

ASSESSING THE LONG-RUN EFFECTS OF INSTITUTIONAL DISTORTIONS, ECONOMIC GROWTH, AND LABOR PARTICIPATION ON EDUCATED UNEMPLOYMENT: AN ISLAMIC ECONOMICS PERSPECTIVE



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Abstract

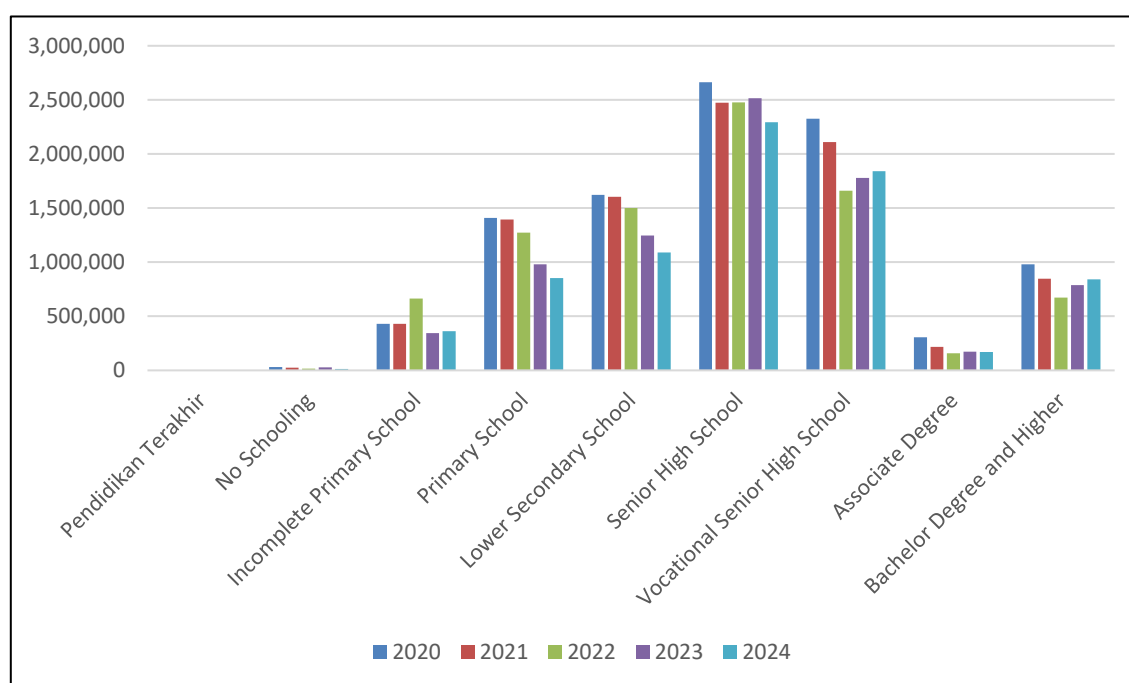
Educated unemployment remains one of the most critical challenges in Indonesia, reflecting a persistent mismatch between the education system and labor market demand. Despite continuous economic growth, the absorption of educated labor remains limited, indicating structural problems in employment creation. This study aims to analyze educated unemployment in Indonesia by examining the roles of economic growth, institutional distortions, and labor force participation in both the short run and the long run. The study employs a quantitative approach using a Vector Error Correction Model (VECM) based on annual time-series data from 1986 to 2024. Data are obtained from Statistics Indonesia (BPS), the World Bank, and Transparency International. The results indicate the existence of a long-run cointegrating relationship among the variables. Economic growth is positively associated with educated unemployment in the long run, suggesting jobless growth and limited creation of high-skilled jobs. Institutional distortions, reflected in weak governance and non-merit-based recruitment, persistently worsen employment outcomes for graduates. Increases in labor force participation further intensify competition when job creation does not keep pace. The findings suggest that reducing educated unemployment in Indonesia requires inclusive growth, stronger institutional governance, and better alignment between education and labor market needs. Policy efforts should also promote entrepreneurship and productive employment through Islamic social finance instruments to support sustainable job creation for educated workers.

Keywords: Educated Unemployment, Economic Growth, Institutional Distortions, Labor Force Participation, VECM

INTRODUCTION

Indonesia's continual economic development has created a situation where educated unemployment has come to be more serious, not simply lacking a logic to explain it, it has more to do with the educations system structural problem in the output of quality human capital and the input of the labor market's absorption capacity. Of the more than 65 % of the total national unemployment in Indonesia, secondary and tertiary educated unemployment dominate the official statistics (Badan Pusat Statistik, 2025). This not only directly affects individual welfare, it also limits macro economic development and may in the long run, increase social unrest Padillah & Saputra (2024). Despite improvements in access to, and the quality of education, the growing number of graduates unused in the labor market shows the rapid economic growth has not been matched with an adequate dispersion of quality employment opportunities for the educated labor force.

Figure 1. Unemployment Trends by Educational Attainment in Indonesia, 2020–2024



Source: Badan Pusat Statistik

As seen in Figure 1, high unemployment, even among educated individuals, continues to be one of the greatest challenges in the Indonesian labor market. As graduates of senior high schools (both general and vocational) and diploma/bachelor's degree holders constitute the highest proportion of total unemployment for the years 2020-2024, this can be further explained. Unemployment among Senior High School graduates was recorded at 2.66 million in 2020 and 2.29 million in 2024, thus it remained high with only a slightly decreasing trend. Unemployment among graduates of the Vocational Senior High School, however, initially dropped from 2.33 million in 2020 to 1.66 million in 2022, and afterwards, even increased to 1.84 million in 2024, indicating that vocational training does not protect against unemployment. Even though there was a significant decline in unemployment among Associate Degree holders from 305,261 in 2020 to 170,527 in 2024, and for Bachelor Degree

holders and above, it decreased from 981,203 in 2020 to 673,485 in 2022, and then increased to 842,378 in 2024, this further reveals the significant unemployment issue, especially for university graduates. Unemployment has indeed become a widespread issue within the population that has attained at least upper secondary education, and remains a pressing issue to create more jobs with better quality to absorb the prevailing high levels of education.

The aim of this study is to examine the interaction of the construct of economic growth, institutional distortions, and labor force participation rate, on educated unemployment in Indonesia. The study's focus is the educated unemployed, nationwide, 1986-2024, using a Vector Error Correction Model (VECM) approach.

This study investigates the relationship of economic growth, institutional distortions, and the participation of the labor force on focused unemployment of the educated in Indonesia. The subject of the study is educated unemployed individuals on a national scale covering the period from 1986 to 2024 using the VECM methodology. Most recent studies have analyzed the educated unemployed phenomenon from various perspectives Areva et al., (2022), stated that even though the Indonesia economy is rapidly growing, the absorption of educated workforce remains low. It shows that economic growth is not enough; there is a need to have inclusive labor market policies. Likewise Khoiruddin et al., (2024) and Wicaksono et al., (2023) explained that a mismatch of education and job shows that there is a wage and employment opportunity loss; and this demonstrates the gap between education and market demand for labor. From the institutional perspective RobeRobertson-Snape, (1999) and Triatmanto & Bawono, (2023) explained that corruption, nepotism, and bureaucracy, and administrative inefficiency are some of the barriers that affect labor market equity and confidence of the Investors in the labor market. However, most of the aforementioned studies relied on cross-sectional data and some failed to analyze these different variables over a long period. Also, most of them focused on the short-run without considering the long-run equilibrium adjustments.

The studies accessible portray a certain relation pertaining to economic growth, the quality of institutions, labor force participation, and unemployment. However, in the case of Indonesia, an empirical gap seems to exist which has studied educated unemployment problems in relation to the mentioned variables in combination, as well as in a longitudinal perspective. In addressing this gap, this study adopts the VECM model to perform a detailed time series analysis with a focus on the short-run and the long-run dynamics. It explores the economic, institutional, and demographic parameters of educated unemployment and VECM model within the integrated reforms of the structures of education, governance, and labor markets.

REVIEW OF LITERATURE

Educated Unemployment

Unaccompanied unemployment from secondary and post-secondary levels educational verticals means people who are on the margins of the formal labor market. This shows the difference between what the job demands and what the graduate can provide. This shows the gap which can be of an Azzahra et al., (2024) stated study. Wafi & Kafa, (2024) pinpoint the educator, the social position of the individual, the sex of the individual, and the marital status of the individual as social factors that are causally linked to educated unemployment and where women suffer the most. Educated unemployment brings about macroeconomic

problems associated with educated unemployment which inflation is present, there is a poverty line minimum wage not commensurate to the level and quality of labor and human capital employed, and paradox educated unemployment and foreign direct investment is exacerbated.

Economic Growth

Job creation and highly skilled job growth elicits attraction from educated workers. However, research from a panel study consisting of 34 Indonesian provinces (Areva et al., 2022) shows that educated workers, even during extensive economic growth in Indonesia, remain highly unemployed. This correlates with research stating economic growth in the industry and services in a developing country context does little to lessen the unemployment of vocational and tertiary educated. This study also posited growth has distinctive advantages for university graduates than vocational graduates, as university graduates appeared to suffer more from the growing problem of graduate unemployment. This in turn highlights that without sector specific productivity and industry responsive curricula and educational system reforms, even economic growth in a developing country with an expanding industry, remains exclusive to the level of education attained.

Institutional Distortion

Institutional Inflicts Distortion in Indonesia in the form of Corruption, Collusion and Nepotism and shows itself in almost all areas of the government and the private sector. This has caused the loss of trust of the people and the investors which resulted in the decrease of the national economy by Robertson-Snape, (1999) conducted a study which states that bribing the bureaucrats and the officials is not only done in large scales, but also occurs in basic public services in the areas of licensing, public service, and health and education. This created a culture of extortion which is a hindrance to public efficiency, and because of that culture, there is also a weakening of Nepotism Meritocracy, which is the system that rewards people. The strategic positions and the career opportunities are given to people because of Family ties or political affiliation, which is a system of injustice to the members of the workforce. Based on the review in the Journal Effendi & Susanti, (2024) the persistence of Nepotism in the Workplace reduces the motivation and productivity of the employees. This is the result of a promotion system that is not transparent and objective. Therefore some potential talents are discriminated against, while in the system some incompetent people are given important positions, and this creates inequality in the placement of jobs. This is the reason for the skepticism of the investors because laws that are not certain lack credibility in the Institution, and increases the risks of investment and the cost of transactions.

Labor Force Participation Rate

The labor force participation rate (LFPR) is defined as the proportion of a particular age group who are either employed or are actively searching for work, in this case the working age group, and is used as a measure of the general state of the labor market. Using the Heckman approach to the 2018 labor force census, Yusnandar et al., (2020) stated that for the LFPR, age, education, work experience, and marital status are key determinants, and age has a U-shaped influence. These results reaffirm that despite education being a motivator for participation, an increase in TPAK does not mechanically induce a fall in unemployment, because for successful participation to happened, it is dependent on the level of the job opportunities available. This is supported by (Muriati & Romanda, 2020) where even though LFPR has improved in some provinces, this is not automatically followed by adequate

employment of educated people. An increase in the LFPR of the younger age group and graduates means that more people are competing to avail of the jobs, which is a negative if not offset by an increase in the volume of available jobs and an improvement in the skills of the workforce.

RESEARCH METHOD

This research focuses on Lake Indonesia's economic growth, institutional distortion, and labor force participation and educated unemployment through the longitudinal study of educated unemployment using a time series methodology, considering long-run and short-run relationships. Analytically, the Vector Error Correction Model (VECM) is preferred because of its ability to detect and, for some, estimate integrated equilibriums for various subsets of a given multivariate process.

This study uses secondary annual time-series data for Indonesia covering the period from 1986 to 2024. The data are obtained from Statistics Indonesia (BPS), the World Bank, and Transparency International. The main variables include educated unemployment (UNP), economic growth measured by real GDP, institutional rate (LFPR).

All variables are measured at the national level. Educated unemployment represents the number of unemployed individuals with at least a secondary education. Economic growth is measured using real GDP. Institutional distortions are captured by the corruption perceptions index, while the labor force participation rate reflects the proportion of the working-age population that is economically active.

The data were collected from official and internationally recognized databases to ensure reliability and consistency. Annual data were compiled and transformed into logarithmic form where appropriate to reduce heteroscedasticity and allow elasticity-based interpretation. The study period captures various economic cycles and policy changes in Indonesia, enabling a comprehensive longitudinal analysis.

The analysis follows standard VECM procedures. Stationarity of the variables is tested using the Phillips-Perron unit root test. The optimal lag length is determined based on the Akaike Information Criterion (AIC). Cointegration among variables is examined using the Johansen cointegration test. After confirming cointegration, the VECM is estimated to analyze short-run adjustments and long-run relationships. Grenger causality tests, Impulse Response Functions (IRF), and Forecast Error Variance Decomposition (FEVD) are further employed to assess dynamic interactions and the relative contribution of each variable to educated unemployment.

RESULTS AND DISCUSSION

Stationarity test

Based on the Phillips-Perron test results at the first difference level, all variables in this study, namely educated unemployment, economic growth, institutional distortions, and labor force participation rate, show t-statistic values that are smaller than the critical value at the 5% significance level. In addition, the respective probability values are below 0.05. Thus, it can be concluded that the four variables have been stationary after the first differentiation, thus qualifying them to proceed to the next test.

Table 1. Phillips-Perron Stationary Test At Level 1st difference

Phillips-Perron

Variabel	t-statistic	Critical value	Prob.
Educated unemployed	-6.180040	-2.943427	0.0000
Economic growth	-18.18020	-2.943427	0.0001
Institutional distortion	-6.216880	-2.943427	0.0000
Labor force participation rate	-38.47508	-2.943427	0.0001

Optimal Lag Selection

The optimal lag selection in this study was conducted using the Akaike Information Criterion (AIC) as the main criterion. Based on the test results, the lowest AIC value is obtained at the 3rd lag with a value of 44.76606, which indicates that the model with three lags provides the best balance between goodness-of-fit and model complexity penalty. Therefore, the 3rd lag is chosen as the optimal lag and used in the next stage of VECM estimation.

Table 2. Optimal Lag Test Result

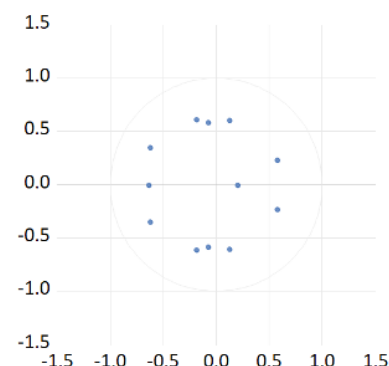
Lag	LogL	LR	PE	AIC	SC	HQ
0	-801.1900	NA	1.13e+15	46.01086	46.18861*	46.07222
1	-781.7579	33.31220	9.35e+14	45.81474	46.70351	46.12154
2	-751.9833	44.23652*	4.42e+14	45.02762	46.62740	45.57986
3	-731.4060	25.86853	3.77e+14*	44.76606*	47.07686	45.56375*

VAR stability test

The stability test is conducted by looking at the characteristic roots of the polynomial of the VAR model. The results show that all modulus values of the roots are within the unit circle (modulus < 1), with the highest value of 0.711112. This condition indicates that the VAR model system is dynamically stable and can be used for estimation and further analysis, and this is reinforced by the visualization of the root graph that shows all points are inside the unit circle. Thus, it can be concluded that the VAR model in this study is dynamically stable and suitable for further estimation.

Table 3. var stability test results

Root	Modulus
-0.620657 - 0.347081i	0.711112
-0.620657 + 0.347081i	0.711112
-0.186845 - 0.611026i	0.638955
-0.186845 + 0.611026i	0.638955
-0.635298	0.635298
0.576445 - 0.234253i	0.622224
0.576445 + 0.234253i	0.622224
0.127578 - 0.603468i	0.616806
0.127578 + 0.603468i	0.616806
-0.077361 - 0.581168i	0.586295
-0.077361 + 0.581168i	0.586295
0.203806	0.203806



Granger causality test

The Granger causality test results show that most of the relationships between variables are not statistically causal. There is no causal relationship between educated unemployment (EU) and economic growth (GDP), institutional distortions (ID), or labor force participation rate (LFPR), either in one or two directions. All the p-values of these combinations are above 0.05, so the null hypothesis cannot be rejected. However, there is one significant causal relationship, which is from GDP to labor force participation rate (LFPR) with an F-statistic of 24.3085 and a p-value of 0.00000005. This indicates that economic growth statistically causes changes in the labor force participation rate. This relationship is consistent with macroeconomic theory, where increased economic activity drives employment and increases labor market participation. Thus, although educated unemployment does not show a direct causal relationship to the independent variables tested, GDP is shown to have an influence on the dynamics of labor force participation in Indonesia.

Table 4. granger causality test results

Null Hypothesis:	Obs	F-statistic	Prob.
GDP does not Granger Cause Educated Unemployed	36	0.27656	0.8418
Educated Unemployed does not Granger Cause GDP		1.33564	0.2820
Institutional distortion does not Granger Cause EU	36	0.22471	0.8784
EU does not Granger Cause Institutional distortion		0.20002	0.8955
LFPR does not Granger-cause Educated Unemployed	36	0.26612	0.8492
Educated Unemployed does not Granger-cause LFPR		1.07727	0.3741
Institutional distortion does not Granger-cause GDP	36	2.57050	0.0734
GDP does not Granger-cause institutional distortion		0.05837	0.9811
LFPR does not Granger-cause GDP	36	1.01025	0.4024
GDP does not Granger-cause LFPR		24.3085	5.E-08
LFPR does not Granger-cause institutional distortion	36	0.01989	0.9961
Institutional distortion does not Granger-cause LFPR		0.34350	0.7940

Johansen cointegration test

The Johansen cointegration test results show that there is a cointegration relationship among the variables analyzed. This is indicated by the trace statistic value of 117.0425, which far exceeds the critical value at the 5 percent significance level of 47.85613. The very small probability value of 0.0000 also indicates that the null hypothesis stating the absence of cointegration can be rejected. In other words, there is at least one stationary linear combination among these variables. This finding is supported by the results at the next level of cointegration, where the trace statistic remains greater than the critical value up to hypothesis at most 3. It can therefore be concluded that there is more than one long-run relationship among the variables: educated unemployment, economic growth, institutional distortions, and labor force participation rate. This finding provides a strong justification to continue the analysis using the Vector Error Correction Model approach to capture the dynamics of the short-run relationship and adjustment to the long-run equilibrium.

Table 5. Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None*	0.807555	117.0425	47.85613	0.0000

At most 1*	0.649746	61.01246	29.79707	0.0000
At most 2*	0.427940	25.34320	15.49471	0.0012
At most 3*	0.170454	6.353813	3.841465	0.0117

Implicit response Function test

The impulse response function results show that educated unemployment responds to shocks from economic growth, institutional distortions, and labor force participation rate variably in the next ten periods. Shocks from GDP tend to produce a positive response to educated unemployment, indicating a potential mismatch between economic growth and the need for educated labor. Institutional distortions show a fluctuating negative effect, while labor force participation has a decreasing effect on educated unemployment at the beginning of the period, but becomes positive in the middle of the period. These results confirm that the relationship between variables is dynamic and non-linear, so the interpretation needs to be supported by IRF graphs to see the pattern of change more clearly.

Table 6. Impulse Response Function Test Result

Response of Period	D(Educated Unemployment:			
	D(EU)	D(GDP)	D(ID)	D(LFPR)
1	156218.5	0.000000	0.000000	0.000000
2	50233.74	27289.14	3805.434	-33790.33
3	72839.78	24634.99	6414.844	-58496.61
4	106791.7	29432.44	-21309.04	-40271.38
5	45897.47	19142.70	-50531.15	-21348.04
6	88796.00	29255.98	8637.723	15057.63
7	98875.26	34006.14	-11198.40	11584.36
8	74121.80	29503.08	-11285.00	-34348.67
9	97782.83	18353.85	5645.574	-49901.38
10	72148.67	28104.07	-33876.42	-41757.26

Response of D(Educated Unemployment) to D(Educated Unemployment)

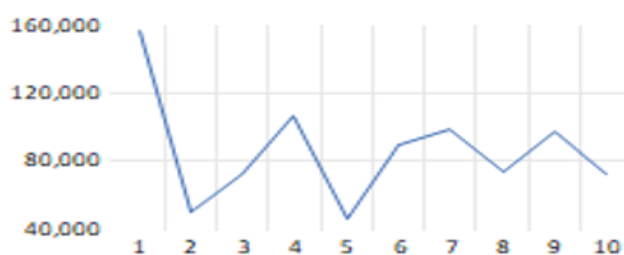


Figure 1. Test of Impulse Response to Educated Unemployment

The first impact that educated unemployment shocks take is typically quite large, however over time the impact of educated unemployment shocks tends to stabilize and the impact is smaller. This is to say that educated unemployment shocks internally are large in the short term, but they diminish over time.

Response of D(Educated Unemployment) to D(GDP)

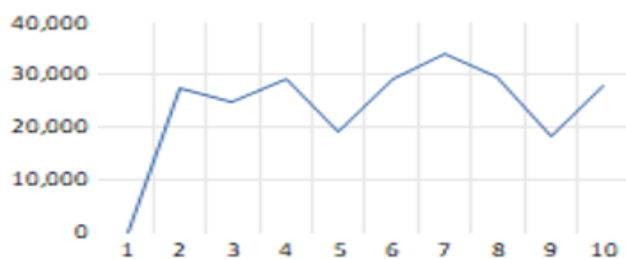


Figure 2. Test of Impulse Response Educated Unemployment to GDP

The graph indicates positive responses until the 7th period regarding fluctuations in the educated unemployment variable, in spite of economic growth. Until the 7th period, deflation was economically positive, followed by an increase in educated unemployment. Educated unemployment perceived economically positive growth, which indicates there was educated employment.

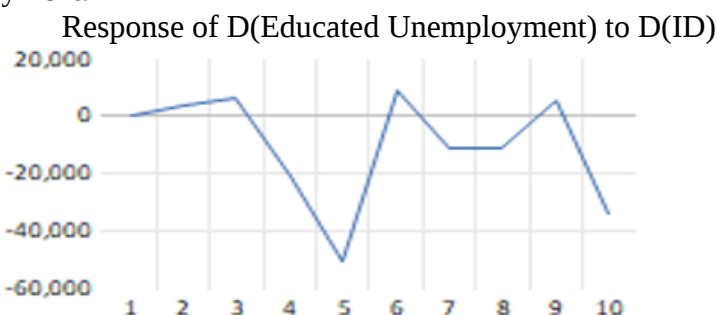


Figure 3. Test of Impulse Response Educated Unemployment to ID

The impact of institutions on institutional distortions have an ephemeral effect which is then followed by a steep drop in educated unemployment in the 4-5th periods. This also adds to the volatility in the effect which is then followed by the educated unemployment response. This suggests that the quality of institutions is likely to have an effect on educated unemployment but is indeterminate and short-lived.

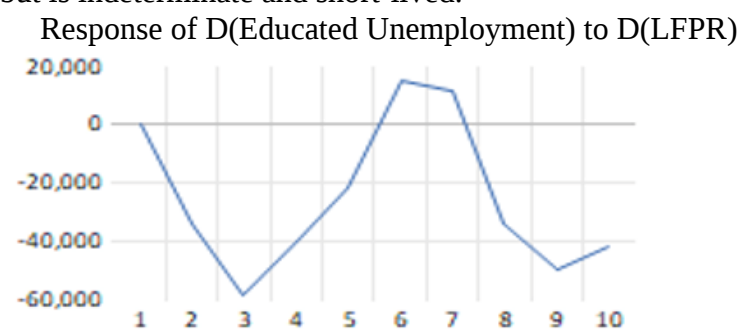


Figure 4. Test of Impulse Response Educated Unemployment to LFPR

The graph shows that shocks to the labor force participation rate have a strong negative impact on educated unemployment in the early period, indicating that an increase in labor force participation can reduce educated unemployment. However, this response

reverses to positive in the 6th-7th period before returning to negative, reflecting that the effect of the LFPR is volatile and time-varying.

The forecast error decomposition of variance test

Table 7. Variance Decomposition (VD) Result

Variance Decomposition of		D(Educated Unemployment:			
Period	S.E.	D(Educated U)	D(GDP)	D(ID)	D(LFPR)
1	156218.5	100.00000	0.000000	0.000000	0.000000
2	169789.9	93.40598	2.583187	0.050232	3.960600
3	195458.8	84.37119	3.537783	0.145617	11.94541
4	229239.5	83.03929	4.220393	0.969932	11.77038
5	240900.2	78.82484	4.453148	5.278219	11.44379
6	258988.2	79.95403	5.128900	4.677927	10.23915
7	279762.8	81.01142	5.872984	4.169201	8.946392
8	293153.3	80.17260	6.361560	3.945210	9.520631
9	313622.8	79.76974	5.900734	3.479431	10.85010
10	327484.0	78.01364	6.148265	4.261197	11.57690

The variance decomposition results show that the educated unemployment variable is initially fully explained by itself, amounting to one hundred percent in the first period, over time the contribution of other variables begins to increase although it is still dominated by the unemployment variable itself, the contribution of economic growth to the variability of educated unemployment slowly rises from around two point five percent in the second period to more than six percent in the tenth period. This shows that the role of GDP on fluctuations in educated unemployment tends to increase but is not dominant.

Institutional distortions make a relatively small but consistent contribution to the variability of unemployment with a value close to four percent at the end of the period. Meanwhile, the labor force participation rate shows a larger influence than the other two variables with a contribution reaching eleven point five percent in the tenth period, indicating that changes in labor participation have a significant role in explaining variations in educated unemployment in the long run. Overall, these results confirm that although educated unemployment is mostly influenced by itself, the contribution of labor force participation and economic growth is also increasingly important in the long run.

CONCLUSION

This research analyzes educated unemployment in relation to economic growth, institutional gaps, and labor force participation in Indonesia. The findings indicate that, even in the short run, educated unemployment, should not be regarded as an outcome of market misallocations. Instead, the unemployment of educated individuals is more of a structural shortcoming and is indicative of certain aspects of economic growth, governance, and the labor supply. The author argues that in the context of educated unemployment, Indonesia must do more than simply maintain economic growth; it must also improve institutional quality and create a more malleable labor market in response to the problem of educated unemployment.

Empirical data confirms that economic growth causes educated unemployment. For example, rising GDP does not mean more jobs for graduates. An economy may be ‘growing’ in activities that do not employ the educated. Add to this the ongoing imbalance between the level of education in the economy and the productive/industrial system. Educated unemployment results from institutional inadequacies. These include patronage, administrative and procedural bottlenecks, bureaucratic sloth, misplaced proaction, and weak selflessness. While such factors lead to educated unemployment, they affect governance and, in turn, educated unemployment through administrative corruption, the bureaucracy, and patronage. Meanwhile, LFPR appears to be the most important, as an increase in participation without an increase in positions will increase educated unemployment. It is undoubtedly correct to say that in Indonesia, educated unemployment results from structural challenges, a lack of systematic job creation, institutional hurdles, and not simply a lack of job availability.

To reduce educated unemployment in Indonesia, the necessary constructive strategies must be combined with systematic synergy between the interrelated relationships between the country's economic growth, labor market design, and institutional framework. The main focus of the responsible government agencies (Bappenas, Kemenaker, Kemendikbudristek, Kemenperin) must be directed towards “growth that absorbs graduates”. This involves allocating investment incentives to sectors with skilled labor potential (e.g., the digital economy, green industry, advanced manufacturing, health, education, and data-based services), as well as establishing agreements with companies to set measurable targets in contracts related to graduate recruitment. Finally, higher education and vocational training institutions need to improve alignment with industry through mandatory industry participation in curriculum development, as well as graduate tracking studies that provide direct feedback into curriculum redesign, so that the programs offered are aligned with the labor market.

A combination of stronger anti-corruption measures, more efficient business licensing, and the removal of bureaucratic barriers that limit large-scale recruitment, as well as the addition of stronger transparency and meritocracy measures in government and state-owned enterprise recruitment, will strengthen labor market institutions and recruitment systems. The fourth aspect focuses on the possible redesign of MSME and entrepreneurship training towards incubation models whereby measurement can be taken for each of the components (mentoring, access to finance, digital tools, market linkage, and performance monitoring), blended with Islamic finance tools including zakat for productive assistance, shariah-compliant micro finance, and waqf to financially support skills development, so that educated youth can create socially and economically sustainable self-employment and enterprises.

In the last place, an explicit recommendation is for a National Graduate Employment and Skills Observatory to be set up, bringing together the most applicable labor market information and analyses of employment prospects for specific regions and the skills deficits stemming from particular occupations, to aid the construction of frameworks empirically in a holistic manner to ensure that while the labor force participation rate is increasing, there is sufficient relevant employment created.

To study future labor gaps, factors that need to be included include the labor force mix by industry, wage rigidity, technology-related wage changes, changes in education quality, the digital labor market, labor force composition gaps, and labor gaps. Geographically and economically, studies on interprovincial distribution and educated unemployment in Indonesia and other developing countries are most relevant to studies on educated unemployment. For educated unemployment, studies need to be quite diverse; eclectic approaches, especially those combining cross-country time series and labor market micro surveys, need to focus on the educated unemployment paradox at the macro and micro levels. Islamic microfinance, waqf, and zakat need to be further contextualized, especially in strengthening and developing entrepreneurial structures, innovative systems, and inclusive labor market participation for educated youth, particularly in the creation of jobs for educated youth.

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