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The Role of Zakat, Waqf, and Education in Reducing Urban Poverty: Evidence from Jakarta City

ABSTRACT - Jakarta, the capital and most densely populated region of Indonesia, continues to struggle with urban poverty despite consistent economic growth. Factors such as high migration, limited employment opportunities, and unequal access to education and social services have deepened socio-economic inequality. This study investigates the key drivers of poverty in DKI Jakarta from 2012 to 2022, incorporating insights from Islamic economics. Utilizing time-series data and the Error Correction Model (ECM), the research explores both short-term and long-term impacts of education, Gross Regional Domestic Product (GRDP), zakat, and waqf on poverty levels. Findings reveal that all variables significantly affect poverty in the long run, while GRDP shows no notable short-term influence. Education and waqf are positively correlated with poverty over time, indicating that structural issues—such as low labor absorption and inefficient waqf management—limit their effectiveness in reducing poverty. In contrast, zakat demonstrates a strong negative relationship with poverty, highlighting its role as a powerful redistributive tool in Islamic economics. The study emphasizes the importance of inclusive education and economic policies, alongside better governance of zakat and waqf through formal institutions like BAZNAS, to improve transparency, optimize resource use, and support sustainable poverty reduction in Jakarta.

ABSTRAK - Peran Zakat, Wakaf, dan Pendidikan dalam Mengurangi Kemiskinan Perkotaan: Bukti Empiris dari Kota Jakarta. *Jakarta, ibu kota sekaligus provinsi terpadat di Indonesia, masih menghadapi tantangan kemiskinan perkotaan meskipun pertumbuhan ekonomi terus berlangsung. Tingginya angka migrasi, terbatasnya daya serap tenaga kerja, serta ketimpangan akses terhadap pendidikan dan layanan sosial memperparah kesenjangan sosial-ekonomi. Studi ini menganalisis faktor-faktor yang memengaruhi kemiskinan di Provinsi DKI Jakarta selama periode 2012–2022 dengan pendekatan ekonomi Islam. Menggunakan data runtun waktu dan model Error Correction Model (ECM), penelitian ini menelaah dampak jangka pendek dan jangka panjang dari pendidikan, Produk Domestik Regional Bruto (PDRB), zakat, dan wakaf terhadap tingkat kemiskinan. Hasil menunjukkan bahwa seluruh variabel berpengaruh signifikan dalam jangka panjang, sementara PDRB tidak menunjukkan pengaruh berarti dalam jangka pendek. Pendidikan dan wakaf memiliki hubungan positif dengan kemiskinan dalam jangka panjang, yang mengindikasikan adanya hambatan struktural seperti rendahnya daya serap tenaga kerja dan pengelolaan wakaf yang belum optimal. Sebaliknya, zakat menunjukkan hubungan negatif yang kuat dan signifikan terhadap kemiskinan, menegaskan efektivitasnya sebagai instrumen distribusi dalam ekonomi Islam. Temuan ini menyoroti perlunya kebijakan pendidikan dan ekonomi yang lebih inklusif, serta peningkatan tata kelola zakat dan wakaf melalui lembaga formal seperti BAZNAS untuk meningkatkan transparansi, efisiensi pemanfaatan sumber daya, dan mendukung pengentasan kemiskinan yang berkelanjutan di Jakarta.*

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INTRODUCTION

As Indonesia's capital and primary metropolitan hub, the DKI Jakarta province is a major center of economic activity that attracts significant migration from other regions. This influx has made Jakarta the most densely populated province in the country, with 15,978 people per square kilometer (BPS, 2021), as illustrated in Figure 1. While often pursued for economic opportunity, this rapid urbanization leads to significant socio-economic challenges, including intense competition for employment, the growth of informal settlements, and most notably, persistent poverty.

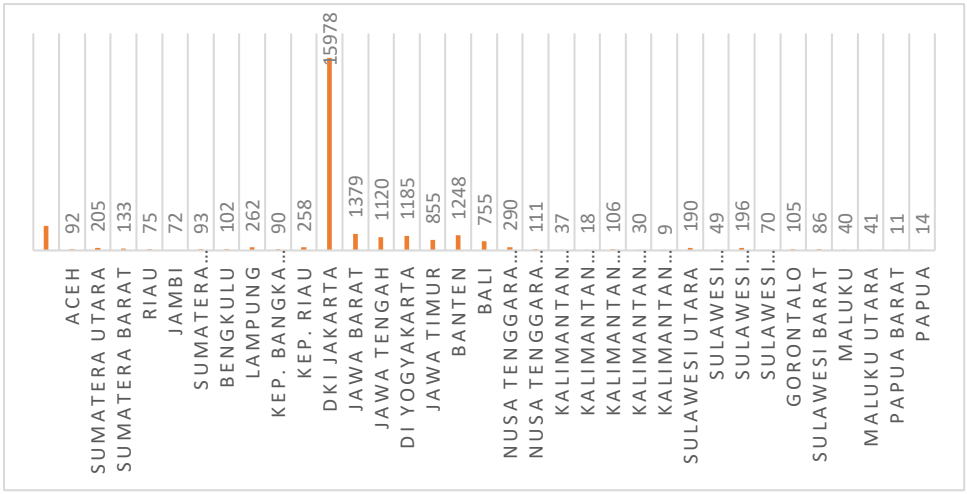

Figure 1. Population Density by Province in Indonesia (people/km²)
(Source: BPS, 2021)

As shown in Figure 1, DKI Jakarta Province records the highest population density nationwide, with 15,978 people per km². Poverty in DKI Jakarta is not uniformly distributed. Data from the Central Bureau of Statistics (BPS, 2023) reveals that North Jakarta consistently exhibits the highest Poverty Severity Index (P2), a measure indicating the depth of poverty among the poor. As shown in Table 1, the index in North Jakarta has progressively worsened, rising from 0.12 in 2021 to 0.39 in 2023.

As shown in Figure 1, DKI Jakarta Province records the highest population density nationwide, with 15,978 people per km². Such density often leads to complex social and economic problems, including the rise of slum areas, increased crime rates, limited employment opportunities, and higher poverty levels. As shown in Table 1, the index in North Jakarta has progressively worsened, rising from 0.12 in 2021 to 0.39 in 2023 (BPS, 2023).

Table 1. Poverty Severity Index (P2) by District/City in DKI Jakarta Province

District/City	2021	2022	2023
Thousand Islands	0.63	0.37	0.33
South Jakarta	0.18	0.26	0.09
East Jakarta	0.13	0.13	0.20
Central Jakarta	0.11	0.15	0.18
West Jakarta	0.11	0.14	0.12
North Jakarta	0.12	0.30	0.39
DKI Jakarta	0.14	0.19	0.18

(Source: BPS, 2023)

This trend reflects significant economic distress. Households in North Jakarta, often supporting 3 to 8 members, face an estimated minimum living cost of IDR 4,874,480 per month. This figure is precariously close to the Provincial Minimum Wage (UMP) of IDR 4,400,000, leaving families with minimal capacity for savings and trapping them in a cycle of financial instability.

To address this, strategies for extreme poverty reduction in the education sector have been implemented. These include increasing completion rates at primary, junior high, and senior high levels; expanding participation in early childhood education; improving the Net Enrollment Rate (NER) at the primary level; and raising the Gross Enrollment Ratio (GER) at higher levels. Educational completion data for 2021–2023 are shown in Figure 2.

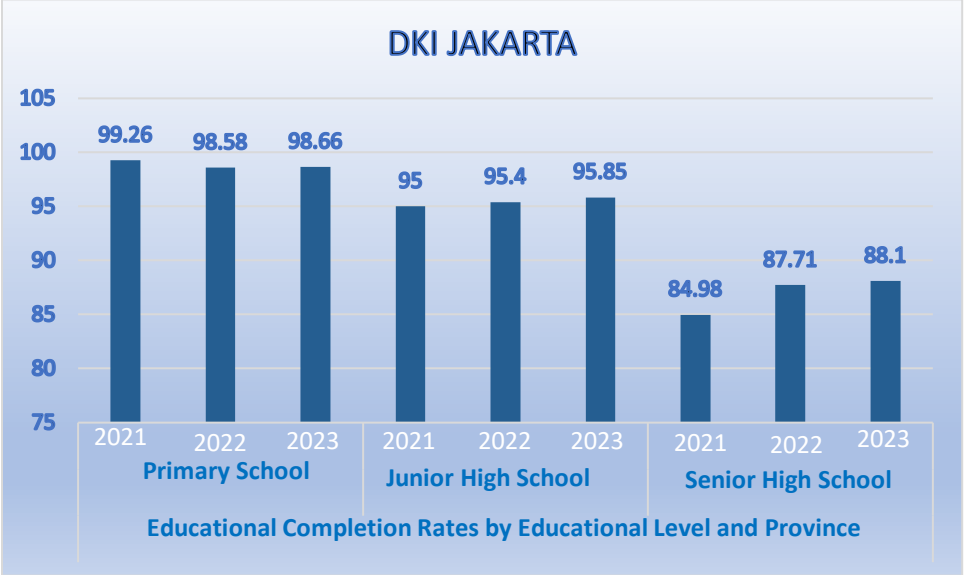

Figure 2. Educational Completion Rates by Level in DKI Jakarta (2021–2023)
(Source: BPS, 2023)

Structural barriers, particularly in education, are critical contributors to this cycle of poverty . The inverse relationship between educational attainment and poverty is well-documented (Surbakti et al., 2023; Sun et al., 2022; Spada et al., 2023). In DKI Jakarta, educational completion rates decline sharply at higher levels of schooling. While primary school completion is nearly universal, the average rate drops to 95.41% for junior high and plummets to 86.92% for senior high school between 2021 and 2023 (BPS, 2023).

This decline is partly attributable to an insufficient number of schools to accommodate the student population, with a notable drop in the number of institutions from 2,721 primary schools to just 614 senior high schools (BPS, 2023). In response, the DKI Jakarta Provincial Government has implemented several assistance programs, including the Jakarta Smart Card (KJP) Plus and the Jakarta Excellent Student Card (KJMU), to improve educational access for low-income families.

Broader economic trends also shape the poverty landscape. While Gross Regional Domestic Product (GRDP) growth is often linked to poverty reduction (Purnomo & Kusreni, 2020), Jakarta's economy has faced volatility. After contracting by 2.93% in 2020 due to the COVID-19 pandemic, the GRDP showed a gradual recovery in subsequent years (BPS, 2023), as detailed in Table 2. However, the benefits of this recovery may not be reaching the most vulnerable

populations, necessitating a deeper analysis of the factors that perpetuate poverty despite overall economic growth.

Given the persistence of poverty despite government interventions and economic growth, this study explores alternative and complementary frameworks for poverty alleviation by incorporating an Islamic economic perspective. Islamic finance offers instruments designed for social welfare, such as Zakat, Infaq, and Sadaqah (ZIS) and waqf. The potential annual collection of ZIS in Indonesia is estimated at 217 trillion Rupiah, with the Quran prioritizing its distribution to the poor and needy, suggesting it could significantly support poverty reduction programs (BAZNAS, 2017). Empirical evidence on the impact of ZIS is mixed; some studies find it has a significant influence on poverty alleviation (Munandar et al., 2020; Salma et al., 2021; Choiriyah et al., 2020; Ridlo et al., 2020), while others report no significant effect (Rohmahwati, 2023). Similarly, waqf (the endowment of assets for community benefit) is recognized as a fiscal tool for funding social infrastructure like schools and hospitals (Sugianto et al., 2022). Recent studies affirm that waqf can have a positive and significant effect on poverty reduction (Halimatussadiah & Sulastri, 2022; Faturohim et al., 2023; Judijanto et al., 2024).

Based on the complex socio-economic landscape of DKI Jakarta and the potential of Islamic financial instruments, this study aims to analyze the factors influencing poverty in DKI Jakarta province from an Islamic perspective from 2012 to 2022. It will investigate the relationship between conventional variables like education and GRDP and the potential role of ZIS and waqf in addressing poverty in Indonesia's capital.

LITERATURE REVIEW

Poverty

Poverty is a multidimensional condition that extends beyond mere income deficiency or the absence of material assets. Over time, the conceptualization of poverty has evolved from a narrow focus on material deprivation to a broader understanding encompassing social, economic, and cultural dimensions (Utami, et al., 2024).

Traditionally, poverty has been defined as a state in which individuals or groups lack sufficient income or resources to meet their basic needs, such as food, clothing, and shelter. However, contemporary perspectives adopt a more comprehensive approach, recognizing that poverty also entails an inability to achieve a socially acceptable standard of living. This includes not only financial deprivation but also restricted access to education, healthcare, infrastructure, and opportunities for social and political participation (Isda et al., 2021).

Education

Education is widely acknowledged as a fundamental factor in improving individual well-being and reducing poverty. It serves as a cornerstone in the formation of human capital, a critical driver of economic development and income generation. The quality and accessibility of education significantly affect an individual’s potential to secure stable and well-paying employment (Pristiwanti et al., 2022).

In the context of DKI Jakarta, the education sector has undergone notable transformations in recent years, including expanded access to quality primary and secondary education and the advancement of vocational and higher education programs. Human capital theory emphasizes that investments in education enhance labor productivity and regional economic capacity. High-quality education equips the workforce with the skills and competencies necessary for innovation and efficiency, which in turn increases individual income and promotes regional competitiveness and economic growth (Asyafiq, 2016).

Real Gross Domestic Product (GDP)

Real Gross Domestic Product (GDP) is a key indicator of economic performance, representing the total value of goods and services produced within a country over a specific period, typically on an annual or quarterly basis. It provides a comprehensive measure of an economy's size and growth rate, reflecting overall productivity and resource utilization.

The concept of real GDP assumes that a nation's economic activity can be assessed through the total output generated by all productive sectors, including both public and private entities. GDP can be measured using several approaches: the production approach, which sums the value added by all sectors; the expenditure approach, which measures total spending by households, businesses, and the government (including net exports); and the income approach, which captures total earnings from production factors such as wages, rents, interest, and profits (Candra & Hoetoro, 2013).

Waqf and Zakat

Waqf and *zakat* are two fundamental instruments in Islamic economics and finance that play essential roles in wealth redistribution and poverty alleviation. Deeply rooted in Islamic teachings, both mechanisms have historically supported social welfare and economic equity in Muslim societies, though they differ in nature and application (Fitriani et al., 2024).

Zakat, one of the five pillars of Islam, is a mandatory financial obligation for eligible Muslims, requiring a fixed portion of wealth to be distributed to those in need. The proportion of *zakat* is typically calculated based on qualifying assets such as savings, investments, and agricultural produce (Ibrahim, 2011). Beyond its role as a religious duty and a form of wealth purification, *zakat* functions as a socio-economic instrument aimed at reducing inequality and supporting the poor. Through wealth redistribution, it contributes to a fairer allocation of resources and helps individuals meet their basic needs (Anas et al., 2023).

Waqf, on the other hand, involves the endowment of assets for long-term public benefit under Islamic law. The proceeds from *waqf* properties are typically used to support social initiatives such as education, healthcare, and community development. Together, *waqf* and *zakat* represent vital fiscal tools in the Islamic economic system that can complement state-led poverty reduction strategies.

Conceptual Framework

A conceptual framework provides the theoretical foundation for understanding the relationships among variables in a study. It outlines how concepts are expected to interact, guiding the research

design, data collection, and analysis. Drawing upon previous theoretical and empirical studies related to poverty and its determinants, this study proposes a conceptual framework linking poverty with education, income (proxied by GDP), *zakat*, and *waqf* as illustrated in Figure 3.

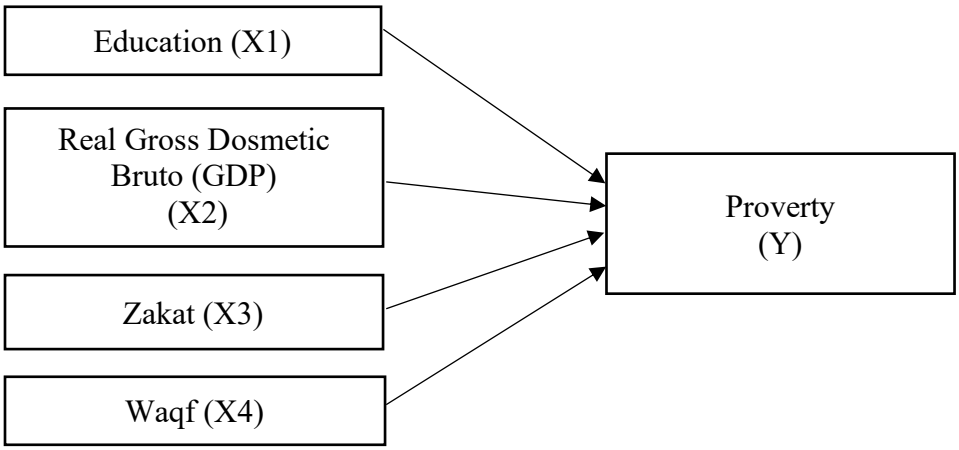

Figure 3. Conceptual Framework

Hypotheses

A hypothesis represents a tentative proposition formulated to address the research problem and guide empirical testing. Based on the literature reviewed, the following hypotheses are developed:

H1: Education has a significant effect on the poverty level in DKI Jakarta Province during the period 2012–2022.

H2: Income has a significant influence on the poverty level in DKI Jakarta Province during the period 2012–2022.

H3: *Zakat* has a significant effect on the poverty level in DKI Jakarta Province during the period 2012–2022.

H4: *Waqf* has a significant effect on the poverty level in DKI Jakarta Province during the period 2012–2022.

METHODOLOGY

Research Design

The research design provides a systematic framework outlining the steps undertaken by the researcher, from hypothesis formulation and operationalization to data analysis, interpretation, and conclusion. This study adopts a quantitative research approach, as it employs data measurable on a numerical scale. According to Sugiyono (2003), quantitative research involves testing hypotheses using empirically measured data that can be statistically analyzed.

This study relies on secondary data, which are processed statistically to examine the relationships among the study variables. Data are sourced from credible and authoritative institutions,

including the National Amil Zakat Agency (BAZNAS), Statistics Indonesia (BPS), the Indonesian Waqf Board (BWI), and other official government websites.

A quantitative econometric approach is applied, employing multiple regression analysis using the Error Correction Model (ECM). Basuki (2016) explains that the ECM is suitable for time series data that exhibit co-integration relationships, as it captures both short-run dynamics and long-run equilibrium behavior between dependent and independent variables. The functional form of the research model is expressed as follows:

$$Y_t = f(X_1, X_2, X_3, X_4) \quad (1)$$

Where:

Y= Poverty
X_1= Education
X_2= Gross Regional Domestic Product (GRDP)
X_3= Zakat (almsgiving)
X_4= Waqf (endowment)

This functional relationship is transformed into a multiple regression equation as follows:

$$Y_t = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e_t \quad (2)$$

Analytical Methods

The study utilizes both the Granger Causality Test and the Error Correction Model (ECM) as its primary analytical tools. The analytical process begins with testing for data stationarity, determining the order of integration, and identifying the optimal lag length. These steps are followed by the implementation of the Granger Causality Test, which examines the directional relationship between variables (Widarjono, 2013). The Granger causality model can be represented as follows:

$$Y_t = \alpha_0 + \sum_{i=1}^{m} \alpha_i Y_{t-i} + \sum_{i=1}^{n} \beta_i X_{t-i} + e_t \quad (3)$$

$$X_t = \delta_0 + \sum_{i=1}^{m} \delta_i X_{t-i} + \sum_{i=1}^{n} \phi_i Y_{t-i} + e_t \quad (4)$$

Where:

Y_t= Endogenous variable at time t
X_t= Exogenous variable at time t
$\alpha_i, \beta_i, \delta_i, \phi_i$= Regression coefficients
e_t= Error term

The ECM analysis requires that all time series data be stationary. Therefore, stationarity tests are conducted initially. If a variable is found to be non-stationary at level form, it is differenced until it becomes stationary. Once the variables are stationary, a co-integration test is performed to determine the presence of a long-run equilibrium relationship between the dependent and independent variables.

If co-integration is established, the ECM is employed to estimate both short-run and long-run relationships. After estimation, diagnostic tests are conducted to evaluate the model's adequacy and reliability. The ECM specification used in this study is expressed as follows:

$$\Delta Y_t = a + \beta_1 \Delta X_1 + \beta_2 \Delta X_2 + \beta_3 \Delta X_3 + \beta_4 \Delta X_4 + \beta_5 ECT_{t-1} + e_t \quad (5)$$

Where:

Δ= Change in variable value

ECT_{t-1}= Error Correction Term (lagged residual from long-run equilibrium)

a= Constant term

e_t= Error term

RESULTS AND DISCUSSION

Results

Classical Assumption Test for the OLS Model

According to Gunawan (2020), classical assumption testing is a fundamental prerequisite in multiple linear regression to ensure that estimators are unbiased, consistent, and efficient. A valid Ordinary Least Squares (OLS) model must meet four key assumptions: normality, multicollinearity, autocorrelation, and heteroskedasticity. The results of the classical assumption tests for the OLS model are summarized in Table 3.

Table 2. Results of Classical Assumption Tests for the OLS Model

Assumption			
Normality	Jarque-Bera Stat		6.378171
	Probability JBstat		0.041210
Multicollinearity	VIF	GRDP	92.455360
		Education	70.058230
		Zakat	73.830010
		Waqf	1.537403
Heteroskedasticity	Obs*R-squared		6.065296
	Prob. Chi-Square		0.194300
Autocorrelation	Obs*R-squared		38.043380
	Prob. Chi-Square		0.000000

(Source: Processed Data, EViews, 2024)

The results reveal that the OLS regression model violates several key assumptions. The normality test fails, as indicated by the Jarque–Bera probability value (0.0412 < 0.05), suggesting that the residuals are not normally distributed. Severe multicollinearity is also detected, with Variance Inflation Factor (VIF) values exceeding 10 for all independent variables except *waqf*, implying a strong linear correlation among predictors. Additionally, the autocorrelation test yields a probability of 0.0000, indicating the presence of serial correlation in the residuals.

However, the heteroskedasticity test shows a probability value of 0.1943, exceeding the 0.05 threshold, suggesting that the model does not suffer from heteroskedasticity. Given that the OLS

model fails to satisfy multiple key assumptions particularly normality, multicollinearity, and autocorrelation, it is deemed unsuitable for reliable estimation. Consequently, the Error Correction Model (ECM) is adopted as an alternative analytical method to capture both short-run and long-run relationships between the dependent and independent variables.

Classical Assumption Testing Using the ECM Regression Model

The ECM model was subsequently tested for compliance with classical regression assumptions. The results are presented in Table 3.

Table 3. Classical Assumption Test for the ECM Regression Model

Normality	Jarque-Bera Stat			5.862269	
	Probability JBstat			0.053336	
Multicollinearity	VIF	GRDP		1.561424	
		Education		1.231120	
		Waqf		1.054316	
		Zakat		1.852725	
Heteroskedasticity	Obs*R-squared			8.210545	
	Prob. Chi-Square			0.1450	
Autocorrelation	dL	dU	4-dL	4-dU	DW
	1.3263	1.7200	2.6737	2.2800	2.1821
Linearity	F-Statistic			0.36629	
	Prob.			0.8493	

(Source: Processed Data, EViews, 2024)

To ensure the robustness and validity of the Error Correction Model (ECM), a series of classical assumption tests were conducted. The results indicate that the ECM regression model satisfies all necessary statistical assumptions, making it appropriate for further analysis. First, the normality test using the Jarque-Bera statistic yielded a probability value of 0.0533, which exceeds the 0.05 threshold. This suggests that the residuals are normally distributed, fulfilling the assumption of normality.

Next, the multicollinearity test was performed using the Variance Inflation Factor (VIF). All independent variables: Gross Regional Domestic Product (GRDP), education, zakat, and waqf, had VIF values well below the critical value of 10, specifically 1.5614, 1.2311, 1.8527, and 1.0543 respectively. These results confirm the absence of multicollinearity, indicating that the independent variables are not excessively correlated with one another.

The heteroskedasticity test, conducted using the Breusch-Pagan method, produced a probability value of 0.1450, which is greater than 0.05. This result indicates homoscedasticity, meaning the variance of the residuals is constant across observations, thereby satisfying another key assumption of linear regression. To assess autocorrelation, the Durbin-Watson (DW) statistic was calculated and found to be 2.1821. This value lies between the lower bound (dL = 1.3263) and upper bound (dU = 1.7200), as well as between 4 − dU = 2.2800 and 4 − dL = 2.6737. These results confirm that the model is free from autocorrelation, ensuring that the residuals are independent over time.

Finally, the linearity test was conducted using the Ramsey RESET test, which yielded a probability value of 0.8493. Since this value is well above the 0.05 significance level, it indicates that the model exhibits a linear relationship between the dependent and independent variables. Taken together, these results demonstrate that the ECM regression model meets all classical assumptions—normality, absence of multicollinearity, homoscedasticity, no autocorrelation, and linearity—thereby validating its use for analyzing both short-term and long-term relationships in the study.

Short-Run ECM Estimation

Prior to implementing the ECM, unit root and co-integration tests were conducted to verify data stationarity. The results indicate that all variables become stationary after first differencing and exhibit a long-run equilibrium relationship. Therefore, ECM analysis is suitable for examining the dynamic interactions among variables. In the short term, education exerts a significant positive effect on poverty reduction, with a coefficient of 0.760830 and a probability value of 0.0015. This indicates that improvements in education contribute to alleviating poverty by enhancing employability and income opportunities. The GRDP variable has a negative coefficient (-0.001739) but is statistically insignificant (p = 0.9703), suggesting that short-term fluctuations in regional output do not immediately influence poverty levels.

Table 4. Short-Run Error Correction Model Results

Variable	Coefficient	t-statistic	Probability
Education	0.760830	3.446316	0.0015
GRDP	-0.001739	-0.037430	0.9703
Zakat	-1.394865	-2.927116	0.0059
Waqf	0.046974	4.920056	0.0000
ECT(-1)	-0.241488	-3.599911	0.0010

(Source: Data processed, E-Views, 2024)

Conversely, zakat shows a significant negative coefficient (-1.394865, p = 0.0059), implying that increases in zakat distribution directly reduce poverty in the short run by providing financial assistance and fulfilling immediate consumption needs among the poor. Meanwhile, waqf displays a significant positive effect (coefficient = 0.046974, p = 0.0000), reflecting its role in enhancing community welfare through productive endowments such as education and infrastructure projects. The Error Correction Term (ECT) coefficient of -0.241488 is statistically significant (p = 0.0010), indicating that approximately 24.15% of the disequilibrium from the previous period's poverty level is corrected in the current period. This confirms that the system adjusts relatively quickly toward long-run equilibrium.

Table 5. Long-Run Error Correction Model Results

Variable	Coefficient	t-statistic	Probability
Education	0.759021	3.347273	0.0018
GRDP	0.083624	2.094175	0.0428
Zakat	-2.056267	-6.685120	0.0000
Waqf	0.037494	4.457355	0.0001

(Source: Data processed, E-Views, 2024)

In the long term, education continues to exert a positive and significant impact on poverty reduction (β = 0.759021, p = 0.0018). This finding underscores the sustained effect of educational attainment on improving economic resilience and household welfare, aligning with the human capital theory that education enhances productivity and long-term income potential. GRDP exhibits a positive and significant relationship with poverty (β = 0.083624, p = 0.0428). Although counterintuitive at first glance, this result may indicate that economic growth in DKI Jakarta has not been fully inclusive, with benefits concentrated among higher-income groups. Structural disparities in income distribution could mean that growth alone does not automatically translate into poverty alleviation.

The zakat variable demonstrates a strong negative and significant relationship with poverty (β = -2.056267, p = 0.0000). This suggests that zakat plays a crucial long-term role in addressing structural poverty by redistributing wealth, financing social programs, and promoting sustainable livelihoods among low-income communities. The waqf variable also has a significant positive effect on poverty reduction (β = 0.037494, p = 0.0001). This indicates that productive waqf initiatives—such as investments in education, healthcare, and infrastructure—contribute meaningfully to improving living standards over time.

Discussion

The Influence of Education on Poverty

The empirical findings reveal that, in both the short and long term, education significantly influences poverty in DKI Jakarta. In the long run, the probability value of 0.0018 and a coefficient of 0.759021 indicate a statistically significant positive effect of education on poverty. Similarly, the short-run results show a positive coefficient of 0.760830 with a probability value of 0.0015, signifying that changes in education levels are significantly associated with changes in poverty within the province.

At first glance, this positive relationship seems counterintuitive, as education is typically expected to reduce poverty. However, a closer look at the regional educational context clarifies this pattern. Based on data from BPS (2022), most residents of DKI Jakarta aged 15 years and older have completed high school or its equivalent. Despite this relatively high educational attainment, job absorption remains inadequate, resulting in a substantial number of unemployed individuals who struggle to meet their living needs. The influx of high school graduates each year adds to the labor supply, but the job market has not expanded sufficiently to accommodate them. Consequently, the mismatch between education and labor market absorption diminishes the potential poverty-reducing impact of education in the short term.

Another contributing factor lies in the structure of educational funding. Although the DKI Jakarta government provides subsidized support through the School Operational Assistance (BOS) program, these funds are primarily directed toward institutional improvements such as school infrastructure, extracurricular activities, teacher training, and library development, rather than directly reducing household education expenses. Costs for uniforms, textbooks, stationery, and

transportation remain the responsibility of families, placing financial strain on low-income households and limiting equitable access to education.

These findings are consistent with those of Surbakti et al. (2023), who argue that the average length of schooling in Indonesia, typically between 7 and 9 years (junior high school level), remains insufficient to enhance competitiveness in the labor market. The low average educational level reduces individual productivity and employability, resulting in limited income and perpetuating poverty. Thus, while education remains a critical determinant of long-term welfare, the short-run effects in DKI Jakarta indicate structural and economic constraints that prevent educational attainment from fully translating into poverty reduction.

The Influence of Real Gross Regional Domestic Product (GRDP) on Poverty

The results of the long-term analysis show a significant positive effect of GRDP on poverty, with a probability value of 0.0428 and a coefficient of 0.083624. This suggests that an increase in GRDP is associated with a rise in poverty levels. Such a result indicates that Jakarta's economic growth has not been inclusive, and its benefits have not been equitably distributed across socioeconomic groups.

The explanation lies in the composition and ownership of production factors. According to BPS (2022), the GRDP encompasses the total value of goods and services produced within Jakarta's territorial boundaries, regardless of whether the factors of production are owned by local residents. A considerable portion of economic activities in Jakarta is driven by capital and labor inputs owned by non-residents. Thus, while output grows, the corresponding income does not necessarily accrue to the local population. As a result, even when GRDP increases, the income distribution among Jakarta residents may remain stagnant or even worsen, leading to persistent or higher poverty rates.

The short-run analysis further supports this view. GRDP exhibits a negative but insignificant relationship with poverty (coefficient = -0.001739; probability = 0.9703), implying that temporary fluctuations in regional output have minimal immediate effect on poverty levels. This finding aligns with Andhykha et al. (2018), who observed a similar trend in Central Java Province, where GRDP exerted a positive and significant impact on poverty (coefficient = 0.160). Their results highlight that without inclusive growth and equitable resource distribution, economic expansion alone cannot guarantee poverty alleviation. In Jakarta's context, economic growth is largely concentrated in the service, finance, and industrial sectors, which require higher levels of education and specialized skills. The exclusion of low-skilled workers from these sectors perpetuates income inequality and limits poverty reduction despite aggregate economic growth.

The Influence of Zakat on Poverty

The findings confirm the expected negative relationship between zakat and poverty. In the long term, zakat significantly reduces poverty, as indicated by a coefficient of -2.056267 and a probability value of 0.0000. A similar pattern is evident in the short-run results, where the

coefficient is -1.394865 with a significance level of 0.0059. These outcomes suggest that effective zakat distribution plays a substantial role in mitigating poverty both in the short and long term.

The zakat variable in this study encompasses the distribution of zakat, infaq, and sadaqah (ZIS) across DKI Jakarta. The data reflect that collection and distribution mechanisms have become increasingly organized, with the National Amil Zakat Agency (BAZNAS) ensuring that funds are directed toward the lower-middle-income population. This structured and transparent management contributes directly to improving welfare among recipients.

These findings are consistent with those of Munandar et al. (2020), who found that ZIS fund distribution has a significant and negative impact on poverty in Indonesia during 2006–2017. Their study highlights that when zakat distribution is targeted effectively, it supports poor households in meeting basic consumption needs and building productive capacity. Similarly, the results align with the broader theoretical understanding of zakat as a redistributive mechanism that channels wealth from surplus sectors of society to those in deficit, thereby narrowing inequality and fostering social stability. In the context of DKI Jakarta, zakat distribution likely supports immediate consumption, health, and education needs among the poor, reducing their vulnerability to income shocks. Moreover, the institutionalization of zakat through BAZNAS enhances its accountability and efficiency, strengthening its long-term poverty reduction potential.

The Influence of Waqf on Poverty

The long-term results show that waqf has a significant positive influence, with a coefficient of 0.037494 and a probability value of 0.0001. Similarly, the short-term coefficient (0.046974; p = 0.0000) also indicates a significant positive relationship. Although waqf is expected to reduce poverty, this positive coefficient suggests that current waqf utilization in DKI Jakarta has not yet been optimized for economic empowerment.

According to data from the Indonesian Waqf Agency, most waqf funds in Jakarta are allocated toward the construction of religious and educational facilities, such as mosques, prayer rooms, and schools. While these allocations contribute to spiritual and social development, they may not have an immediate economic impact on poverty reduction. Furthermore, the management of waqf assets in Indonesia remains largely unproductive, with limited integration into income-generating activities. Another factor contributing to this finding is the lack of public awareness and institutional visibility of waqf compared to zakat. National-level waqf institutions are still relatively unknown, leading to low participation and limited fund mobilization. Consequently, while waqf serves important religious and social purposes, its potential as a tool for economic transformation remains underutilized.

These results correspond with Halimatussadiah and Sulastri (2022), who found that waqf has a positive and significant relationship with poverty reduction when effectively managed, evidenced by a t-statistic (4.145) exceeding the t-table value (2.776) at the 5% significance level. Their study also revealed that the joint management of zakat and waqf significantly affects

poverty alleviation in Cianjur Regency. The DKI Jakarta case suggests that such synergistic management is still limited, thereby constraining the poverty-reducing potential of waqf.

The combined results emphasize that Islamic economic instruments, particularly zakat and waqf, complement conventional poverty reduction mechanisms such as education and economic growth. However, their effectiveness depends heavily on governance quality, distribution efficiency, and institutional integration. Education remains crucial but requires alignment with labor market needs to ensure that educational expansion translates into employment and income generation. Economic growth (GRDP) must be inclusive, prioritizing job creation and equitable income distribution to ensure that its benefits reach marginalized groups. Zakat demonstrates both short and long-term effectiveness in alleviating poverty when distributed transparently and productively. Waqf, although significant, requires a strategic shift toward productive investment such as microfinance, entrepreneurship, and infrastructure for small enterprises to produce tangible economic impacts. In sum, sustainable poverty alleviation in DKI Jakarta will depend on integrating Islamic fiscal mechanisms with inclusive economic and educational policies. Such an integrated approach can bridge structural gaps, promote social equity, and foster long-term economic resilience.

CONCLUSION

This study examined the influence of education, Gross Regional Domestic Product (GRDP), zakat, and waqf on poverty levels in DKI Jakarta Province during the period 2012–2022 using an Error Correction Model (ECM). The results demonstrate that all four variables significantly affect poverty, though in different directions and magnitudes. Education shows a positive and significant impact on poverty in both the short and long term, indicating that despite higher educational attainment, job absorption remains limited. GRDP exhibits a negative but insignificant short-term effect and a positive and significant long-term relationship with poverty, suggesting that economic growth in Jakarta has not been sufficiently inclusive. Conversely, zakat has a negative and significant effect in both the short and long term, underscoring its effectiveness in alleviating poverty through equitable wealth redistribution. Waqf, meanwhile, demonstrates a positive and significant relationship with poverty in both periods, reflecting that most waqf funds are still directed toward religious and educational facilities rather than productive economic ventures capable of generating direct income for low-income communities.

The findings highlight several key policy implications. First, improving the quality and accessibility of education is crucial, particularly through enhanced teacher training, curriculum alignment with industry needs, and expansion of scholarship and vocational programs to bridge the skills gap. Second, Jakarta's economic policies should prioritize inclusive growth, focusing on labor-intensive industries and support for micro, small, and medium enterprises (MSMEs) to ensure that GDP expansion translates into poverty reduction. Third, the government and religious institutions must strengthen Zakat, Infaq, and Sadaqah (ZIS) programs, emphasizing transparency, accountability, and digital integration to enhance collection and distribution efficiency. Finally, the professionalization of waqf institutions is essential; this includes diversifying waqf utilization toward productive assets, improving public awareness, and

implementing independent financial audits to enhance institutional credibility and maximize socio-economic impact.

While this study presents strong findings, it also has notable limitations that point to opportunities for further exploration. The education variable used here focuses on the highest level of education completed but does not capture quality, field of study, or employability dimensions that could further clarify education's complex relationship with poverty. Similarly, GRDP's aggregate measure may not reflect income distribution or local ownership of production factors, leading to ambiguous effects on household welfare. Future research should therefore incorporate more disaggregated indicators, such as sectoral income or employment elasticity, to capture the inclusiveness of economic growth. Continuous monitoring and evaluation of zakat and waqf programs are also recommended to assess their evolving effectiveness. Future studies should also focus on refining analytical methods and improving policy instruments. This approach will enable the development of poverty alleviation strategies that are more targeted, effective, and sustainable, both in DKI Jakarta and in broader contexts.

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