

Analysis of Economic Growth and Investment on Educated Unemployment: The Role of Inflation as a Moderating Variable in East Java

Riza Nuraini^{1*}, Mohammad Wahed²

Universitas Pembangunan Nasional "Veteran" Jawa Timur

Corresponding Author: Riza Nuraini 21011010042@student.upnjatim.ac.id

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ABSTRACT

Educated unemployment has now emerged as a major challenge in East Java Province, being one of the regions with the largest population and number of graduates within Indonesia. This study aims to analyze the effect of economic growth and investment on educated unemployment in East Java Province. The independent variables are economic growth and investment, with inflation employed as a moderating variable. A quantitative approach was applied through the Moderate Regression Analysis (MRA) approach covering the period 2007–2024. The findings reveal that economic growth exerts a significant negative influence, whereas investment demonstrates a significant positive influence. Meanwhile, inflation is unable to moderate the effect of economic growth on educated unemployment, nor can it moderate the relationship between investment and educated unemployment.

INTRODUCTION

Economic development is an effort undertaken by a to enhance the living standards of its people through the advancement of the economic sector. The success of development is not only reflected in the increase in economic growth, but also in the extent to which development contributes to providing employment opportunities and expanding job prospects. An imbalance between the growth of the labor force and the availability of job opportunities will create a gap commonly referred to as unemployment (Wahed, 2021).

One type of unemployment that has drawn particular attention is educated unemployment. This issue is not only a national concern but also a major challenge for East Java Province, being one of the regions with the largest population and number of graduates in Indonesia. Educated unemployment refers to a condition in which educated workers face difficulties in securing employment (Rahmalia et al., 2019).

During the period 2019–2024, unemployment in East Java Province exhibited a fluctuating trend. The highest proportion of unemployment was dominated by individuals who completed Senior High School (SMA) and Vocational High School (SMK). The highest level was recorded in 2020, with educated unemployment amounting to 663,486 people. In 2024, the unemployment rate among those with elementary, junior high, and senior high school backgrounds showed a declining trend compared to the previous year. However, unemployment among university graduates increased, reaching 137,406 individuals in 2024.

Efforts to reduce the unemployment rate, particularly educated unemployment, need to take into account various factors from both the demand and supply sides of the labor market. One of the key economic indicators that influences unemployment is economic growth. Economic growth refers to the expansion of a country's income or the growth in the volume of goods and services generated over a one-year period (Noviatamara et al., 2019).

Economic growth is closely related to economic development, which encompasses income improvement, structural transformation, and equity, thereby fostering societal welfare (Febriyanti et al., 2024). Rapid economic growth reflects a significant increase in output (Wahed, 2022). Such an increase requires greater input, particularly labor, allowing a larger number of job seekers to be absorbed into the expanding employment opportunities (Susanto & Siswanto, 2022).

In addition to economic growth, investment also plays a significant role in creating employment opportunities. Investment is a key component in driving the economy of a country (Nujum & Rahman, 2019). It has an important influence on the unemployment rate as it can stimulate an increase in demand (Saragih et al., 2021). Investment not only contributes to increasing output but also to labor allocation, income distribution, population growth and quality, as well as technological advancement. Both domestic investment (PMDN) and foreign direct investment (FDI) are expected to stimulate positive economic growth (Primadhana & Wahed, 2020). An increase in investment enables the production

of more goods and services, thereby fostering greater absorption of educated labor.

The relationship between economic growth and investment with unemployment is strongly influenced by other macroeconomic variables, one of which is inflation (Wahed & Sishadiyati, 2023). Inflation is closely related to unemployment because changes in aggregate demand affect both prices and employment opportunities. When inflation rises, household purchasing power tends to weaken, resulting in a decline in the demand for goods and services.

The Phillips Curve illustrates the relationship between inflation and unemployment under the assumption that inflation reflects an increase in aggregate demand (Priatna, 2020). An increase in inflation driven by higher aggregate demand encourages producers to expand production volumes in order to meet market demand. This expansion of production leads to greater demand for labor.

East Java Province plays an important role in driving the national economy due to its large population and abundant resources (Wahed, 2019). However, the expansion of access to education has not always been accompanied by the creation of employment opportunities that match the qualifications of the educated workforce. Therefore, this study aims to analyze the effects of economic growth and investment on educated unemployment, while also considering inflation as a moderating variable in order to obtain a more comprehensive understanding.

LITERATURE REVIEW

Unemployment Theory

Keynesian theory states that unemployment is caused by low aggregate demand, resulting in inflexible wage levels in the labor market (Hasanah & Imani, 2021). A decline in public demand for goods and services also leads to reduced production activities within firms (Suhendra & Wicaksono, 2020). This reduction in production forces producers to downsize their workforce. Consequently, a growing number of workers remain unabsorbed in the labor market, which in turn leads to higher unemployment.

Okun's Law

Okun's Law states that there is a negative relationship between economic growth and the unemployment rate, in which an increase in economic growth is often accompanied by a decline in unemployment (Soylu et al., 2018). Okun concluded that when real economic growth is at a high level, the unemployment rate tends to decrease, whereas when real growth slows down or even turns negative, the unemployment rate will rise (Astuti, 2016).

Phillips Curve

The Phillips Curve illustrates the relationship between inflation and unemployment under the assumption that inflation reflects an increase in aggregate demand (Priatna, 2020). When aggregate demand rises, prices tend to increase, and producers respond by expanding production and employing more

labor, thereby reducing unemployment. Therefore, in the short run, inflation is often regarded as an indicator of economic growth.

The following is the Thinking Framework used in this research:

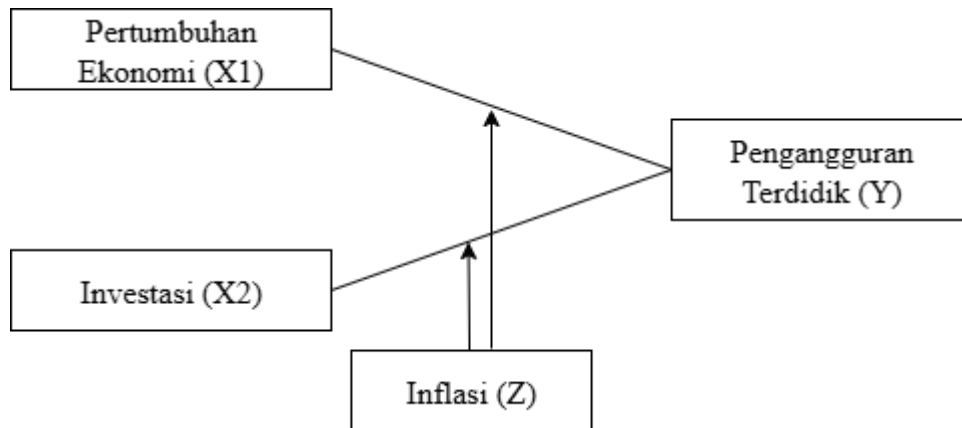


Figure 1. Conceptual Framework

METHODOLOGY

This research adopts a quantitative method and makes use of secondary time series data. The data were obtained from *Badan Pusat Statistik dan Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu* of East Java Province for the period 2014–2024. The dataset includes educated unemployment, economic growth, investment, and inflation. The analytical method applied in this study is Moderate Regression Analysis (MRA).

Moderate Regression Analysis (MRA) is a statistical technique designed to assess how a moderating variable influences the linkage between independent and dependent variables. To evaluate the impact of the independent variables – economic growth and investment – on the dependent variable, educated unemployment, this study applies multiple regression analysis. MRA is then conducted by regressing the independent variables with the moderating variable, inflation. The equation for Moderate Regression Analysis (MRA) is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Z + \beta_4 X_1 Z + \beta_5 X_2 Z + \varepsilon$$

Description:

Y : Educated Unemployment

β_0 : Constant

$\beta_1 - \beta_5$: Regression coefficients of the independent variables

X1 : Economic Growth

X2 : Investment

Z : Inflation

X1Z : Interaction between Economic Growth and Inflation

X2Z : Interaction between Investment and Inflation

ε : Error term

RESEARCH RESULT

Classical Assumption Test Results

Normality Test

Table 1. The Result of Normality Test

	<i>Unstandardized Residuals</i>	Note
Asymp. Sig. (2-tailed)	0.200	Normal

In the residual normality test, the data are regarded as normally distributed when the residual significance value exceeds 0.05. The test results indicate that the Asymp. Sig. (2-tailed) value is 0.200. Hence, since 0.200 is greater than 0.05, it can be concluded that the data follow a normal distribution.

Multicollinearity Test

Table 2. The Result of Multicollinearity Test

Variable	Tolerance	VIF	Note
X1	0.764	1.308	No Multicollinearity Detected
X2	0.777	1.287	No Multicollinearity Detected
Z	0.634	1.577	No Multicollinearity Detected

It is found that the independent variables show Tolerance values above 0.1 and VIF values below 10, suggesting that the regression model does not experience high correlations among the independent variables. Therefore, it may be inferred that the model does not suffer from multicollinearity.

Autocorrelation Test

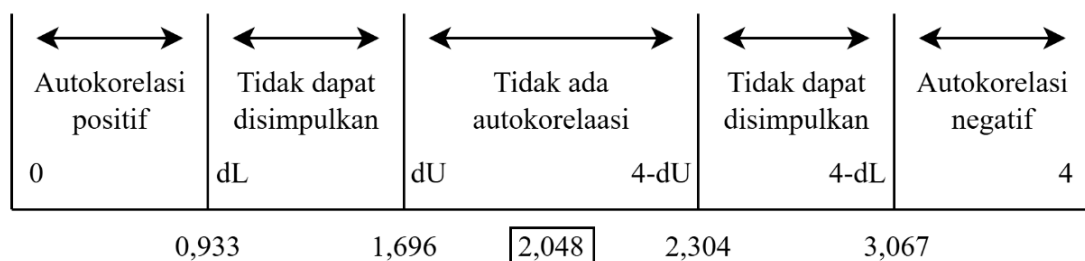


Figure 2. Autocorrelation Test Results (Durbin-Watson)

The results of the autocorrelation test in this study show a Durbin-Watson (DW) value of 2.048. The DW value of 2.048 falls within the range between dU (1.696) and 4 - dU (2.304), indicating that the regression equation is free from autocorrelation problems, meaning that no autocorrelation is present in the regression model.

Heteroscedasticity Test

Table 3. The Result of Heteroscedasticity Test

Variable	Sig.	Note
X1	0.893	No Heteroscedasticity Detected

X2	0.239	No Heteroscedasticity Detected
X3	0.309	No Heteroscedasticity Detected

It is found that the significance value of Economic Growth (X1) is 0.893, Investment (X2) is 0.239, and Inflation (Z) is 0.309. Since each independent variable has a significance value greater than 0.05, it can be concluded that the regression model is free from heteroscedasticity problems.

Multiple Regressio Analysis

Table 4. The Result of Multiple Regression Analysis

Variable	Coefficient	t-Statistic	Sig
X1	-39070.457	-4.724	0.000
X2	2398.316	5.770	0.000
f-Statistic	36.937		0.000
R- Square	0.813		

Coefficient of Determination

Based on the data analysis results, the R Square value is 0.813. This indicates that the independent variables, namely Economic Growth (X1) and Investment (X2), are able to explain the dependent variable, Educated Unemployment, by 81.3%. Meanwhile, the remaining 18.7% is explained by other variables not included in this study.

F-Test

The results show that the calculated F value is 36.937, which is greater than the F table value of 4.494, and the significance value is $0.000 < 0.05$. Therefore, it can be concluded that Economic Growth and Investment simultaneously have a significant effect on Educated Unemployment.

T-Test

The calculation results show that the t value for Economic Growth is -4.724, which is greater than the t table value of 2.131, with a significance value of $0.000 < 0.05$. Thus, it can be concluded that Economic Growth has a negative and significant partial effect on Educated Unemployment.

The calculation results also show that the t value for Investment is 5.770, which is greater than the t table value of 2.131, with a significance value of $0.000 < 0.05$. Thus, it can be concluded that Investment has a significant partial effect on Educated Unemployment.

Moderate Regression Analysis

Table 5. The Result of Moderate Regression Analysis

Variabel	Coefficient	T-Statistic	Sig
X1Z	-14811.106	-1.414	0.000
X2Z	-14.320	-0.85	0.000
F-Statistic	17.344		0.000
R- Square	0.878		

Based on the table above, the R Square value is 0.878. This indicates that the influence of the independent variables, the moderating variable, and the interaction between the independent variables and the moderating variable on the dependent variable is 87.8%. The results also show that the calculated F value is 17.344, which is greater than the F table value of 3.179, with a significance value of $0.000 < 0.05$. Therefore, based on the F-test results, it can be concluded that the independent variables, the moderating variable, and the interaction between the independent variables and the moderating variable simultaneously have a significant effect on the dependent variable.

DISCUSSION

The Effect of Economic Growth on Educated Unemployment

The test results reveal that economic growth exerts a negative influence on educated unemployment in East Java during the 2007–2024 period. When economic growth slows down, the level of educated unemployment generally rises, whereas an increase in growth is able to reduce the rate of unemployment. This result aligns with Okun's Law, which describes the inverse relationship between economic growth and unemployment, where growth above potential stimulates higher labor demand.

Economic growth in East Java exhibited fluctuations due to the global financial crisis of 2008 and the COVID-19 outbreak, both of which affected the dynamics of educated unemployment. However, during periods of high growth, such as 2010–2013 and 2022–2023, educated unemployment declined in line with increased economic activity and the recovery of key sectors. These findings emphasize that economic growth is a crucial driver in lowering educated unemployment, consistent with the studies of Veronika & Mafruhah (2022) serta Salim (2023), which demonstrate a significant inverse association between economic growth and educated unemployment.

The Effect of Investment on Educated Unemployment

Based on the hypothesis testing results, the Investment variable partially has a positive and significant effect on Educated Unemployment in East Java Province during 2007–2024. This means that each increase in investment is followed by a rise in the level of educated unemployment, and conversely, when investment decreases, educated unemployment tends to decline as well. This finding does not align with Keynesian theory, which states that investment acts as a key driver of job creation and should reduce unemployment.

Although investment realization in East Java has continued to increase annually, the majority remains concentrated in capital-intensive sectors and industrial areas. This indicates that increased investment does not necessarily correspond to higher employment for educated workers, as it is more directed toward capital- and technology-based sectors rather than labor. In line with this, Arisusanti & Bendesa (2023) emphasize that investment does not automatically reduce unemployment if it is not focused on labor-intensive sectors or accompanied by improvements in workforce quality. Similarly, Adewi & Azhari (2022) found that increased investment can coincide with rising unemployment

if local labor absorption is low and investment is not directed toward labor-intensive sectors.

The Effect of Economic Growth on Educated Unemployment with Inflation as a Moderating Variable

Based on the hypothesis testing results, it is found that, partially, inflation has not been able to moderate the effect of Economic Growth on Educated Unemployment in East Java Province during 2007–2024. These results indicate that the effect of economic growth on educated unemployment is direct and does not depend on the inflation rate, likely influenced by other variables not observed in this study. According to the Phillips Curve theory, inflation is often associated with a short-term decrease in unemployment through increased aggregate demand. However, this theory is more relevant in the context of demand-pull inflation rather than cost-push inflation.

During 2007–2024, inflation in East Java was largely driven by rising production costs (cost-push), particularly from food, energy, and transportation commodities. Its pattern was inconsistent with economic growth, as inflation increased when growth weakened. Consistent with the findings of Suwito (2024), inflation does not have a significant effect on labor absorption because development policies are more focused on macroeconomic stability. Therefore, inflation is not a primary factor in explaining the relationship between economic growth and educated unemployment.

The Effect of Investment on Educated Unemployment with Inflation as a Moderating Variable

Based on the hypothesis testing results, it is found that, partially, inflation has not been able to moderate the effect of Investment on Educated Unemployment in East Java Province during 2007–2024. Theoretically, inflation can influence the effectiveness of investment in creating employment; however, the conditions in East Java during the 2007–2024 period show a different pattern. Fluctuating but relatively controlled inflation levels were not sufficient to exert economic pressure that could hinder investment performance.

During certain periods, inflation in East Java increased along with rising investment. This is because investment was largely directed toward capital-intensive sectors such as mining, transportation, telecommunications, and the food industry, and concentrated in major industrial areas such as Gresik, Surabaya, and Sidoarjo. This pattern indicates that inflation does not moderate the relationship between investment and educated unemployment. In line with the studies of Syaikh & Haryati (2017) and Maulana & Maulana (2024), investment decisions are more influenced by profit prospects, policies, and market demand rather than inflation fluctuations. As a result, capital-intensive investment does not significantly contribute to the absorption of educated labor.

CONCLUSIONS AND RECOMMENDATIONS

East Java Province ranks second in terms of contribution to economic growth and third in national investment realization. However, educated

unemployment remains a major issue in the province. Based on these conditions and the results of this study, the conclusions are as follows:

1. Economic growth has a significant negative effect on educated unemployment, meaning that when growth slows down, unemployment increases due to the limited creation of job opportunities for educated graduates.
2. Investment has a significant positive effect on educated unemployment, as increased investment in East Java is largely directed toward capital-intensive sectors rather than labor-intensive sectors capable of absorbing educated workers.
3. Inflation has not been able to moderate the relationship between economic growth and educated unemployment in East Java, as it is more influenced by production costs rather than demand that can stimulate job creation.
4. Inflation does not moderate the effect of investment on educated unemployment in East Java, because the relatively controlled inflation level is not sufficient to affect the effectiveness of investment in absorbing educated labor.

ADVANCED RESEARCH

An advanced research direction from this study is to develop a multidimensional model of educated unemployment that integrates not only economic growth, investment patterns, and inflation, but also structural factors such as labor market mismatch, digital transformation, sectoral shifts, and human capital quality. Future studies could adopt a mixed-method approach, combining econometric panel data analysis with qualitative assessments of labor absorption capacity across sectors, as well as system dynamics modeling to simulate long-term interactions between education output, industrial structure, and labor demand. Comparative regional studies within Indonesia or across ASEAN countries would also provide valuable insights into how policy instruments—such as incentives for labor-intensive and knowledge-based industries, vocational alignment, and digital skill upgrading—can be optimized to reduce educated unemployment and enhance inclusive economic growth.

REFERENCES

- Adewi, M., & Azhari. (2022). Pengaruh Investasi Dan Kesempatan Kerja Terhadap Pengangguran Terbuka Di Kabupaten Bojonegoro Tahun 2013-2020. *Jurnal Ekonomi Manajemen Dan Sosial (JEMES)*, 5(1), 40–51.
- Arisusanti, L. M., & Bendesa, I. K. G. (2023). Analisis Pengaruh Investasi, Upah, Dan Pertumbuhan Ekonomi Terhadap Pengangguran Terdidik Lulusan Perguruan Tinggi Di Indonesia. *E-Jurnal Ekonomi Pembangunan Universitas Udayana*, 12(06), 387–397.
- Astuti, P. B. (2016). Analisis Kurva Phillips Dan Hukum Okun Di Indonesia

- Tahun 1986-2016. *Jurnal Fokus Bisnis*, 15(1), 72–91.
<https://doi.org/10.32639/fokusbisnis.v15i1.72>
- Febriyanti, V. A., Priana, W., & Wahed, M. (2024). Pengembangan Potensi Ekonomi dan Identifikasi Sektor Unggulan dalam Pembangunan Daerah di Kabupaten Magetan dan Kabupaten Ngawi. *Jurnal Syntax Admiration*, 5(6), 1937–1950. <https://doi.org/10.46799/jsa.v5i6.1195>
- Hasanah, M., & Imani, S. (2021). Pandemi Covid 19 Inflasi Dan Pengangguran Dalam Perspektif Ekonomi Islam. *Asy Syar'iyah: Jurnal Ilmu Syari'ah Dan Perbankan Islam*, 6(1), 1–22.
- Maulana, A. W., & Maulana, I. S. (2024). Dinamika Inflasi Di Indonesia Terhadap Daya Beli Masyarakat Pada Tinjauan Ekonomi Makro. *Moneter : Jurnal Ekonomi Dan Keuangan*, 2(2), 20–29.
<https://doi.org/10.61132/moneter.v2i2.437>
- Mohammad Wahed, S. & A. W. (2022). Acceleration Model for Economic Development in Disadvantaged Regions of East Java Province. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 5(1), 6861–6871.
<https://www.bircu-journal.com/index.php/birci/article/view/4413>
- Muhammed Wahed, S. & N. I. (2021). *Ekonomi Pembangunan kajian Teori dan Studi Empiris* (W. Afrida (ed.)). Mitra Cendikia Mitra.
https://repository.upnjatim.ac.id/9895/1/4.Buku_ekonomi_pembangunan.pdf
- Noviatamara, A., Ardina, T., & Amalia, N. (2019). Analisis Pengaruh Pertumbuhan Ekonomi Dan Tingkat Pengangguran Terbuka Di Daerah Istimewa Yogyakarta. *Jurnal REP (Riset Ekonomi Pembangunan)*, 4(1), 53–60. <https://doi.org/10.31002/rep.v4i1.1341>
- Nujum, S., & Rahman, Z. (2019). Pengaruh Investasi Dan Inflasi Terhadap Pertumbuhan Ekonomi Di Kota Makassar. *Jurnal Economic Resource*, 2(1), 21–33. <https://doi.org/10.33096/jer.v1i2.158>
- Priatna, I. A. (2020). Analisis Vector Autoregresion (VAR) Terhadap Hubungan Pengangguran Dan Inflasi Dalam Perekonomian Indonesia. *Jurnal Proaksi*,

7(2), 90–98. <https://doi.org/10.32534/jpk.v7i2.1275>

- Primadhana, W. P., & Wahed, M. (2020). Strategi Percepatan Investasi Kota Surabaya. *Jurnal Economic Resource*, 2(2), 147–162. <https://doi.org/10.33096/jer.v2i2.427>
- Rahmalia, S., Ariusni, & Triani, M. (2019). Pengaruh Tingkat Pendidikan, Pengangguran, Dan, Kemiskinan Terhadap Kriminalitas Di Indonesia. *Journal Kajian Ekonomi Dan Pembangunan*, 1(1), 21–36.
- Salim, A. (2023). Karakteristik Tenaga Kerja dan Pertumbuhan Ekonomi Terhadap Pengangguran Tenaga Kerja Terdidik di Indonesia. *Jurnal Ekonomi-Qu*, 13(1), 102–117. <https://doi.org/10.35448/jequ.v13i1.20534>
- Saragih, J. M., Harlen, & Indrawati, T. (2021). Pengaruh Tingkat Pendidikan Dan Investasi Terhadap Tingkat Pengangguran Di Provinsi Riau. *Jurnal Online Mahasiswa (JOM) Bidang Ilmu Ekonomi*, 8(2), 1–12.
- Soylu, Ö. B., Çakmak, İ., & Okur, F. (2018). Economic Growth And Unemployment Issue: Panel Data Analysis In Eastern European Countries. *Journal of International Studies*, 11(1), 93–107. <https://doi.org/10.14254/2071-8330.2018/11-1/7>
- Suhendra, I., & Wicaksono, B. H. (2020). Tingkat Pendidikan, Upah, Inflasi, Dan Pertumbuhan Ekonomi Terhadap Pengangguran Di Indonesia. *Jurnal Ekonomi-Qu*, 6(1), 1–17. <https://doi.org/10.35448/jequ.v6i1.4143>
- Susanto, J., & Siswanto, Y. (2022). Educated Unemployment and Personal Character. *Jejak*, 15(1), 179–194. <https://doi.org/10.15294/jejak.v15i1.31715>
- Suwito, D. A. (2024). Analisis Penyerapan Tenaga Kerja Dengan Inflasi Sebagai Variabel Moderasi Di Negara ASEAN 4. *Jurnal Ilmu Ekonomi JIE*, 8(02), 134–143. <https://doi.org/10.22219/jie.v8i02.32831>
- Syaikh, A. M., & Haryati, T. (2017). Analisis Pengaruh Inflasi, Suku Bunga Kredit, Tenaga Kerja, Teknologi Terhadap Investasi di Indonesia. *Economics Development Analysis Journal*, 6(1), 8–15.
- Veronika, S., & Mafruh, A. Y. (2022). Pengaruh Pertumbuhan Ekonomi, Investasi dan Inflasi terhadap Pengangguran Terdidik di Provinsi Jawa

- Barat Sherty. *Jurnal Riset Ilmu Ekonomi Dan Bisnis (JRIEB)*, 2(2), 139–146.
- Wahed, M. (2019). *Potensi Ekonomi dan Perencanaan Kebijakan Investasi (Studi Kasus pada Kabupaten Pacitan)*. Mitra Sumber Rejeki.
https://repository.upnjatim.ac.id/9893/1/2.Buku_Monograf_Potensi_Ekonomi_dan_Perencanaan.pdf
- Wahed, M. & Sishadiyati. (2023). Model Of Acceleration Of Economic Development Of Disadvantaged Areas In East Java Province. *Journal of Economics, Business, and Government Challenges*, 3(02), 107–116.
<https://doi.org/10.33005/ebgc.v3i2.123>