



ANALYSIS OF POPULATION AND UNEMPLOYMENT ON ECONOMIC GROWTH IN INDONESIA DURING THE COVID-19 PANDEMIC

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ABSTRACT

Understanding the effect of population and unemployment rate on Indonesia's economic growth during the COVID-19 pandemic period is the main focus of this study. Through descriptive and explanatory approaches as well as multiple linear regression analysis, the study highlights that population increase has a positive impact on economic growth, while the unemployment rate has a negative influence. These findings confirm that economic growth can be spurred by population growth, but can be hampered by high unemployment. In addition, factors such as the quality of human resources, infrastructure, and government policies also influence the dynamics of economic growth. Therefore, it is important for the government to continue to improve these aspects in order to optimize Indonesia's economic potential. This study provides a deep understanding of the relationship between demographic factors and economic growth during the COVID-19 pandemic.

Keywords: Number of Population, Unemployment, Economic Growth during the Covid-19 Pandemic Period, Indonesia.

1. Introduction

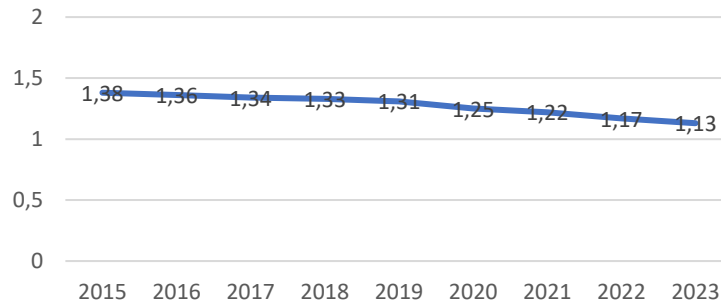
Indonesia has been seriously affected by the COVID-19 pandemic. Indonesia ranks third in the number of deaths due to COVID-19 in Asia (Worldometer, 2020). Indonesia's economic growth has decreased due to the Large-Scale Social Restrictions (PSBB), including restrictions on people's economic activities. The government also implements health protocols such as maintaining distance, avoiding crowds, and issuing *Work From Home* policies. This makes it difficult for producers to run their businesses directly, and consumers face difficulties in obtaining daily necessities. Some sectors and companies are experiencing difficulties, even some of them are bankrupt or do not have *cashflow*, resulting in layoffs.

The impact of the Covid-19 pandemic caused a decrease in economic growth by minus 5.32% in the second quarter of 2020, (BPS, 2020) in the third quarter of 2020 indicating a decrease ranging from minus 2.9% to minus -1.1%. This negative impact penetrated the employment sector, reflected in an increase in the number of unemployed, the deteriorating economic situation prompted a number of companies to make layoffs. The decrease in the number of job vacancies reached 62% as of May 2020 reflecting a significant decrease in labor demand (Thomas, 2020).

The sectors most affected by the COVID-19 pandemic include tourism, MSMEs, households, finance, textiles, etc. (Firdaus, 2020). The trade sector experienced a significant reduction in employment, with around 677,000 to 953,200 workers reduced (Bappenas, 2020). Meanwhile, the construction sector experienced a reduction in employment by 3.2% to 4.5% of the number of workers in February 2020. Some sectors that can still absorb labor during the pandemic include education, information and communication, health services and social activities, and financial and insurance services (Rizal, 2020).

In addition, population is a potential input that can be used as a factor of production to increase the production of a company's household. (Zulfa, 2016). Indonesia's population growth rate in 2023 is at 1.13%. The population growth rate is the lowest level in eight years. As for the period 2015-2022, Indonesia's population growth rate continues to decline every year and increase by 1.13% in 2023. (Annur, 2023)

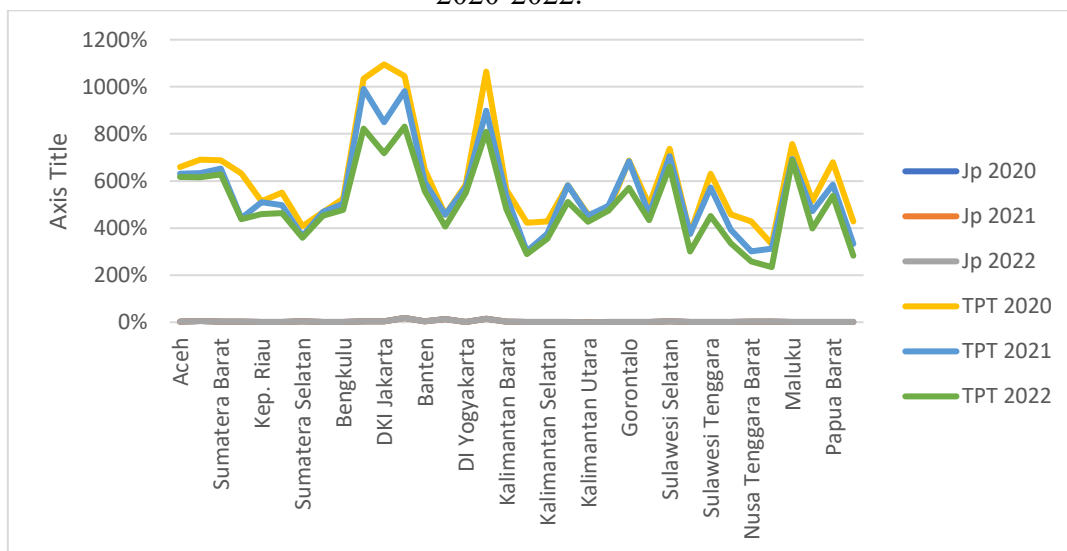
Figure 1. Indonesia's Population Growth Rate in 2015-2023



Source : BPS data processed by the author, 2024

Open unemployment is a type of unemployment that is formed due to the availability of job opportunities smaller than the growing workforce. (Wahab, 2022). The number of unemployed people in Indonesia has tended to decline in the last three years, since reaching its highest peak at the beginning of the COVID-19 pandemic. Then, the number of unemployed people in Indonesia exceeded 9.77 million people in August 2020. That figure is up 2.67 million people compared to the same period last year. In 2021, the number of unemployed or open unemployment rate (TPT) in August 2021 reached 6.49 percent of the total labor force or equivalent to 9.10 million. This number is lower than the TPT in August 2020. (Andrean W. Finaka, 2023) Economic growth reflects the state of the economy of a region or country. (Nuzulaili, 2022). (Wahab, 2022) and the Central Statistics (BPS) noted that the Indonesian economy in 2022 managed to grow 5.31 percent compared to the previous year (*year-on-year / yoy*). The domestic economy in 2022 managed to grow thanks to high growth in the fourth quarter of 2022 which rose 5.01 percent (BPS. 2022).

Figure 2. Economic growth, number of unemployed, open unemployment rate (TPT) in 2020-2022.



Source : BPS data processed by researchers, 2024

2. Literature Review

2.1 Economic Growth

A country's economy is measured by its economic growth, which reflects the success of economic development. If there is an increase in the production of goods and services, or in other words, there is a development of a country's Gross National Product (GNP), then it is a positive indicator of economic growth. Good economic growth should be reflected in an increase in per capita output, real wage growth, and an increase in living standards (Astuti et al., 2019). The factors that affect the economic growth of a society or country can be categorized into three, as stated by Subandi (2016). First is capital accumulation, which includes investments in various forms such as land, physical equipment such as machinery and infrastructure, as well as human resources through education and training. This investment in capital increases production capacity and directly supports economic growth.

Second is population and labor growth. Increasing population can be a human resource that has the potential to increase the workforce, but must be balanced with improving the quality of education and training to improve their skills. In addition, adequate job creation also needs to be done to accommodate labor growth. Third is technological progress, which is considered the most important factor in driving economic growth. Technological advances can change the way resources are produced and used, both neutrally and by saving labor and capital. This can increase productivity and efficiency in various sectors of the economy, which in turn will accelerate overall economic growth

Overall, a combination of capital accumulation, population and labor growth, and technological advances play an important role in determining the pace of economic growth. To achieve high and sustainable economic growth, appropriate policies are needed to encourage investment, improve the quality of the workforce, and encourage technological innovation. This will help create an economic environment conducive to long-term growth and the overall well-being of society.

2.2 Unemployment

Unemployment refers to individuals who have not managed to get a job, even though they are included in the category of the labor force who have the ability and desire to work (Fikri & Gopar, 2020). The COVID-19 pandemic situation has caused many people to find it difficult to find work due to job losses and increasing job competition (Indayani & Hartono, 2020).

In this context, there are several types of unemployment such as covert unemployment, underemployment, and open unemployment (Franita, 2016). Involuntary unemployment often occurs when economic growth slows, leading to company bankruptcies and layoffs. On the other hand, voluntary unemployment occurs when individuals are able to work but choose not to work (H, 1992).

In addition, frictional unemployment is also a phenomenon caused by an imbalance between labor demand and available jobs (Prof. Dr. Ir. Johannes, 1981). Some factors that cause high unemployment include imbalances between the number of workers and employment, company preferences for technology, quality of human resources, lack of education, high poverty rates, mass layoffs, remote work locations, global competitiveness, difficulty finding jobs, and too high expectations of prospective workers (Kasnelly, 2020).

Unemployment refers to the condition of a person who wants a job but has not managed to get it, and they do not participate in the process of production of goods and services, causing a general shortage of demand. The inflexibility of wage levels in the labor market can result in a decrease in firm production and an increase in the number of untapped labor. As a result, unemployment occurs where individuals belonging to the labor force are unemployed and actively looking for work. It is important to note that a person who is not working but is actively

looking for work cannot be categorized as unemployed, as revealed by Mankiw (in Nanga, 2018).

2.3 *Periode Pandemic*

Government regulations stipulate the implementation of Large-Scale Social Restrictions (PSBB) authorized by the Minister of Health and can be implemented by Regional Governments with the approval of the Minister of Health. Involvement in the world of work makes individuals more vulnerable to the impact of the pandemic, as stated by McKibbin (in Fernando, 2020). As a result of this regulation, factors such as average monthly income, family size, education level, and incidence of disease are significant determinants of urban poverty rates (Ramadhani, 2023).

The COVID-19 pandemic has had a significant impact on unemployment and economic growth in Indonesia. Large-scale social restrictions (PSBB) and other preventive measures have resulted in many sectors of the economy being hit, causing a decline in production, business closures, and a decrease in income. This has contributed to an increase in the unemployment rate in the country, with many workers losing their jobs or experiencing cuts in working hours. In addition, limited mobility and global economic uncertainty also affect Indonesia's overall economic growth. With declining exports and imports, as well as declining business activity, Indonesia's economic growth has slowed. Therefore, sustainable economic recovery measures and policies that support the labor sector are key in facing the economic challenges faced by the COVID-19 pandemic.

3. Research Methods

This study uses a descriptive and explanatory approach using numerical data to reveal the relationship between population, unemployment rate, and economic growth in Indonesia during the COVID-19 pandemic period. The variables used in this study are independent variables that affect economic growth as dependent variables. The data source used comes from secondary data obtained from trusted institutions such as the Central Statistics Agency (BPS).

The method of data analysis is carried out using multiple linear regression, Multiple linear regression is a statistical model used to predict the value of the dependent variable (Y) based on two or more independent variables (X_1, X_2, \dots, X_n). This model is called "multiple" because it involves more than one independent variable, and "linear" because the relationship between the dependent variable and the independent variable is assumed to be linear; a method used to analyze the relationship between three main variables, namely population, unemployment rate, and economic growth.

Classical Assumption Test:

- a. **Normality:** Kolmogorov-Smirnov/Shapiro-Wilk test (H_0 : Normal distribution)
- b. **Homoscedasticity:** Breusch-Pagan/White Test (H_0 : Constant residual variance)
- c. **Multicollinearity:** VIF (Variance Inflation Factor) > 10 (indication of multicollinearity)
- d. **Autocorrelation:** Durbin-Watson/Ljung-Box Test (H_0 : No autocorrelation)

Best Model Test:

- a. **Anova:** F test (H_0 : All regression coefficients zero)
- b. **t-test: Individual t-test** (H_0 : Individual regression coefficient = 0)
- c. **F-test:** Overall F test (H_0 : All regression coefficients zero, except intercept)

Hypothesis Testing:

$$PAD_{it} = \beta_0 + \beta_1 P_{it} + \beta_2 R_{it} + \beta_3 JP_{it} + \beta_4 TK_{it} + e_{it}$$

Information:

PAD_{it} : Local Original Revenue

P_{it} : Local Tax

R_{it} : Regional Retribution

JP_{it} : Population

TK_{it} : Poverty Rate

e_{it} : Error

4. Research Findings and Discussion

This study presents research findings based on explanations of statistical descriptions and results of logistic regression analysis. Information description of research data is presented in the following table:

Table 1. Description of Research Data Statistics

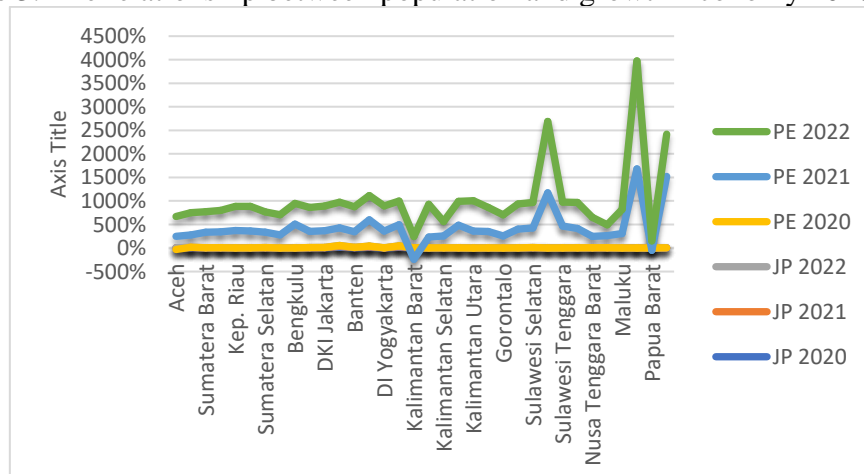
Variable	Obs	Average	Deviation Std.	Minimum	Maximum
Total Population	102	8026.083	11271.96	701.8000	49405.80
Opened Unemployment	102	5.497255	1.852934	2.340000	10.95000
Economic Growth	102	2.907059	4.445997	-9.340000	22.94000

Source : BPS, data processed by the author, 2024

From table 1 above, it can be seen that this study involved 102 variables. The average population in the area in this study was 8026 people with a standard deviation of 11271.96 people. This shows that there is considerable variation in population numbers in the study area. The average open unemployment rate was 5.49% with a standard deviation of 1.85%. This suggests that the unemployment rate in this study area is relatively low. The average economic growth rate is 2.91% with a standard deviation of 4.45%. This suggests that economic growth rates in this study area vary.

Based on the descriptive statistical analysis above, it can be concluded that the population in this study area is quite diverse, the unemployment rate is relatively low, and the economic growth rate varies.

Figure 3. The relationship between population and growth Economy 2020-2022



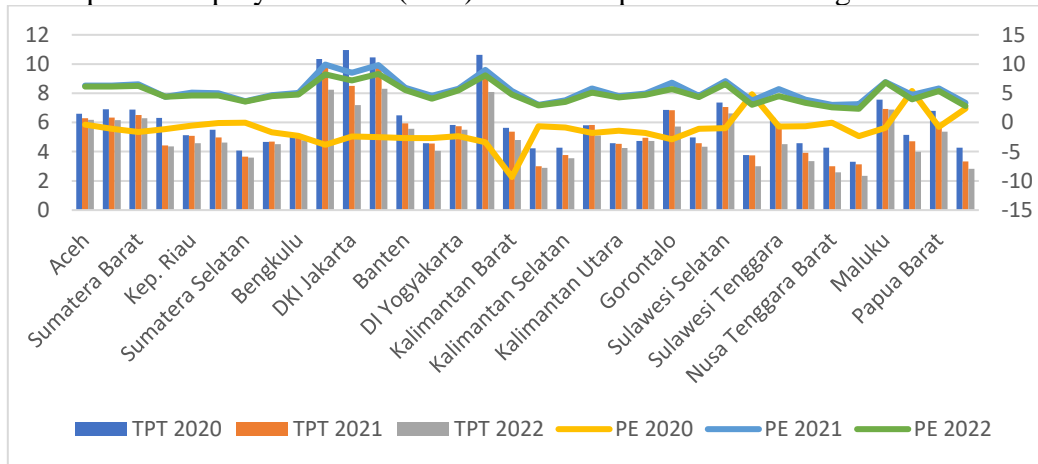
Source: BPS, data processed by the author, 2024

Based on diagram above, there is a significant relationship between population and economic growth in Indonesia during the 2020-2022 period. This can be seen from the trend that shows that regions with higher populations, such as West Java and East Java, generally experience higher economic growth as well. For example, West Java with a population percentage of 15%, experienced economic growth of 4.96%. On the other hand, regions with lower populations, such as Bengkulu and Gorontalo, generally experience lower economic growth.

This relationship can be explained by several factors. First, a high population can increase demand for goods and services, thereby encouraging the growth of economic sectors such as trade, tourism, and manufacturing. Second, a high population can provide the human resources needed to support economic growth.

However, it should be noted that the relationship between population size and economic growth is not always linear. Several other factors, such as the quality of human resources, infrastructure, and government policies, can also affect economic growth. Therefore, it is important for the government to continue to improve the quality of human resources, infrastructure, and government policies to maximize the potential for economic growth in Indonesia.

Figure 4. Open unemployment rate (TPT) relationship and Economic growth in 2020-2022



Source : BPS, processed by the author, 2024

Based on graph shown above, there is a negative relationship between the open unemployment rate (TPT) and economic growth in Indonesia in 2020-2022. This means that when economic growth increases, TPT tends to decrease, and vice versa. This relationship can be explained by several factors. First, high economic growth encourages the creation of new jobs, thereby reducing the number of unemployed. Second, economic growth can increase people's income, which in turn can increase demand for goods and services. This encourages companies to open new jobs to meet the demand.

However, it should be noted that this relationship is not always linear. In some cases, high economic growth is not always followed by a significant decline in TPT. This can be caused by several factors, such as workforce skills that do not match the needs of the labor market, or the presence of external factors that affect the economy, such as the COVID-19 pandemic.

Overall, it can be concluded that there is a negative relationship between TPT and economic growth in Indonesia in 2020-2022. High economic growth can help reduce TPT, but this relationship is not always linear and is influenced by several other factors.

4.1. Classical Assumption Test

The Classical Assumption Test used in this study is multicholinerlity and heterokedasticity. The Classical Assumption Test can be illustrated in the following table :

Tabel 2. Uji Multikolinearitas

	X1	X2
X1	1.000000	0.489150
X2	0.489150	1.000000

Source : data processed by the author, 2024

X1 : Total Population

X2 : Open Unemployment Rate

From the results of the multicholinerality test table 2 above, it can be concluded that the value of the correlation coefficient between independent variables ranging around 0.4 indicates the absence of significant multicollinearity in this research model.

Tabel 3. Hasil Regresi Linear Berganda

Variable	Economic Growth	
	(1) Fixed Effect	(2) Random Effect
Total Population	0.005494	3.70E-05
Open Unemployment Rate	-3.382536	-0.870392

Source : data processed by the author, 2024

Based on table 4 of multiple linear regression results above, there are two regression models analyzed, namely Fixed Effect and Random Effect models. Both models aim to see the influence of two independent variables, namely the Number of Population and the Open Unemployment Rate (TPT), on the dependent variable, namely Economic Growth.

4.2. Model Fixed Effect

In the Fixed Effect model, the regression coefficient for the Total Population variable is 0.005494. This shows that every increase of 1 unit of Total Population will increase Economic Growth by 0.005494 units, *ceteris paribus*.

While the regression coefficient for the Open Unemployment Rate (TPT) variable is - 3.382536. This shows that every increase of 1 unit of the Open Unemployment Rate (TPT) will decrease Economic Growth by 3.382536 units, *ceteris paribus*.

4.3. Model Random Effect

In the Random Effect model, the regression coefficient for the Total Population variable is 3.70E-05. This shows that every increase of 1 unit of Total Population will increase Economic Growth by 3.70E-05 units, *ceteris paribus*. While the regression coefficient for the Open Unemployment Rate (TPT) variable is -0.870392. This shows that every increase of 1 unit of the Open Unemployment Rate (TPT) will decrease Economic Growth by 0.870392 units, *ceteris paribus*.

It can be concluded that Population has a positive influence on Economic Growth in

both regression models, Open Unemployment Rate (TPT) has a negative influence on Economic Growth in both regression models. The population and open unemployment rate (TPT) have a significant influence on economic growth in Indonesia. Increasing the population will encourage economic growth, while increasing the Open Unemployment Rate (TPT) will hinder economic growth.

5. Conclusion

This research analyzes the relationship between population, unemployment rate and economic growth in Indonesia during the COVID-19 pandemic period. Based on data analysis using multiple linear regression, it was found that population size has a positive influence on economic growth, while the open unemployment rate has a negative influence. This shows that an increase in population can encourage economic growth, while an increase in the unemployment rate can hinder economic growth. This finding is in line with economic theory which states that a high population can increase demand for goods and services and provide the human resources needed to support economic growth.

However, it is important to remember that the relationship between population, unemployment rate and economic growth is not always linear. There are other factors such as the quality of human resources, infrastructure and government policies which can also influence economic growth. Therefore, it is important for the government to continue to improve the quality of human resources, infrastructure and economic policies that support it so that the potential for economic growth in Indonesia can be maximized. This research provides valuable insight into the relationship between demographic and economic factors in Indonesia during the COVID-19 pandemic period.

References

- Acemoglu, Daron, et al. (2020). *The Economics of COVID-19*. Chicago: University of Chicago Press.
- Aeni, N. (2021). Pandemi covid-19: Dampak kesehatan, ekonomi, & sosial. *Jurnal Litbang: Media Informasi Penelitian, Pengembangan Dan IPTEK*, 17(1), 17-34.
- Andria,Z (2016) Pengaruh pertumbuhan penduduk dan pertumbuhan ekonomi terhadap tingkat pengangguran di kota lhokseumawe. *Jurnal visioner & strategis* 5.1 (2016).
- Arifianto, Ferry. (2021). *Kebijakan Publik dalam Masa Pandemi: Perspektif Ekonomi*. Jakarta: Kencana Prenada Media Group.
- Assidikiyah, N., Marseto, M., & Sishadiyati, S. (2021). Analisis Potensi Pertumbuhan Ekonomi Provinsi Jawa Timur (Sebelum Dan Saat Terjadi Pandemi Covid-19). *Jambura Economic Education Journal*, 3(2), 102-115.
- Aulawi, Anton. 2020. "Penerbitan Peraturan Pemerintah Pengganti Undang-Undang Nomor 1 Tahun 2020 Sebagai Strategi Kebijakan Pajak Pemerintah Indonesia Dalam Menghadapi Dampak Pandemi COVID-19 Terhadap Keuangan Negara." *Jurnal Ilmiah Widya: Jurnal Ilmiah Ilmu Hukum*, 12(2), 193-206.
- Boeri, Tito. (2012). *Ekonomi Tenaga Kerja*. Jakarta: LP3EI.BPS - <https://www.bps.go.id>
- Gujarati, Damodar N., & Porter, Dawn C. (2013). *Basic econometrics* (5th ed.). New York: McGraw-Hill.
- Hill, Hal. (2016). *Transformasi Struktural dan Pertumbuhan Ekonomi: Pengalaman Indonesia*. Jakarta: LP3EI.
- Indayani, Hartono. 2020. "Analisis Pengangguran dan Pertumbuhan Ekonomi sebagai Akibat Pandemi COVID-19." *Perspektif: Jurnal Ekonomi & Manajemen*, 18(2), 201-208.
- Iriyadi, I., & Purba, J. H. V. (2022). Pertumbuhan Ekonomi Indonesia: Faktor Pendorong Pada Pandemi Covid-19. *Jurnal Ilmiah Manajemen Kesatuan*, 10(3), 529-544.

- Junaedi, D., & Salistia, F. (2020). Dampak Pandemi COVID-19 Terhadap Pertumbuhan Ekonomi Negara-Negara Terdampak. *Simposium Nasional Keuangan Negara*, 2(1), 995-1013.
- Kasnelly, F. A. J. S. (2020). Meningkatnya Angka Pengangguran Ditengah Pandemi (Covid 19). *Al-Mizan: Jurnal Ekonomi Syariah*, 3(1), 45-60.
- Kiranti, D. E., & Nugroho, L. (2022). Dampak Pandemi Covid-19 Terhadap Pengangguran serta Jabatan Kerja Kritis. *Ekonomi, Keuangan, Investasi Dan Syariah (EKUITAS)*, 3(3), 335-341.
- Krisnandika, V. R., Aulia, D., & Jannah, L. (2021). Dampak Pandemi Covid-19 Terhadap Pengangguran Di Indonesia. *JISIP (Jurnal Ilmu Sosial dan Pendidikan)*, 5(4).
- Kusumo, B. H. (2022). Analisis Pengaruh Pertumbuhan Ekonomi, Tingkat Pengangguran, Pendidikan dan Upah Minimum Kabupaten (UMK) Terhadap Kemiskinan Provinsi Jawa Tengah. *Jurnal Ilmiah Mahasiswa FEB*, 10(2).
- Mankiw, N. Gregory. (2021). *Macroeconomics* (9th ed.). New York: Worth Publishers) Greene, William H. (2012). *Econometric analysis* (7th ed.). New York: Pearson
- Mardiyah, Nurwati. 2020. "Dampak Pandemi COVID-19 Terhadap Peningkatan Angka Pengangguran di Indonesia." *Jurnal Studi Kependudukan*, 8(2), 101-110.
- Mddala, G. S. (2001). *Introduction to econometrics* (3rd ed.). New York: Wiley. Stock, James H., & Watson, Mark W. (2012). *Introduction to econometrics* (3rd ed.). Boston: Pearson.
- Pantjoro, T. H. (2021). Pandemi Covid-19, Disrupsi Bonus Demografi dan Ketahanan Nasional. *Jurnal Lemhannas RI*, 9(2), 83-100.
- Pangiuk, A. (2018). Pengaruh Pertumbuhan Ekonomi terhadap Penurunan Kemiskinan di Prasetya, G. M., & Sumanto, A. (2022). Pengaruh tingkat pengangguran dan tenaga kerja terhadap kemiskinan melalui pertumbuhan ekonomi. *KINERJA*, 19(2), 467-477.
- Provinsi Jambi Tahun 2009-2013. *ILTIZAM Journal of Shariah Economics Research*, 2(2), 44-66.
- Rosyadi, K. (2021, September). Kemiskinan dan Kesenjangan Sosial di Jawa Timur Pada Masa dan Pasca Pandemi Covid-19; Refleksi Sosiologis. In *Prosiding Seminar Nasional Penanggulangan Kemiskinan* (Vol. 1, No. 1).
- Soleha, A. R. (2020). Kondisi UMKM masa pandemi covid-19 pada pertumbuhan ekonomi krisis serta program pemulihan ekonomi nasional. *EKOMBIS: Jurnal Fakultas Ekonomi*, 6(2).
- Wahab, A. (2022). Pengaruh Pertumbuhan Penduduk, Upah, Dan Inflasi Terhadap Pertumbuhan Ekonomi Dan Tingkat Pengangguran Terbuka Di Sulawesi Selatan. *Jurnal Ekonomi Pembangunan STIE Muhammadiyah Palopo*, 8(2), 168187.
- Widiastuti, A., & Silfiana, S. (2021). Dampak Pandemi Covid-19 Terhadap Pertumbuhan Ekonomi Di Pulau Jawa. *Jurnal Ekonomi-Qu*, 11(1), 97-107.
- Wooldridge, Jeffrey M. (2013). *Introductory econometrics: A modern approach* (6th ed.). Mason, OH: South-Western Cengage Learning.