. The form of regression model equations in this study is as follows:

$$TPTt = \beta 0 + \beta 1ALSt + \beta 2MWt + \beta 3PGRt + \varepsilon t$$

Where:

OUR	= Open Unemployment Rate
ALS	= Average School Length
MW	= Minimum Wage
PGR	= Population Growth Rate
B0	= Konstanta
B1, B2, B3	= Regression Coefficient
e	= Error Term
t	= Time series 2005-2024

Based on the data analysis techniques carried out, the following hypotheses can be formulated: H1: Average length affects the open unemployment rate in Bojonegoro Regency in 2005-2024, H2: Minimum wage affects the open unemployment rate in Bojonegoro Regency in 2005-2024, H3: Population growth rate affects open unemployment rate in Bojonegoro Regency in 2005-2004, H4: Average school length, minimum wage, and population growth rate affect the open unemployment rate in Bojonegoro Regency in 2005-2004.

RESULTS AND DISCUSSION

Results

Normality Test

Table 2. Normality Test

Unstandardized Residual	Shapiro-Wilk		
	Statistic	df	Sig.
	.983	20	.964

Source: Data was analyzed using SPSS version 24

Test Criteria: Based on the Shapiro-Wilk normality test, if the significance value is greather than 0.05, the data can be saud to be normally distributed. The results of the tables show that the value of Asymp. Sig (2-tailed) is (0.964 > 0.05) so that the value of sig. greather then 0.05, then it can be concluded that the data is distributed normally.

Multicollinearity Test

Table 3. Multicollinearity Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-15.097	4.815		-3.136	.006		
	ALS	4.145	.886	1.208	4.677	.000	.247	4.051
	MW	-5.768E-6	.000	-1.682	-6.484	.000	.245	4.085
	PGR	1.875	3.022	.094	.640	.544	.711	1.406

Source: Data was analyzed using SPSS version 24

Test criteria: If the tolerance value > 0.100 and VIF < 10.00, it can be concluded that there are no symptoms of multicollinearity. Based on the results of the multicollinearity test that can be seen in the Collinearity Statistics column, it shows that the tolerance values of the average length of school (0.247 > 0.100), the minimum wage variable (0.245 > 0.100), and the population growth rate variable (0.711 > 0.100). VIF values were on the variables of average school age (4.051 < 10.00), the minimum wage variable (4.085 < 10.00) and the population growth rate variable (1.406 < 10.00). Overall, only the population growth rate variable had a tolerance value (> 0.100) and a VIF value (< 10.00) so it can be concluded that there are no symptoms of multicollinearity in this regression model.

Heteroscedasticity Test

Table 4. Heterosdasticity Test

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std.Error	Beta	t	Sig.
1	(Constant)	1.888	2.697		.700	.494
	ALS	-.043	.497	-.039	-.087	.932
	MW	-3.9453-7	.000	-.358	-.792	.440
	PGR	-.541	1.693	-.085	-.320	.753

Source: Data was analyzed using SPSS version 24

Test Criteria: If the significance value is greater than 0.05 then it can be concluded that the data does not cause symptoms of heteroscedasticity. Based on the results of the Glejser test, it shows that: The average variable of school time has a significance value (0.932 > 0.05); The minimum wage variable has a significance value (0.440 < 0.05); The variable population growth rate has a significance value (0.753 > 0.05). Therefore, it can be concluded that in this regression model, there are no symptoms of heteroscedasticity.

Autocorrelation Test

Table 5. Autocorrelation Test

	Unstandardized Residual
Test Value	-.11159
Cases < Test Value	10
Cases >= Test Value	10
Total Cases	20
Number of Runs	11
Z	.000
Asymp. Sig. (2-tailed)	1.000

Source: Data was analyzed using SPSS version 24

Test criteria: Asymp value. Sig (2-tailed) > 0.05, it can be concluded that there are no autocorrelation symptoms. Based on the results of the Run-Test test, it shows that the value of Asymp. Sig (2-tailed) is 0.100 > 0.05. Therefore, it can be concsluded that the regression model in this study does not have autocorrelation symptoms.

Multiple Regression Analysis

Table 6. Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-15.097	4.815		-3.136	.006
	ALS	4.145	.886	1.208	4.677	.000
	MW	-5.768E-6	.000	-1.682	-6.484	.000
	PGR	1.875	3.022	.094	.640	.544

Source: Data was analyzed using SPSS version 24

Based on the results of the regression output in the table above, it can be found that each variable has the following characteristics: A constant value of -15.097 states that if the average value of school time, minimum wage and population growth rate is constant value (0), then the magnitude of the Open Unemployment Rate is -15.097. The regression coefficient of the Average School Length variable of 4.145 means that if the average length of school increases by 1%, then the Open Unemployment Rate will increase by 4.145%. The regression coefficient of the Minimum Wage variable -0.000005768 means that if the minimum wage rises by 1 rupiah, then the percentage point of the Open Unemployment Rate is 0.000005768%. The regression coefficient of the variable population growth rate of 1.875 means that if the population growth rate increases by 1%, then the Open Unemployment Rate will increase by 1.875%.

Multiple Correlation Analysis (R) and Coefficient of Determinan (R^2)

Table 7. Coefficient of Determinan Test (R^2)

Model	R	R Square	Adjusted-R Square	Std. Error of the Estimate
1	.858a	.736	.687	1.22185

Source: Data was analyzed using SPSS version 24

Based on the results of the table 7, it shows that the value of R is 0.858. Since the correlation value is in the range of 0.80-1, it is assumed that there is a very strong correlation between Average School Length (X1), Minimum Wage (X2), and Population Growth Rate (X3) with Open Unemployment (Y). The regression output results show that the Adjusted R squared value (R2) is 0.687. This suggests that the 68.7% variation in the open unemployment rate can be explained by average length of schooling, minimum wage, and population growth rate. The remaining 31.3% is explained by other variables that are not included in this model.

Partical Statistical Test (T test)

Table 8. Partial Statistical Test

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-15.097	4.815		-3.136	.006
	ALS	4.145	.886	1.208	4.677	.000
	MW	-5.768E-6	.000	-1.682	-6.484	.000
	PGR	1.875	3.022	.094	.640	.544

Source: Data was analyzed using SPSS version 24

Based on the results of the regression output in the table above, the results of the T-test can be found as follows: The effect of the average length of school (X1) in the table above shows that the t-value is calculated as 4.677, while the value of sig. by (0.000 < 0.05) so that it has a significance value of 0.000 less than 0.05. Thus, H0 is rejected and H1 is accepted, so it can be concluded that the Average School Length has a significant effect on the Open Unemployment Rate (Y). The effect of minimum wage (X2) in the table above shows that the t-value is calculated as -6.484, while the value of sig. by of (0.000 < 0.05) so that it has a significance value of 0.000 less than 0.05. Thus, H0 is rejected and H1 is accepted, so it can be concluded that the Minimum Wage has a significant and negative influence on the Open Unemployment Rate (Y). This means that if the minimum wage increases, the Open Unemployment Rate will decrease. The effect of the population growth rate (X3) in the table above shows that the t-value calculated as 0.620, while the value of sig. by (0.544 > 0.05) so that it has a significance value of 0.544 that is greather than 0.05. Thus, H0 is accepted and H1 is rejected, so it can be concluded that the Population Growth Rate has no significant influence on the Open Unemployment Rate

(Y). This means that changes in the rate of population growth do not have a meaningful impact on the open unemployment rate in this model.

Simultaneous Test (F test)

Table 9. Simultaneous Test

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	66.721	3	22.240	14.897	.000[b]
	Residual	23.886	16	1.493		
	Total	90.607	19			

Source: Data was analyzed using SPSS version 24

Based on the results of the regression output, it shows that the Sig. value is 0.000 < 0.05, so it can be concluded that the variables of average length of schooling, minimum wage, and population growth rate simultaneously affect the open unemployment rate in Bojonegoro Regency.

Discussion

The Effect of Average School Length on Open Unemployment Rate

The average length of school influences the Open Unemployment Rate in Bojonegoro Regency because the significance value is smaller than 0.000 < 0.05. It can be interpreted that, if the average length of school increases by 1%, then the open unemployment rate also tends to increase by 1% as well. This research is in line with (Anowor et al. 2023; Munawaroh et al., 2025; Khan 2025). The contradiction in this study that occurs in the effect of the average length of school on the unemployment rate indicates the existence of a complex phenomenon of educated unemployment. Sociologically, the low-educated population in Bojonegoro and its surroundings often come from families with limited economic conditions, which forces them to be immediately absorbed into any job market (informal sector or agriculture) to meet basic needs. On the other hand, higher education graduates tend to have the 'economic cushion' of a more affluent family, so they are more selective in choosing jobs (job search) that match their wage expectations and educational prestige. This selective behavior, which is often referred to as waiting unemployment, causes an increase in school length (RLS) not to automatically reduce the unemployment rate, but instead shifts the burden of unemployment to the educated group (BPS of Bojonegoro Regency, 2025).

The Effect of the Minimum Wage on the Open Unemployment Rate

The minimum wage has a significant and negative effect on the Open Unemployment Rate in Bojonegoro Regency because Calculated t-value of -6.484. It can be interpreted that, if the minimum wage rises by 6.484 rupiah, then the open unemployment rate will decrease by 6.484%. This research is in line with (Wolfson & Belman (2019); Damaianti & Chaerudin, 2021;Ten & Wang 2025). This indicates that the minimum wage policy in Bojonegoro district reflects the condition of the labor market, which is dominated by the agricultural sector and the oil and gas sector. The study Wolfson & Belman (2019) also found that the minimum wage is not always significant to the open unemployment rate

due to the dependence on the informal sector. Bojonegoro Regency itself also depends on regional income through the oil and gas sector, so it does not affect the unemployment rate in real terms.

The Effect of Population Growth Rate on Open Unemployment Rate

The population growth rate has no significant effect on the open unemployment rate with a regression coefficient of 0.620. It can be interpreted that the rate of population growth does not have a major influence on the open unemployment rate. The rate of population growth that is increasing from year to year has led to an increase in the number of labor force. This shows that employment opportunities and employment opportunities need to be increased and expanded. These findings are in line with research conducted by (Zenika et al., 2022; SitiPatima et al., 2022; Izzati et al., 2023).

CONCLUSION

Fundamental Finding: Based on the results of the research that has been carried out, it can be concluded that: The results of multiple regression showed that partially the variable population growth rate had a significant effect on the Open Unemployment Rate in Bojonegoro Regency, while the variables of average length of schooling and minimum wage had no significant effect on the Open Unemployment Rate in Bojonegoro Regency in 2005-2024. **Implication:** Based on the results and conclusions of the research, suggestions that can be submitted to the Bojonegoro Regency government can seek to reduce open unemployment which is dominated by educated unemployed undergraduate and vocational school graduates by organizing a certified internship program in the oil and gas industry to have experience in accordance with the needs of the oil and gas industry job market, with the existence of the program seeks to reduce educated unemployment in Bojonegoro. The government also needs to monitor the rate of population growth by controlling the number of people in low-income families to invest in better quality human capital for families so that they can break the chain of unemployment between generations. The minimum wage policy does not have strong pressure on the unemployment rate, it is better for the local government to shift its focus to strengthening the informal sector in Bojonegoro Regency. **Limitation:** Partially, the rate of population growth has no significant effect on the open unemployment rate. In a small sample (n=20), statistical testing becomes vulnerable because the results show insignificant, but often this does not mean that the variable does not have an effect in the real world, but rather that the existing data are not strong enough to prove the influence statistically "low power of the test" (Gujarati & Porter, 2009). The determination coefficient (R2) in the results of this study showed a figure of 0.687. This shows that 68.7% of the variables of the open unemployment rate can be explained by the average length of schooling, minimum wage, and population growth rate. The remaining 31.3% is explained by other variables that are not included in this model. The constant value in the results of this study shows that it is -15.097 which can be stated that, if the average value of school time, minimum wage and population growth rate is constant (0), then the magnitude of the Open Unemployment Rate in Bojonegoro Regency is -15.097%. **Future Research:** With this, it is hoped that the next researcher can add other variables that have not been discussed in the study with different analysis models to improve the results of the study.

REFERENCES

Anderson, K., & Ponnusamy, S. (2023). Structural transformation away from agriculture in growing open economies. *International Association of Agricultural Economics, 54*(1), 62-76. doi:10.1111/agec.12745

Anowor, O., Ichoku , H., Onodugo , V., Ochinanwata, C., & Uzomba, P. (2023). Does investment in education and health impact youth employment outcomes? Evidence from Sub-Saharan Africa. *Cogent Economics & Finance, 11*(1), 1-16. doi:10.1080/23322039.2022.2160128

Ashraf, Q., & Galor, O. (2011). Dynamics and Stagnation in the Malthusian Epoch. *American Economic Review, 101*(5), 2003-2041. doi:10.1257/aer.101.5.2003

Bilek-Steindl, S., Kettner, C., & Mayrhuber, C. (2022). Special Issue: Sustainability, Work and Growth in the Context of SDG 8. *Empirica, 49*(2), 277-279. doi:10.1007/s10663-022-09538-9

BPS of Bojonegoro Regency. (2024). *Statistik Daerah Kabupaten Bojonegoro.* Bojonegoro: BPS of Bojonegoro Regency.

BPS of Bojonegoro Regency. (2025). *Profil Ketenagakerjaan Badan Pusat Statistik Kabupaten Bojonegoro.* Bojonegoro: BPS of Bojonegoro Regency.

Damaianti, I., & Chaerudin, R. M. (2021). The Minimum Wage and Its Implications to The Open Unemployment Rate Covid-19 Pandemic in West Java. *Journal of International Conference Proceedings, 4*(2), 71-75. doi:10.32535/jicp.v4i2.1227

Dao, M. Q. (2012). Population and Economic Growth in Developing Countries. *International Journal of Academic Research in Business and Social Sciences, 2*(1), 526-538.

Gaol, R. I., Suharianto, J., Sianturi, R., & Siagian, Y. (2023). Pengaruh Angka Harapan Lama Sekolah, Rata-Rata Lama Sekolah dan Pengeluaran Per Kapita Terhadap Indeks Pembangunan Manusia di Provinsi Sumatra Utara Tahun 2010-2022. *Aurelia: Jurnal Penelitian dan Pengabdian Masyarakat Indonesia, 3*(1), 470-478. doi:10.57235/aurelia.v3i1.1656

Gu, D., Andreev, K., & Dupre, M. (2021). Major Trends in Population Growth Around the World. *Chinese Center for Disease Control and Prevention, 3*(28), 604-613. doi:10.46234/ccdcw2021.160

Gujarati , D., & Porter , D. (2009). *Basic Econometrics* (5th ed.). McGraw-Hill.

Harris, J., & Todaro, M. (1970). Migration, Unemployment and Developmnent: A Two-Sector Analysis. *The American Economic Review, 60*(1), 126-142.

Hoque, N., Mahanta, R., & Sarkar, D. (2022). Does free education reduce early school dropouts? Evidence from a legislative reform in India. *Economic Analysis and Policy, 74*, 657-665. doi:10.1016/j.eap.2022.03.022

Izzati, N., Nasir, M., & Abrar, M. (2023). Analisis Pengaruh Pertumbuhan Penduduk dan Pertumbuhan Ekonomi Terhadap Tingkat Pengangguran Terbuka di Provinsi Aceh. *Jurnal Ilmiah Mahasiswa Ekonomi Pembangunan (JIM EKP)*, 136-146.

Khan, I. (2025). Reducing youth unemployment in India? The impact of macroeconomic factors. *Journal of Economic and Administrative Sciences*. doi:10.1108/JEAS-09-2024-0369

Lestari, I. D., & Nilasari, A. (2025). Pengaruh Laju Pertumbuhan Penduduk, Tingkat Partisipasi Angkatan Kerja, dan Upah Minimum Kabupaten/Kota Terhadap Tingkat Pengangguran Terbuka Di Kabupaten/Kota Provinsi Jawa Barat Tahun 2018 - 2022. *EKUILNOMI: Jurnal Ekonomi Pembangunan, 7*(2), 483-493. doi:10.36985/ywmawh84

Lutz, W., Reitera, C., Ozdemirc, C., Yildiz, D., Guimaraes, R., & Goujon, A. (2021). Skills-adjusted human capital shows rising global gap. *PNAS, 118*(7), 1-5. doi:10.1073/pnas.2015826118

Maulana, M. H., & Huda, S. (2025). Analysis of the Influence of Life Expectancy, Average Length of Schooling, Per Capita Expenditure, and Population Size on Economic Growth in Kediri City. *International Journal of Business and Applied Economics, 4*(4), 1595-1604. doi:10.55927/ijbae.v4i4.165

Mokoagow, M. I., & Mardiana, A. (2023). Dampak Pengangguran Terhadap Pertumbuhan Ekonomi di Provinsi Gorontalo. *Jurnal Ilmiah Edunomika, 8*(1), 1-8. doi:10.29040/jie.v8i1.10650

Munawaroh, S. R., Endang, Susilo, J. H., & Astuti, H. (2025). Determinants of Unemployment Rate in Indonesia: A Dynamic Panel Data Approach. *Jurnal Ekonomi Pembangunan, 23*(1), 99-112. doi:10.29259/jep.v23i1.23310

Parluhutan, P., Junaidi, J., & Prianto, P. H. (2022). Faktor-Faktor yang Mempengaruhi Tingkat Pengangguran Terbuka di Pulau Sumatera. *Jurnal Ekonomi Aktual, 1*(3), 133-140. doi:10.53867/jea.v1i3.20

Putra, Z., Wiridin, D., & Wajdi, F. (2022). *Implementasi Upah Minimum Terhadap Kesejahteraan Pekerja.* Malang: Ahlimedia Press.

Putri, N. C., & Nurwati, N. (2021). Pengaruh Laju Pertumbuhan Penduduk berdampak pada Tingginya Angka Kemiskinan yang menyebabkan banyak Eksploitasi Anak di Indonesia. *Jurnal Ilmu Kesejahteraan Sosial HUMANITAS, 3*(1), 1-15.

doi:10.23969/humanitas.v2i1.2827

Rahmawati, O. F., & Imaningsih, N. (2025). Analysis of the Influence of Education Level, Economic Growth, and Labor Force Participation Rate on Poverty Levels in Jember Regency and Probolinggo Regency. *International Journal of Business and Applied Economics, 4*(3), 993-1008. doi:10.55927/ijbae.v4i3.91

Saleh , H., Surya , B., Ahmad, D. N., & Manda, D. (2020). The Role of Natural and Human Resources on Economic Growth and Regional Development: With Discussion of Open Innovation Dynamics. *Journal of Open Innovation: Technology, Market, and Complexity, 6*(4), 1-23. doi:10.3390/joitmc6040103

Salsabila, S. I., Nabila, S., Rianti, R. A., Priyoga, D., & Sujianto, A. E. (2024). Pengaruh Upah Minimum Dan Tingkat Partisipasi Angkatan Kerja Terhadap Tingkat Pengangguran Terbuka Di Jawa Timur. *Journal of Administrative and Social Science (JASS), 5*(1), 92-107. doi:10.55606/jass.v4i2.885

Setiawan, A. Y., & Bay, I. (2024). Analisis Laju Pertumbuhan Penduduk di Kecamatan Sukasari Kota Bandung. *Geoarea: Jurnal Geografi, 7*(1), 21-31. Retrieved from https://ejournal.unibba.ac.id/index.php/Geoarea

SitiPatima, A., Hardiani, H., & Umiyati, E. (2022). Pengaruh Pertumbuhan Ekonomi, Pertumbuhan Penduduk, dan Tingkat Pendidikan terhadap Pengangguran Terbuka di Provinsi Jambi. *Jurnal Ekonomi Aktual, 1*(3), 149-154. doi:10.53867/jea.v1i3.52

Ten, G. K., & Wang, S. (2025). Minimum wage and unemployment in Russia: A new look on an old construct. *Economic Modelling, 148*, 1-15. doi:10.1016/j.econmod.2025.107086

Tumilaar, T., Maramis, M. T., & Siwu, H. F. (2022). Pengaruh Jumlah Penduduk, Pendidikan, dan Upah Minimum Terhadap Tingkat Pengangguran Terbuka di Kabupaten/Kota Provinsi Kalimantan Timur. *Jurnal Berkala Ilmiah Efisiensi, 22*(5), 61-72. doi:10.35794/jbie.v22i5.42451

Wang, Y., & Conesa, J. C. (2022). The role of demographics and migration for the future of economic growth in China. *European Economic Review, 144*, 1-18. doi:10.1016/j.euroecorev.2022.104076

Weiss, A. (2018). Efficiency Wages. In *The New Palgrave Dictionary of Economics* (pp. 3519-3522). London: Palgrave Macmillan UK.

Wolfson, P., & Belman, D. (2019). 15 Years of Research on US Employment and the Minimum Wage. *Labour, 33*(4), 488-506. doi:10.1111/labr.12162

Yoto, Suyetno, A., Wibawa, A. P., Paryono, & Romadin, A. (2024). Unveiling the

Distinctive Impact of Vocational Schools Link and Match Collaboration with Industries for Holistic Workforce Readiness. *Open Education Studies, 6*(1), 1-18. doi:10.1515/edu-2024-0045

Zeleke, B. (2022). The Mismatch between Technical and Vocational Education and Training Graduates' Competence and Expected Employees' Skills: Perceived Experience of Employers in Private Firms of Addis Ababa. *East African Journal of Social Sciences and Humanities, 7*(1), 47-68.

Zenika, S., Lubis, D. S., & Zein, A. S. (2022). Pengaruh Pertumbuhan Penduduk dan Pertumbuhan Tenaga Kerja Terhadap Pengangguran Tingkat Kota di Provinsi Sumatera Utara Tahun 2014-2020. *PROJFES, 1*(1), 299-314. doi:10.24952/profjes.v1i1.6946

***Syifaul Fuaadhilah Kholis (Corresponding Author)**
Economic Education Study Program,
Universitas Negeri Surabaya,
Address: Jl. Ketintang No.2, Ketintang, Kec. Gayungan, Surabaya, Jawa Timur 60231
Email: syifaul.22035@mhs.unesa.ac.id

Heny Musfidah
Economic Education Study Program,
Universitas Negeri Surabaya,
Address: Jl. Ketintang No.2, Ketintang, Kec. Gayungan, Surabaya, Jawa Timur 60231
Email: henymusfidah@unesa.ac.id

Dhiah Fitrayati
Economic Education Study Program,
Universitas Negeri Surabaya,
Address: Jl. Ketintang No.2, Ketintang, Kec. Gayungan, Surabaya, Jawa Timur 60231
Email: dhiahfitrayati@unesa.ac.id

Shochrul Rohmatul Ajija
School Of Social Science,
Universiti Sains Malaysia
Address: Jl. Universiti, 11700 Gelugor, Pulau Pinang, Malaysia
Email: shochrulrohma@student.usm.my