

Article

The Effect of Distributed Zakat on Sustainable Economic Development in Indonesia: A VECM Approach

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ABSTRACT

The purpose of this article is to examine how Indonesian sustainable economic development factors are affected by distributed zakat. In particular, the poverty rate, the human development index (HDI), and economic growth. Time series data from 2001 to 2020 were processed using a vector error correction model (VECM). Additionally, the stationarity and long-run connection have been tested using the unit root and co-integration tests, respectively. The analysis made the assumption that dispersed zakat will have a positive, long-term influence on sustainable economic development. As a result, the main goals of zakat distribution, which are linked to long-term zakat funds and economic expansion, will be effectively accomplished. The case study of only one nation, Indonesia, is one of the research's limitations; therefore, in order to generalize the findings, it is advised that more nations be included in future studies. To help zakat organizations optimize their collecting and distribution strategies, the Indonesian government ought to enact tax reduction programs for them. Furthermore, it is advised that zakat institutions broaden their distribution to include those who are more at-risk in order to significantly reduce poverty and promote sustainable development. There aren't enough empirical findings about the SDGs and zakat. This article, on the other hand, is original and evaluated the dynamic short- and long-term effects of distributed zakat on Indonesia's economic growth, poverty rate, and Human Development Index (HDI).

Keywords: Economic Growth; Vector Error Correction Model (VECM); Sustainable Economic Development; Zakat

JEL Classification: M15, E52, Z12, Z13, D1.

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INTRODUCTION

Zakat is a compulsory tax that is taken from privileged Muslims and given to the needy and less privileged. This is as per the ruling of zakat that is mentioned in the Holy Quran. It is also one of the five pillars of Islam. It is considered an obligation for those who have welfare that falls under the Nisab value. Individuals typically work hard and are very dedicated to achieving wealth (Ahmed Shaikh & Ghafar Ismail, 2017). Therefore, it shows our steadfast confidence in Allah when we offer or share even a small bit of this. It helps us to understand what Allah's Grace bestows upon us and what we actually spend. Those who cheerfully give to Allah's cause are in his favor.

The amount to be given out as zakat is only 2.5% of the wealth that falls into the categories of assets that can be levied. Giving alms to the needy is a form of purification for an individual. Zakat is not only a form of worship, but also an important principle in Islamic economics (Khasandy & Badrudin, 2019). Therefore, when a person pays Zakat, he is not only fulfilling his right to Allah but also fulfilling society rights by contributing to uplifting society. According to Sakti (2007), zakat has two main functions in society: it connects humans vertically to Allah and it gives collective benefit to the people in the environment where zakat is running. Zakat is considered crucial within the sharia economic framework for poverty alleviation and economic welfare. It helps to establish justice and circulate monetary resources from excess to deficit.

Some of the most important problems of our time are poverty and inequality, which are the focus of the Sustainable Development Goals (SDGs) (UNDP, 2018). The financing of those objectives is largely contributed by various religions. Giving away zakat is how it's done in Islam. Since all Muslims who earn more than a certain amount are required to pay zakat, it is one of the main ways that

income is transferred to the underprivileged worldwide. Zakat has the potential to effectively contribute towards achieving the Sustainable Development Goals (SDGs), particularly those related to human development, equality, and poverty alleviation (Pickup, 2017). Zakat has a beneficial function in helping both rich and poor nations achieve the Sustainable Development Goals, according to earlier research on the subject.

Studies conducted, for example, in Turkey by Dembele & Bulut (2021), in Malaysia by Akmal et al. (2020), in Indonesia by Yusoff (2011), in Malaysia by Suprayitno (2020), and in Malaysia by Ayuniyyah et al. (2022) have suggested that zakat distribution programs have contributed to the reduction of both poverty and income disparity. Additionally, at least five important sectors are the focus of zakat distribution programs: education, health, social services, economics, and Da'wah, or the spread of Islamic religion. A country's standard of living will eventually rise, poverty and inequality will decline, and the Sustainable Development Goals will be more successfully attained with more zakat money going into these channels (Nurhapsari et al., 2021).

Nowadays, poverty alleviation is one of the major problems faced by Muslim societies. Although Islam has a clear set of principles to promote justice and welfare in the economy, unbalances regarding poverty and income equality are still challenging Muslim societies. In Indonesia, research conducted on Zakat and sustainable development are mostly theoretical research (Ibrahim, 2015; Muliadi, 2020) and focused on one dimension of sustainable development goals such as economic growth (Suprayitno (2020), poverty alleviation (Pickup (2017) and (Ayuniyyah et al., 2018). Therefore, this study is relevant in case that it tries to look at the effect of distributed zakat on sustainable economic development in three

different dimension namely Human development, economic growth and poverty which represent the most important dimension of SDGs. For that purpose, this research tries to analyze empirically the significant effect of distributed zakat on sustainable development in the world's largest Muslim country, Indonesia. Specifically, we aim to look at the short run and long run impact of distributed zakat on economic growth, poverty rate, and human development Index. This research can help zakat institutions manager to draw a new distribution based on the empirical evidence. It can also provide recommendation for government for sake of policy design related to zakat and sustainable development. The paper's structure is provided below: The second section will include an overview of the study's background and a review of the literature. We will describe the methodologies in section three, and present the results and discussion in section four. The conclusion and recommendations will be presented in Section 5.

LITERATURE REVIEW

Framework of zakat and SDGs

Zakat is currently considered as a method for reducing poverty, which is one of the biggest problems with modern civilization. Poverty has always been pervasive in the world and a barrier to advancement. The Quran examines poverty in detail and suggests a number of ways to lessen its pain and anguish in society. Charity can help alleviate the envy and other negative emotions of the poor and instead foster a sense of community and harmony among the beneficiaries (Kasri, 2016; Zulkifli et al., 2021). Therefore, Islamic Relief using zakat assists some of the world's poorest and most needy communities. These people are happy and have hope that one day they may be able to give zakat rather than receive it thanks to the generosity of Zakat suppliers. As it is said, the giving hand is

better than the one receiving (Ahmed Shaikh & Ghafar Ismail, 2017).

Economic welfare has long been spoken about since the beginning of time. One of the ways to improve the economy is by reducing poverty levels in not only the nation or society as a whole but also at an individual level. Poverty can be a major deterrent to production. Individuals will look for money just to get something to eat or have a roof over their head. In addition, the time spent in doing this could have been used for other productive economic activities (Cingano, 2014; World Bank, 2022). It can also lead to vice and immorality especially in the women folk and the youth. Not only is it a cause of drug dealing but also health issues such as depression. Although depression can affect everyone, regardless of socioeconomic level, poverty exacerbates the condition and makes it more difficult for a person to get the proper medical care. However, if the aspects of poverty that fuel sadness are lessened, then fewer people should experience depression (Ismal, 2014).

In the SDGs, the UN has placed poverty alleviation as the number one priority. This shows how critical the issue of poverty is worldwide. In many societies, the responsibility has been left to large corporations apart from the government to help contribute to the society's welfare. Corporate social responsibility has indeed helped in contributing to uplift the community but this is only done occasionally and is not regulated by the law, as it is not mandatory (UNDP, 2018; Fallah Shayan et al., 2022). On the other hand, Islam has placed this responsibility at individual level. Every individual looks out for the other in whatever way they can. Indonesia being the fourth highest in terms of population is also a Muslim majority nation. This means it has a larger possibility of the number of individuals who give out zakat if they reach the Nisāb value.

Furthermore, the establishment of four isolated Indonesian communities with electricity supplied by micro hydropower plants was the first significant joint venture between BAZNAS and the UNDP. This renewable energy project is a component of a bigger Global Environment Facility-financed project. Future initiatives that will make use of Zakat monies include protecting biodiversity and maintaining the standard of living for communities who have just obtained access to energy (UNDP, 2018). Through these initiatives, it becomes evident how zakat can assist in a community's or individual's potential to be productive, as opposed to merely being used for consumptive or humanitarian purposes, such covering medical costs and disaster relief. This suggests that social welfare and economic progress are positively impacted by the distribution of zakat.

Zakat and sustainable economic development

Many scholars have conducted the study between zakat and sustainable economic development in Muslim societies. Whereas, most of them are theoretical investigation, few among them are empirical work. In the following section, we will review theoretical study after digging into empirical one.

The ability of zakat institutions to accomplish the Sustainable Development Goals (SDGs) was investigated by Ismail & Shaikh (2017). Following a study of theoretical research, they concluded that zakat is crucial to reaching sustainable development objectives including hunger, poverty, wellbeing, and economic expansion. In other words, zakat institutions would facilitate the flow of money across the productive sector, so fostering business expansion and the generation of additional wealth for society. Therefore, this path of wealth accumulation in a productive sector will help to realize the objectives of sustainable

development. In a same vein, Dembele & Bulut (2021) looked into how Islamic social finance, including zakat, infaq, and waqf, contributes to the accomplishment of SDG goals. According to the research, zakat institutions have effectively contributed to the accomplishment of at least seven of the global agenda's sustainable development goals. In other words, distribution programs are introduced by zakat organizations and they cover at least five major areas: social, health, education, and Da'awah (the spread of Islam). An increase in zakat fund contributions to these channels will strengthen the SDGs, lessen poverty, and boost a nation's economic prosperity (Nurhapsari et al., 2021).

Furthermore, Pickup (2017) carried research on how zakat institutions contribute to sustainable development goals (SGDs) and financing. They maintained that zakat is an important instrument for pursuing SGDs and that it is one of the five pillars of Islam. They go on to say that correctly putting the Islamic zakat principle into practice will aid in advancing economic welfare and addressing the issues associated with sustainable development. Zakat institutions can also be viewed as a viable tactic to assist the Sustainable Development Goals (SDGs) and as a means of reducing poverty. Olanipekun et al. (2015) examined a review of studies regarding the function of zakat in the context on the Quran and hadith as a strategy for environmentally friendly development and as a tool for reducing poverty.

After analyzing several verses and hadiths related to zakat, they revealed that, zakat is a significant tool for poverty alleviation and the best strategy for sustainable development. This is worth noting as zakat is distributed to eight categories of people that represent the most vulnerable in society. This will serve as a potential in promoting the development of the eight categories of people mentioned in the Quran. Consequently, helping

those people will reach development all over the country and the entire society. Likewise, Ibrahim, (2015) argued that zakat has principle aims of distribution stated in the Holy Quran and Sunnah, that after being achieved, could enhance social welfare and sustainable development. In addition, according to a study by Muliadi (2020) it was found that zakat distribution towards economic empowerment community in Yogyakarta does indeed help in reducing inequality and poverty reduction. The study also recommended that the Rumah Zakat program could be employed the same way in other regions of Indonesia including urban areas. The descriptive approach and qualitative analysis were employed in this investigation. Secondary data was gathered from texts and documents pertaining to the research topic as the data source.

Suprayitno et al. (2017) carried out an empirical study to ascertain the impact of zakat on the human development initiatives of five states in Malaysia from 1980 to 2009. Using the Auto Regressive Distributed Lag (ARDL) with bound testing approach, it was discovered that zakat had a beneficial and significant impact on human development in all five states of Malaysia, both in the short and long terms. This illustrates how the distributed zakat may, in the short term, enhance the recipients' social lives. As a result, increasing zakat may soon result in better social welfare and academic standards. The distribution of more zakat over time will affect investment, employment, and consumption. Additionally, it will motivate zakat beneficiaries to begin contributing zakat.

Consequently, the primary objectives of zakat distribution—which are associated with the accumulation of long-term zakat funds and economic growth—will be successfully achieved. In a same vein, Akmal et al. (2020) discovered that zakat improves the Human Development Index. In order to assist Indonesia in achieving the SDGs, the

study set out to evaluate and explore the role that zakat plays in human development in a quantifiable manner. The specific goals of the study were to assess the differences in the Human Development Index (HDI) between zakat recipients before and after they received zakat, as well as the effects of zakat on the HDI and its constituent parts. The sample for the study was made up of 100 zakat recipients who were chosen using a combination of proportionate and purposive stratified random samplings from the three zakat distribution programs run by the zakat institution of Aceh Province, Indonesia (Baitul Mal Aceh-BMA). One family per undergraduate scholarship program, zakat for thalassemia and cancer patients, and zakat for low-income households to purchase working capital were a few of the zakat initiatives. A paired t-test was used to compare the HDI of zakat beneficiaries before and after they received zakat, and a multivariate linear regression model was used to assess the effect of zakat on the HDI and its components. The HDI of zakat recipients was determined to be higher than it was before receiving zakat, according to the study.

Yusoff (2011) examined the data pertaining to actual zakat expenditure in Malaysia. The results showed that, using panel data from 2003 to 2006, the variation in real out was significantly explained by zakat expenditure. Meanwhile, to promote greater economic wellbeing and sustainable growth, the government ought to enhance the zakat distribution procedure. This implies that zakat spending could increase labor force and productivity as well as recipients' consumption. Zakat can therefore be utilized as an instrument for fiscal policy to increase overall productivity and consumption while also achieving societal sustainability.

A recent study by Suprayitno (2020) looked at the impact of zakat on macroeconomic metrics, namely Indonesia's economic development. Using

the Error Correction Model, he calculated the long-term relationship between zakat and economic development (ECM). According to his research, there is a significant positive correlation between changes in economic growth and how zakat is distributed. This highlights the reality that by providing resources for social production and consumption, zakat has a direct impact on the actual economy. Therefore, increases in output and consumption will promote economic growth. Any strategies used by the government, non-governmental organizations, or affluent people to lessen or end poverty in a community are referred to as poverty alleviation. The best way to lessen or eradicate poverty is to take use of it to help individuals gain new abilities or liberties (Oviasuyi, 2020).

Initiatives in Indonesia to provide zakat have reportedly helped to lower economic disparity and poverty (Ayuniyyah et al., 2018). Finding out how Indonesian zakat distribution programs have benefited both rural and urban communities in their attempts to combat poverty and narrow the income gap was the aim of the research. An analysis of 1,309 zakat recipients who were overseen by the National Zakat Board (BAZNAS), Indonesia's coordinating zakat organization, was included in the article. Situated in the West Java Province, the study was conducted in the cities and regencies of Bogor, Depok, and Sukabumi.

The study employed several analytical tools, including the deciles approach, the Gini coefficient, and the Centre of Islamic Business and Economic Studies (CIBEST) model. According to the study, the current zakat distribution procedures may, on the whole, help the zakat beneficiaries who were seen to be experiencing poverty and economic inequality. In conclusion, the literature suggests that studies examining the theoretical and empirical impacts of distributed zakat on sustainable development-related variables have

demonstrated that zakat has a positive and noteworthy influence on welfare economics, economic growth, poverty reduction, and the Human Development Index (HDI). However, the empirical research only looked at the relationship with certain characteristics and left out important aspects of sustainable development. The current study examines the dynamic short- and long-term effects of dispersed zakat on Indonesia's economic development, poverty rate, and Human Development Index (HDI) in an effort to close this disparity. Thus, the combination of these three components will yield fundamental findings regarding the impact of zakat on sustainable economic development.

METHODOLOGY

Data and Definition of the Variables

The United Nations Development Program (UNDP), the Organization of Islamic Cooperation (OIC) statistics database, and the National Zakat Board (BAZNAS) reports of Indonesia are the sources of the data. Times series data from 2001 to 2020 are used in the study. Four variables are employed: the poverty rate, GDP, Human Development Index, and distributed zakat, which serve as proxies for zakat and sustainable economic development, respectively. The quantity of zakat that is gathered and given to the needy individuals listed in the holy Qur'an is known as distributed zakat, and it is the dependent variable. A study on the function of zakat institutions in funding sustainability and accomplishing sustainable development goals (SDGs) was carried out by Pickup (2017). They maintained that zakat is an important instrument for pursuing SGDs and that it is one of the five pillars of Islam. It illustrates how correctly putting the Islamic zakat principle into practice will support welfare economic growth and address issues related to sustainable development.

In parallel, we employed dispersed zakat to evaluate zakat's influence on Indonesia's sustainable economic growth.

The GDP, HDI, and POR are the independent variables that are used as stand-ins for sustainable economic development. The quantity of value contributed to an economy over time through the production of goods and services is measured by a nation's Gross Domestic Product (GDP). This variable functions as a typical indicator in this investigation. According to [Yusoff \(2011\)](#), zakat expenditure accounted for a considerable portion of the fluctuation in real out. We used GDP as a stand-in for the economic growth sector in order to assess the impact of distributed zakat.

A good education, a long and healthy life, and a living standard are only a few of the significant areas of human development that the Human Development Index (HDI) assesses. [Suprayitno et al. \(2017\)](#) claim that zakat promotes human development in Malaysia. In order to find out how distributed zakat influences Indonesia's human development index, we chose this variable.

The percentage of people (in a given age group) whose income is below the poverty line is known as the poverty rate (POR), and it is calculated as half of the median household income for the entire population, according to the [World Bank \(2022\)](#). It was accurately argued by [Ayuniyyah et al. \(2018\)](#) that zakat distribution systems in Indonesia have contributed to the reduction of income inequality and poverty. Therefore, it's critical to assess the true impact of zakat on sustainable economic development in Indonesia using the poverty rate as a proxy for the sector responsible for reducing poverty.

Econometric Model and Estimation Techniques.

To investigate the relationship between these factors, the Error Correction Model (VECM) will be utilized. The unit root test will be the initial

stage in the estimation procedure to prevent erroneous regression. The co-integration test will then be employed to ascertain whether the series are co-integrated or not. Next, the estimation of the Error Correction Model (VECM) will be carried out to ascertain the short- and long-term effects of distributed zakat on the GDP, POR, and Human Development Index (HDI). The "Vector Error Correction Model" is a generating mechanism that arises when two series, X_t and Y_t , are co-integrated. According to [Engle & Granger \(1987\)](#), [Muniroh et al. \(2017\)](#), this mechanism allows for a range of short-run dynamics while bringing the variables closer together over time. Another excellent advantage of employing the vector error correction approach is the ability to predict the short- and long-term effects of factors on time series data.

The equation of Vector Error Correction Model (VECM) is obtained after differencing the VAR model. Conventionally, the VAR model is written as follows:

$$\begin{aligned} \Delta \ln gdp_t &= \alpha_1 + \sum_{i=1}^k \beta_i \Delta \ln gdp_{t-1} \\ &+ \sum_{m=1}^k \Phi_j \Delta \ln zakat_{t-1} \\ &+ \sum_{m=1}^k \varphi_m \Delta HDI_{t-1} \\ &+ \sum_{m=1}^k \Theta_n \Delta POR_{t-1} + \mu_{1t} \\ \Delta \ln zakat_t &= \alpha_2 + \sum_{i=1}^k \beta_i \Delta \ln gdp_{t-1} \\ &+ \sum_{m=1}^k \Phi_j \Delta \ln zakat_{t-1} \\ &+ \sum_{m=1}^k \varphi_m \Delta HDI_{t-1} \\ &+ \sum_{m=1}^k \Theta_n \Delta POR_{t-1} + \mu_{2t} \end{aligned}$$

$$\begin{aligned}\Delta HDI_t &= \alpha_3 + \sum_{i=1}^k \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{m=1}^k \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^k \varphi_m \Delta HDI_{i,t-1} \\ &+ \sum_{m=1}^k \Theta_n \Delta POR_{i,t-n} + \mu_{3t}\end{aligned}$$

$$\begin{aligned}\Delta POR_t &= \alpha_4 + \sum_{i=1}^k \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{j=1}^k \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^k \varphi_m \Delta HDI_{i,t-m} \\ &+ \sum_{n=1}^k \Theta_n \Delta POR_{i,t-n} + \mu_{4t}\end{aligned}$$

After differencing VAR model that means we reduced lag length by one, we find the vector error correction model. Following are a set of equations of the chosen model:

$$\begin{aligned}\Delta \ln gdp_t &= \alpha_1 + \sum_{i=1}^{k-1} \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \varphi_m \Delta HDI_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Theta_n \Delta POR_{i,t-1} \\ &+ \lambda 1ECT_{t-1} + \mu_{1t}\end{aligned}$$

$$\begin{aligned}\Delta \ln zakat_t &= \alpha_2 + \sum_{i=1}^{k-1} \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \varphi_m \Delta HDI_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Theta_n \Delta POR_{i,t-1} \\ &+ \lambda 1ECT_{t-1} + \mu_{2t}\end{aligned}$$

$$\begin{aligned}\Delta HDI_t &= \alpha_3 + \sum_{i=1}^{k-1} \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \varphi_m \Delta HDI_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \Theta_n \Delta POR_{i,t-n} \\ &+ \lambda 1ECT_{t-1} + \mu_{3t}\end{aligned}$$

$$\begin{aligned}\Delta POR_t &= \alpha_4 + \sum_{i=1}^{k-1} \beta_i \Delta \ln gdp_{i,t-1} \\ &+ \sum_{j=1}^{k-1} \Phi_j \Delta \ln zakat_{i,t-1} \\ &+ \sum_{m=1}^{k-1} \varphi_m \Delta HDI_{i,t-m} \\ &+ \sum_{n=1}^{k-1} \Theta_n \Delta POR_{i,t-n} \\ &+ \lambda 1ECT_{t-1} + \mu_{4t}\end{aligned}$$

Where:

$\ln gdp$: natural logarithm of real GDP

$\ln zakat$: Natural logarithm of Distributed zakat

HDI: Human Development Index

POR: Poverty Rate

$k - 1$ = the lag length is reduced by 1

$\beta_i, \Phi_j, \varphi_m, \Theta_n$ = short-run dynamic coefficients of the model's adjustment long run equilibrium.

λ = speed of adjustment parameter with a negative sign

ECT_{t-1} = error correction term, it contains the short run information derived from the long run co-integration relationship.

μ_{it} =residuals

RESULT AND DISCUSSION

Summary of Descriptive Statistics

The descriptive statistics are where we begin our analysis. The parameters for the descriptive statistics are presented in Table 1 below. We have standard deviation, maximum, minimum, mean, and median. The variable distributed zakat (Zakat) has a maximum value of 19597401 and a minimum value of 8152,230, according to these data. These figures indicate that the amount of zakat distributed in Indonesia was USD 8152,230 at the beginning and has lately climbed to around USD 19.597.401. It indicates that distributed zakat throughout the economy has the potential to increase in Indonesia; this may be because the government has implemented strict rules to encourage the spread of Islamic social finance across the nation.

Consequently, this development suggests that the economic sector holds a sizable portion of the zakat shares. In a similar vein, GDP shows significant expansion. It began at USD 1.71e+11 and has increased to over USD 1.12E+12 in

subsequent years. Furthermore, these findings also demonstrate that these variables' median is lower than their mean. Consequently, it suggests that all of the variables have a positive skewness.

Table 1.
Descriptive Statistics

	ZAKAT	GDP	HDI	POR
Mean	4281764.	6.79E+11	0.667500	12.80850
Median	1693623.	8.08E+11	0.670000	12.10000
Maximum	19597401	1.12E+12	0.720000	31.20000
Minimum	8152.230	1.71E+11	0.610000	0.970000
Std. Dev.	5879932.	3.26E+11	0.035522	8.320955
Skewness	1.432442	-0.273463	-0.107067	0.373621
Kurtosis	3.767981	1.521865	1.616609	2.219807
Jarque-Bera	7.331128	2.070009	1.633019	0.972559
Probability	0.025590	0.355225	0.441972	0.614910
	ZAKAT	GDP	HDI	POR
Sum	85635284	1.36E+13	13.35000	256.1700
Sum Sq. Dev.	6.57E+14	2.02E+24	0.023975	1315.527
Observations	20	20	20	20

Unit Root Test: The ADF Test and PP Test

Table 2 above shows the outcomes of the two tests that were performed on the variables. The null hypothesis is as follows: H0: The series have a unit root and are non-stationary. If the series is stationary and the prob value is less than 0.05 at the 5% significance level, we reject this hypothesis.

All four variables are non-stationary at this level in the ADF test (prob values larger than 0.05), while they are all stationary in the PP test (prob values less than 0.05). To make these series

stationary, we use the differentiation strategy (1st difference and 2nd difference).

The p values for lnzakat, lnGDP HDI, and POR are 0.0000, 0.0100, 0.0060, and 0.0124, respectively. Since each of these ADF test results is less than 0.05, the null hypothesis is rejected, and it is determined that these variables are stable. In the same way, the p values for every variable in the PP test are less than the 5% significance level. We infer that all of these series are stationaries globally. The co-integration test may therefore be used to look into the link between the variables.

Table 2.
The ADF Test and PP Test

variables	ADF			Philip-Perron (PP)		
	LEVEL	1st difference	2nd difference	LEVEL	1st difference	2nd difference
Lnzakat	0.1288	0.0081	0.0100	0.0814	0.0000	0.0001
LnGDP	0.9699	0.0539	0.0060	0.9699	0.1127	0.0000
HDI	0.9756	0.0000	0.0124	0.1780	0.0000	0.0001
POR	0.0016	0.0163	0.0000	0.0141	0.0000	0.0000

prob values, 5% significance level

Co-integration test: The Johansson co-integration test

To observe the connexion between zakat, economic growth, human development index and poverty rate, we performed the Johansen co-integration test.

The results of the test are shown in Tables 3 and 4. For the first outcome, the test was interpreted using trace statistics (table 3). The null hypothesis, H_0 , states that the Human

Development Index (HDI), poverty rate (POR), zakat, GDP, and POR do not co-integrate. If the value of the trace statistic is higher than the critical value, we reject the null hypothesis and conclude that there is a co-integrating relationship between the variables. For the null hypothesis, the trace test results display four co-integrating equations. The null hypothesis, which states that there is no co-integration between the variables, is rejected because each prob value is less than 0.05. As so, all four (04) variables are co-integrated.

Table 3.
trace statistics

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.762145	66.33285	47.85613	0.0004
At most 1 *	0.648348	40.48318	29.79707	0.0020
At most 2 *	0.474765	21.67115	15.49471	0.0052
At most 3 *	0.428816	10.08078	3.841465	0.0015

For the second outcome (table 4), the highest Eigen value was employed. At the 5% level of significance, we may observe that the null hypothesis's p value (at most 3*) is less than 0.05. In other words, the null hypothesis—that there is no co-integrating connection between the variables—is rejected.

In general, we draw the conclusion that there are co-integrating relationships between the

variables based on the cointegration test results from the two tables. It suggests that there is evidence of a relationship over an extended period of time between the poverty rate (POR), zakat, GDP, and the Human Development Index (HDI).

Table 4.
Maximum Eigenvalue

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.762145	25.84968	27.58434	0.0820
At most 1	0.648348	18.81203	21.13162	0.1024
At most 2	0.474765	11.59037	14.26460	0.1270
At most 3 *	0.428816	10.08078	3.841465	0.0015

Estimation of vector Error Correction Model (VECM).

All of the previously listed procedures are used to gauge how distributed zakat affects economic growth, the human development index, and the poverty rate. After the stages of stationarity of the series and co integration of the variables, we know that the vector error correction model (VECM) is suitable for forecasting the short- and long-term

correlations between distributed zakat, economic growth, human development index, and poverty rate. According to Davidson et al. (1995), if the variables are co-integrated and stationary in the first difference, then VECM is the proper method to utilize.

Table 5 and table 6 present the output of short run and long run effect of distributed zakat on economic growth (GDP), Human Development Index (HDI) and Poverty rate (POR).

Table 5
Short Run Model

Error Correction:	D(LNZAKAT)	D(LNGDP)	D(POR)	D(HDI)
CointEq1	-0.683121 (0.45468) [-1.50243]	0.157499 (0.12657) [1.24434]	14.73150 (4.58312) [3.21429]	-0.007312 (0.01766) [-0.41398]
D(LNZAKAT(-1))	0.116491 (0.32552) [0.35787]	-0.038646 (0.09062) [-0.42648]	-7.257468 (3.28120) [-2.21184]	0.003731 (0.01265) [0.29502]
D(LNGDP(-1))	0.576982 (1.21352) [0.47546]	0.719476 (0.33782) [2.12976]	18.49799 (12.2323) [1.51223]	-0.019396 (0.04714) [-0.41145]
D(POR(-1))	-0.001922 (0.01097) [-0.17521]	-0.000657 (0.00305) [-0.21522]	-0.114448 (0.11060) [-1.03480]	-0.000137 (0.00043) [-0.32105]
D(HDI(-1))	-14.35189 (11.5027) [-1.24770]	2.802178 (3.20210) [0.87510]	52.79537 (115.946) [0.45534]	-0.963730 (0.44684) [-2.15675]

C	0.204113 (0.08425) [2.42272]	-0.004551 (0.02345) [-0.19405]	-1.025209 (0.84923) [-1.20722]	0.010874 (0.00327) [3.32259]
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Table 6
Long Run Model

Cointegrating Eq:	CointEq1
LNZAKAT(-1)	1.000000
LNGDP(-1)	-1.836582 (0.17375) [-10.5700]
POR(-1)	-0.062604 (0.01008) [-6.21023]
HDI(-1)	-26.34278 (2.66214) [-9.89535]
C	34.00853

Because their respective t-values are lower than the 5% critical threshold ($cv=2.92$), the results show that all three variables—GDP, HDI, and POR—are statistically significant. This conclusion may be drawn from the findings presented here. As a consequence of this, zakat that is distributed has a considerable effect, over the course of time, on measures of economic growth (GDP), human development index (HDI), and poverty rate. (POR). Based on these findings, it appears that zakat that is disbursed has a favorable influence on GDP growth both in the short run and the long run. This highlights the fact that zakat has a direct influence on the functioning of the actual economy by contributing to the availability of resources for the consumption and production of goods within the community. To stimulate overall economic expansion, therefore, solutions will be explored to strengthen output and consumption. [Yusoff \(2011\)](#) and [Suprayitno \(2020\)](#) came to comparable conclusions in their research. In addition, it is

possible to claim that zakat institutions develop distribution strategies that address at least five different sectors. These sectors include the social, economic, and religious (Da'wah) components of education. As more money is given as zakat to various charities and organizations, a country's overall economic well-being will begin to improve.

The community's zakat, which is distributed across it, is crucial to development. It is reasonable to conclude from these results that the human development index benefits from dispersed zakat. (HDI). Zakat is a determinant in the human development index, according to [Suprayitno et al. \(2017\)](#), which is in line with the conclusions drawn by [Ibrahim \(2015\)](#). This suggests that zakat has the potential to raise the human development index.

In addition, the charity known as zakat is distributed to eight categories of people who are considered to be the most defenseless members of society; this has the potential to foster the growth of the eight categories of people who are mentioned in the Quran. As a consequence of this, extending assistance to such individuals will result in growth across the entirety of the nation and society. In addition, more than 4,500 people in four isolated regions of Indonesia now have access to electricity thanks to the establishment of micro hydropower plants by BAZNAS and the UNDP, which was the first big cooperation effort between the two organizations. The Global Environment Facility is providing financial support for this project so that it can be included in a bigger renewable energy strategy. Communities that now have access to energy will benefit economically from future Zakat projects, which will also contribute to the conservation of wildlife. It is feasible to envision how zakat could promote the creative

capacities of people and communities through such initiatives, as an alternative to merely supporting consumptive or humanitarian endeavors such as paying for medical expenditures and disaster assistance (UNDP, 2018). This illustrates that the distribution of zakat has a positive influence on both the general welfare of society and the expansion of the economy. In the case of poverty, distribution has a significant and significant long-term impact on the decrease of poverty. Based on our results, it is assumed that distributing zakat will, in the long run, be able to reduce the rate of poverty and maintain economic well-being. On the other hand, Yaumidin (2014) came to the conclusion that zakat had no impact whatsoever on the alleviation of poverty. This finding contradicts that conclusion. In contrast to the present findings, which reflect empirical results and recent investigation, this study only covered a very small portion of time before the year 2010. Again, in the long run, the distribution of zakat will have a big impact on GDP, which in turn can have a knock-on effect on the poverty rate, which in turn will have a significant impact on the amount of poverty that is alleviated (Ayuniyyah et al., 2022). Once more, our calculations suggest that the amount of zakat that is distributed accounts for around 6% of the expansion of Indonesia's economy. In addition, the quantity of zakat that is given to those who are eligible to receive it will, in the long run, be productive and will serve as a source for the relief of poverty.

In general, these findings showed that an increase in zakat in the near term is possible to improve the standard of education and social welfare in the community. An increase in the amount of zakat that is distributed will, in the long run, have an effect on consumption, investment, and employment, as well as stimulate zakat beneficiaries to become zakat providers. As a result of this, the principal goals of zakat distribution,

which pertain to the maintenance of zakat funds and the expansion of the economy, will be successfully accomplished. As a result, we are in a position to attest to the substantial impact that zakat has on the growth of an economy that is sustainable.

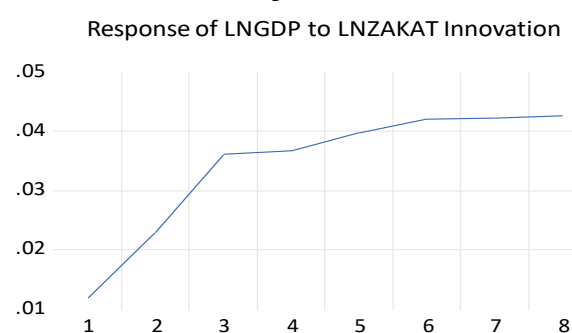
Moreover, we also analyze the impulse response function. It shows the response of each to shock of one another in the long run. Figure 1, 2 and 3 shows the response of the variables GDP, HDI and POR to the induction of zakat.

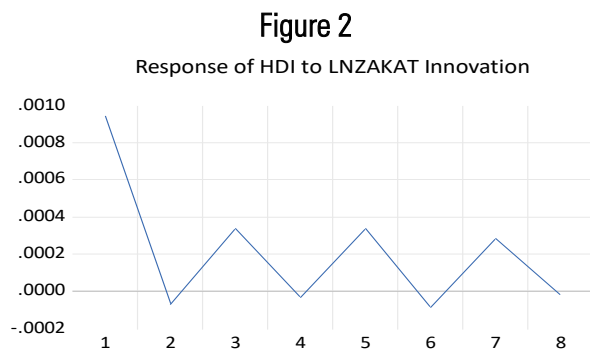
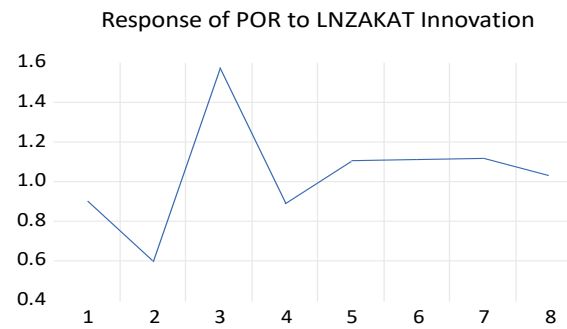
Figure 1 explained that from period 1 to 3 distributed zakat increases the economic growth to a maximum level in period 3. After that GDP responds constantly to the shock of zakat without any decreases in the long run. Therefore, it implies the positive impact of zakat on economic growth.

Figure 2 also shows that for each period, HDI is decreasing but, with the impulse of distributed zakat it responds positively. Thus, in the long run, the human development index responds positively to the variation of distributed zakat. On that account, it shows the positive relationship between zakat and human development index.

Figure 3 also shows that, from the beginning, zakat was able to lower the poverty rate. Some variations are observed due to the shock of the economic sector. However, in the long run, distributed zakat tends to lower poverty rate. Hence we can affirm the crucial impact of zakat on poverty alleviation in the long run.

Figure1



**Figure 3**

Model Diagnostics

We performed some diagnostics tests to see how our estimation results can be taken into consideration. We used the following tests: autocorrelation test, heteroscedasticity test and normality test. The results of these tests are presented in table 7 below.

Table 7
Diagnostics Tests

Diagnostics Tests	Type of tests	Prob value at 5% level of significance
Autocorrelation Test	Breusch–Godfrey Test	0.3983
Heteroscedasticity Test	White Test	0.4501
Normality Test	Jarque-Bera	0.8640

Given that the data indicate that the prob values are more than 0.05, the alternative hypothesis is accepted and the null hypothesis is rejected. As a result, we get the following findings: The data have a normal distribution; there is no evidence of serial correlation among the variables observed; and the error variances are similar, signifying the lack of heteroskedasticity errors.

CONCLUSION AND RECOMMENDATION

Conclusions

In summary, this research illustrates the immediate and long-term effects of dispersed zakat on Indonesia's sustainable economic growth. We employed an impulse response function, stationary test, and co-integration test as well as related estimation methods in conjunction with a vector

error correction model (VECM). To estimate the VECM model, we employed time series data. According to our findings, distributed zakat has a beneficial effect on long-term, sustainable economic growth. Thus, it proves that raising zakat can, in the near term, improve social welfare and educational standards. This highlights the fact that by providing resources for societal consumption and production, zakat directly affects the real economy. It follows that increases in consumption and output will accelerate economic growth.

Over time, more zakat distributed will have an impact on employment, investment, and consumption. It will also encourage zakat beneficiaries to start supplying zakat. As a result, the main goals of zakat distribution, which are linked to long-term zakat funds and economic expansion, will be effectively accomplished. Zakat

organizations create distribution plans that consider the social, economic, religious (Da'wah), and educational aspects, among at least five other factors. The economic well-being of a nation will be enhanced by a rise in zakat donations through various avenues. We suggest that the Indonesian government enact tax reduction policies for zakat organizations to help them optimize collection and distribution schemes in order to support and

accomplish sustainable development goals. Furthermore, it is advised that zakat institutions broaden their distribution to include those who are more at-risk in order to significantly reduce poverty and promote sustainable development. The case study of just one nation, Indonesia, is one of the research's shortcomings, hence it is advised to include more nations in order to generalize the findings.

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