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Exploring the Macroeconomic Drivers on Zakat Collection in Indonesia: Evidence from 1994-2024

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ABSTRACT

Zakat serves as a critical instrument of Islamic fiscal policy, with the potential to significantly contribute to poverty alleviation, sustainable development, and social security. Despite its central role in Islamic economic thought, zakat collection in Indonesia remains far below its estimated potential. While previous studies have attributed this shortfall to institutional, legal, and sociological factors, limited attention has been paid to the role of macroeconomic variables in influencing zakat collection. This study aims to empirically examine the relationship between key macroeconomic indicators, GDP growth, inflation, and real effective exchange rate (REER), and zakat collection in Indonesia from 1994 to 2024. Using the Autoregressive Distributed Lag (ARDL) approach, this study finds no significant long-run relationship between zakat collection and the selected macroeconomic indicators. However, short-run dynamics reveal a marginal adjustment process, indicating a slow and weak responsiveness of zakat collection to macroeconomic fluctuations. These findings suggest that, unlike tax revenue, zakat collection is less influenced by economic performance and more dependent on institutional trust, regulatory clarity, and the governance structure of zakat institutions. The study concludes that enhancing zakat collection in Indonesia requires not only macroeconomic stability but also deep structural and administrative reforms. This includes improving institutional governance and strengthening legal frameworks. Theoretically, the research contributes to the field of Islamic political economy by highlighting the limited applicability of conventional macroeconomic models to explain zakat behavior. It calls for a more integrated framework that incorporates both economic and religious-social dimensions in understanding and optimizing zakat collection.

1. INTRODUCTION

Zakat is a compulsory religious financial obligation imposed on eligible Muslims who meet specific criteria. Its presence, both in Muslim-majority and minority countries, has played a vital role in promoting social security [1-3], supporting sustainable development [4-7], and alleviating poverty [8, 9]. Empirical evidence of these roles can be observed in various countries, including Indonesia [10-12], Malaysia [13-15], Brunei Darussalam [16], Thailand [17, 18] and the Philippines [19]. Although zakat is traditionally distributed to specific underprivileged groups, such as the *fakir* and *miskin*, many zakat institutions have begun to implement *productive zakat* distribution initiatives. These initiatives focus on Zakat's broader role in advancing social protection, fostering long-term development, and reducing poverty.

Despite its recognized significance, zakat continues to face several persistent challenges, particularly in Indonesia. One of the most pressing issues is the wide gap between the estimated potential and the actual zakat collected [20, 21]. Compared to several Middle Eastern countries, Indonesia's zakat collection mechanisms are often perceived as ineffective [22], which significantly limits zakat's potential socio-economic impact. Scholars have attributed this inefficiency to various factors, including the dualism of national zakat agency [23], low public trust in Zakat institutions [24], and limited dissemination of updated Zakat legislation [25]. These issues, in turn, encourage *muzakki* (zakat payers) to distribute zakat directly to recipients. Some studies argue that these challenges may stem from the structural relationship between the state, local governments, and Zakat institutions, resulting in institutional dualism and weak regulatory outreach. Furthermore, governance deficiencies within zakat institutions themselves may contribute to the erosion of trust among

muzakki [26].

However, some studies also caution against a narrow interpretation of the determinants of zakat collection. In addition to governance and legal factors, broader macroeconomic conditions may also influence Zakat's contributions, yet these variables are often overlooked in empirical research [26]. In response, this study aims to examine the impact of key macroeconomic indicators on zakat collection in Indonesia. The remainder of this article is structured as follows: the next section reviews the relevant literature and outlines the study's theoretical framework and hypotheses. The methodology section details the application of the Autoregressive Distributed Lag (ARDL) approach. This is followed by a presentation and discussion of the empirical results. The final section concludes the study by summarizing the main findings and their implications.

2. LITERATURE REVIEW

This section discusses the theoretical foundation linking macroeconomic indicators to zakat collection, drawing on the established relationship between macroeconomic variables and tax revenue. This analogy is justified by the similarities between zakat and taxation, both of which are forms of mandatory financial contributions that serve public welfare. While zakat is religiously mandated, tax represents a civic duty; yet both are responsive to broader economic conditions.

Macroeconomic and Tax Revenue

The relationship between macroeconomic indicators and tax revenue is well-documented in the literature. One of the key rationales for this relationship lies in the variation of tax revenue based on a country's economic size, as illustrated by the tax-to-GDP ratio. Early studies [27-29] explore this dynamic, particularly in the context of developing countries. It argues that macroeconomic indicators such as real GDP per capita, the size of international trade, and demographic variables are crucial in enhancing tax revenue performance [29]. These indicators are instrumental for understanding the resource allocation, income distribution, and economic stability of a nation, as well as for evaluating the taxable capacity of developing economies.

Building on this, some studies provide robust empirical evidence across 59 countries from 1996 to 2015, affirming the significance of GDP and trade openness in determining tax revenues. It introduces the concept of "tax effort," defined as the ratio of actual tax-to-GDP to the fitted value from regression models. Its findings reveal that high GDP per capita does not always translate into optimal tax effort, reflecting inefficiencies in fiscal mobilization [30].

Inflation is another macroeconomic indicator shown to influence tax revenue. It suggests that taxation should be adjusted to account for inflation, as failing to do so may distort tax burdens and undermine revenue collection [31]. More recently, another study investigated the effects of tax adjustments on consumption and corporate behavior. Their findings suggest that while increased personal taxes can lower the prices of non-durable goods in the short term, corporate tax increases tend to have delayed but inflationary effects, which may ultimately reduce government revenue [32].

Taken together, these studies provide strong theoretical and empirical justification for the inclusion of GDP, trade openness, and inflation in models explaining fiscal revenue behavior. Given the structural parallels between zakat and tax, it is plausible to hypothesize that zakat collection is also responsive to these macroeconomic variables. Table 1 below summarizes key references used to construct this conceptual relationship.

Table 1. Summary of macroeconomic and tax revenue relationship

Variable	Reference
GDP	[27-30]
Size of international trade	[27-30]
Inflation	[31, 32]

Macroeconomic and Zakat collection

Building upon the tax literature, this study explores how macroeconomic indicators similarly influence zakat collection. Conceptually, GDP is expected to play a significant role. It argues that economic growth enhances zakat collection, while economic downturns reduce it. Given that the zakat rate is fixed and non-negotiable, the total collection tends to move in tandem with GDP [33, 34]. This view is mathematically proved, emphasizing zakat function on GDP, using both income and expenditure approaches [33].

Empirical studies support these conceptual insights. Through a Granger causality analysis, it finds that GDP and gold prices have a significant positive effect on zakat collection [35]. Similar findings are reported [36]. Interestingly, however, some study reports a negative correlation between GDP and zakat collection, suggesting that other contextual factors may moderate this relationship [37].

Regarding inflation, the literature that discusses zakat collection is limited. It notes that some study suggests that zakat distribution could serve as a tool to counter inflation [38]. In relation to zakat collection, others argue that rising inflation rates may dampen zakat collection [39]. However, it also finds that there is a positive correlation between inflation and zakat collection, where, consequently, inflation may increase zakat collection [40]. Nevertheless, some studies also find that inflation is statistically insignificant in affecting zakat contributions [41]. These mixed findings highlight the need for further empirical investigation.

For trade-related variables, the size of international trade justified from the theory of taxation discussed before is proxied in this study by the real effective exchange rate (REER), due to the limited availability of direct trade-to-zakat studies. It reports a positive correlation between zakat collection and exchange rates, suggesting that trade competitiveness may influence zakat-generating capacity [41].

Hence, the hypotheses that are developed for this study are as follows:

H1 = GDP has a positive and significant effect on zakat collection in Indonesia

H2 = Inflation has a positive and significant effect on zakat collection in Indonesia

H3 = REER has a positive and significant effect on zakat collection in Indonesia

Sub-hypothesis:

H1a = GDP has a positive and significant effect on zakat collection in Indonesia, both in short-term and long-term

H2a = GDP has a positive and significant effect on zakat collection in Indonesia, both in short-term and long-term

H3a = REER has a positive and significant effect on zakat collection in Indonesia, both in short-term and long-term

3. METHODOLOGY

Data and source of data

The data for zakat collection fund is collected from several sources, which include the Centre of Zakat Statistics by BAZNAS for zakat collection data between 2015 and 2024. Meanwhile, for the data year 1994 to 2014, the Zakat collection data is collected from online-based financial reports of Zakat institutions. To make the empirical results more specific and portray the actual zakat collection, this study used zakat collection per capita, where the calculation of zakat collection per capita is available in Eq. (1) below:

$$zakat\ percapita = \frac{\text{total of zakat collection}}{(\text{total population} - \text{poor population}) \times \text{percentage of Muslim population}} \quad (1)$$

where,

Total of zakat collection = collected zakat fund from online-based financial report

Total population = number of Indonesian populations from Eikon data stream

Poor population = number of Indonesian poor population from Eikon data stream

Percentage of Muslim population = percentage of Muslim population

Further, independent variables such as economic growth, inflation, and exchange rates data are collected from relevant websites, including the official website of the World Bank and International Monetary Fund (IMF), and Eikon data stream by Thomson Reuters. As zakat collection and real effective exchange rate are neither in indices nor in percentage form, it therefore transforms into natural logarithm (Ln). The description of each variable is available in Table 2.

Table 2. Variable description

Variables	Indicators	Source
LnZakat collection	Zakat collection per capita	BAZNAS and all online sources
Economic growth	GDP Growth (% Annual, by expenditure)	World Bank and Eikon data stream
Inflation	Inflation Annual Changes	IMF and Eikon data stream
LnReal Effective Exchange Rate	Exchange Rate	Eikon data stream

Autoregressive Distributed Lag (ARDL)

There are some reasons why ARDL is employed which include a) could be processed using small sample sized, b) could mixed stationery data on zero order or stationer at level / I(0) and stationery data on first order or stationer at first difference / I(1), c) it involves single equation set up, so making it simple to implement and to interpret, d) different variable could use different lag-length, so it can be very flexible to the data [42]. Some advantages of ARDL model will be very suitable and benefit our study, as zakat collection data in Indonesia is limited, and different lag-lengths will also benefit our small data. Furthermore, the ARDL also allows us to investigate the short-run and long-run impact of macroeconomic indicators on zakat collection. Although other approaches, such as Vector Error Correction Model (VECM) and Fully Modified Ordinary Least Square (FMOLS), also provide dynamic analysis, unlike ARDL, VECM requires similar lag-lengths [42] while FMOLS is more likely to be adopted in panel data because it can handle the heterogeneity of individual members of all panels [43].

The ARDL model specification of this study is illustrated in Eq. (2):

$$\begin{aligned}\Delta Z = \beta_0 + \theta_0 Z_{t-1} &+ \theta_1 growth_{t-1} + \theta_2 inf_{t-1} \\ &+ \theta_3 exrate_{t-1} + \Sigma\epsilon_l \Delta growth_{t-l} \\ &+ \Sigma\zeta_m \Delta inf_{t-m} + \Sigma\eta_n \Delta exrate_{t-n} \\ &+ \varepsilon_t\end{aligned} \quad (2)$$

where,

Z = zakat collection fund per capita

growth = GDP growth

inf = inflation

exrate = real effective exchange rate

These are the steps in analysing the ARDL Model [42].

1) Unit root test

Prior to the data analysis, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) stationarity test will be employed in this study.

2) Bound Cointegration test

Panel cointegration test is used to look at the relation of short-term and long-term effects on the model specified. This study will use the Bound co-integration test.

H_0 =0.05, no cointegration

$H_1 \neq$0.05, cointegration

3) Error Correction Model

This is intended to show the short-term effect.

4) Robustness and Stability test

Robustness test

Correlation and Heteroscedasticity test.

Stability test

CUSUM and CUSUM Square test.

4. RESULTS AND DISCUSSION

This section presents empirical findings and provides a discussion of the results. The analysis begins with descriptive statistics, followed by unit root tests, the ARDL bounds cointegration test, long-run and short-run estimations, and finally, diagnostic checks to assess the model's robustness.

Empirical results

The descriptive statistics provided in Table 3 show that the inflation and REER variables exhibit high variability and kurtosis, indicating potential non-normality. This may affect their behavior in the regression model.

Further, Table 4 provides the results of unit root test using the Augmented-Dickey Fuller (ADF) and Philip Peron (PP) criteria. It finds that all variables are integrated at first difference I (1) except for GDP Growth, Inflation, and Real Effective Exchange Rate, which are at level, I (0). Since there is a mix of integration, we proceed to the ARDL bound test of cointegration.

Table 5 explained the ARDL bound test cointegration. It finds that the model is not cointegrated at any significant level as the value of F-statistics (0.679) is lower than upper bound in all significant levels. This indicates that there is no long-term relationship between dependent and all independent variables.

Table 3. Descriptive statistics of dependent and independent variables

Variable	Mean	Standard Deviation	Sample Variance	Skewness	Kurtosis	Jarque-Bera
lnzakatpercapita	6.40	2.97	8.86	-0.15	-1.21	23.06
GDP growth	5.43	2.02	4.10	1.49	6.86	30.83
INF	8.22	10.15	103.14	4.31	21.16	522.53**
LnREER	4.57	0.12	0.01	-0.66	0.10	13.13**

*Significant at 10%; **Significant at 5%; ***Significant at 1%

Table 4. Unit root test results

	Augmented-Dickey Fuller (ADF)		Philip Perron (PP)	
	Trend and intercept		Trend and intercept	
	Level	First Difference	Level	First Difference
lnzakatpercapita	-1.21	-4.69***	-1.53	-4.69***
GDP Growth	-6.80***	-6.88***	-6.72***	-19.48***
INF	-5.12***	-6.45***	-7.84***	-21.07***
LREER	-3.52*	-6.22***	-3.48*	-6.25***

*Significant at 10%; **Significant at 5%; ***Significant at 1%

Table 5. Bound test cointegration

F-Stat	0.679	
Sig. level	Lower bound	Upper bound
10%	2.72	3.77
5%	3.23	4.35
1%	4.29	5.61

The inexistence of long-term relationship between dependent and independent variables is emphasized by the results of partial relationship from each variable. Table 6 shows that there is no partial relationship between GDP and Zakat collection, where the probability 0.845 is exceeding any significant level. Similar results are also found in the Inflation and REER, each with probability 0.766 and 0.746, also exceeding any significant level.

Table 6. ARDL long-term

Variables	Rest. Constant (Prob)
GDP Growth	0.73 (0.84)
INF	0.29 (0.76)
REER	-22.40 (0.74)

Table 7. Error correction model and diagnostic test

Panel A: Error Correction Model	
Variable	Coefficient
ECT	-0.01 (0.09)*
C	1.90 (0.05)**
Panel B: Diagnostic test	
Serial Correlation (LM test)	
0.20 (0.81)	
Heteroscedasticity (White test)	
0.36 (0.96)	
Stability Test (CUSUM and CUSUM Sq)	
Stable	

*Significant at 10%; **Significant at 5%; ***Significant at 1%

Nevertheless, the Error correction model (Table 7), which indicates the short-term relationship, finds that there is a short-term effect of macroeconomic variables proxied by GDP, Inflation, and REER on zakat collection. However, the adjustment effect takes approximately 66.67 years. Diagnostic tests such as the LM test for serial correlation, the Harvey test for heteroscedasticity, and the CUSUM and CUSUM Sq tests for stability indicate no econometric issues. All p-values exceed 0.05, allowing us to fail to reject the null hypotheses of no autocorrelation and no heteroscedasticity. The stability tests further confirm that the models are dynamically stable, supporting the robustness and validity of the results.

4.1 Discussion

The empirical results of this study provide important insights into the relationship between macroeconomic indicators and zakat collection in Indonesia, offering both empirical contributions and theoretical implications for Islamic fiscal policy and governance. For instance, the absence of a statistically significant long-run relationship between zakat collection and macroeconomic indicators such as GDP growth, inflation, and the REER contrasts with conventional expectations derived from the literature on tax revenue, where macroeconomic variables are typically strong predictors of fiscal performance [28-30]. This suggests that zakat mobilization in Indonesia may not follow the same economic logic as taxation, despite their structural similarities as fiscal instruments, with zakat payment functioning as income tax relief [44].

This divergence may be attributed to the behaviour of *muzakki* (zakat payers). Unlike taxes, which are legally enforced. Zakat is voluntary and primarily a religious obligation. As a result, zakat collection tends to be driven more by religious awareness and knowledge of *muzakki* [45] than by economic capacity.

Moreover, institutional rigidity, which includes the issue of trust towards zakat institutions and the quality of zakat institutions' governance, also appears to play an essential role [45]. Previous studies have highlighted the importance of accountability, indicated by the availability of financial reports as an important element of zakat governance that may directly affect zakat collection [46, 47]. These findings indicate that the effectiveness of zakat collection mechanisms in Indonesia is more sensitive to non-economic variables than to macroeconomic indicators alone.

Furthermore, while the Error Correction Model (ECM) confirms the existence of a short-term dynamic relationship between zakat collection and macroeconomic indicators, the adjustment speed is extremely slow, with only about 1.5% of disequilibrium being corrected per year. This result emphasizes the previous finding where there is a sluggish responsiveness of zakat collection to economic fluctuations. Such inertia likely reflects structural constraints linked to *muzakki* behavior and the rigidity of Zakat institutions, including issues of accountability and transparency. This finding aligns with some studies [37] but at the same time, it challenges others that report stronger associations [35, 36].

Additionally, the absence of macroeconomic impact on zakat collection highlights the importance of theoretical exploration of an alternative determinant. A growing body of literature suggests that political policy for zakat, such as clear zakat regulation and comprehensive zakat governance

regulations, is among the possible determinants in influencing zakat compliance and payment behavior [26]. For instance, in Malaysia, zakat collection has improved through the transformation of zakat institutions from centralized to more localized collection systems, supported by the inclusion of local *amil* (zakat collectors) [48]. Similarly, in Pakistan, increased trust in centrally managed zakat collection has been associated with zakat revenues reaching nearly 7% of the total GDP of Pakistan [49].

Therefore, macroeconomic indicators may be insufficient for explaining zakat collection in Indonesia. The findings highlight the importance of developing a theoretical framework for zakat policy rooted in Islamic political economy, which provides a more comprehensive approach for understanding the determinants of zakat collection. This study shows that purely economic models relying on macroeconomic variables are inadequate without incorporating political and institutional dimensions.

5. CONCLUSION

This study examines the influence of GDP growth, inflation, and the REER on zakat collection in Indonesia over the past three decades, employing the ARDL approach to assess both short- and long-term dynamics.

The findings indicate no statistically significant long-term relationship between zakat collection and the selected macroeconomic indicators. In the short term, the adjustment process is notably sluggish, reflecting a limited and delayed response to macroeconomic fluctuations. Unlike tax revenue, zakat collection does not closely track economic performance indicators such as GDP, inflation, or exchange rates. Instead, the evidence suggests that religious behaviour, institutional, and governance-related factors exert greater influence. This outcome underscores the distinct nature of zakat as a religiously mandated yet voluntarily observed obligation, contrasting with taxation, which is reinforced through legal enforcement.

From a policy perspective, these insights highlight the need for a multifaceted approach to zakat reform in Indonesia. Efforts to increase zakat revenue should prioritize improvements in both state-government-zakat collection policy and governance also public accountability of zakat institutions. Additionally, educational campaigns that strengthen religious awareness and emphasize the societal benefits of institutionalized zakat, could also enhance compliance rates among *muzakki*.

Therefore, theoretically, this research contributes to the urgency to develop zakat policy based Islamic political economy by demonstrating that zakat cannot be fully understood or modeled using conventional economic paradigms alone. Future models of zakat behavior must integrate economic, sociological, and religious dimensions to more accurately reflect the realities of zakat practice in Muslim-majority societies, particularly in Indonesia. In conclusion, while macroeconomic stability remains important for the overall fiscal health of a nation, enhancing zakat collection in Indonesia requires deeper structural, institutional, and normative interventions. Strengthening the political and administrative foundations of zakat policy will be key to unlocking its full potential as a tool for a more sustainable development, poverty alleviation, and social justice.

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