An Analysis of Zakat Expenditure and Real Output: Theory and Empirical Evidence

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ABSTRACT

This study advocates zakat as the major and potent fiscal policy instrument in an Islamic state. Zakat plays its role in the macroeconomic stabilization policy through the non-discretionary and discretionary fiscal policy. The built-in stabilizer mechanism occurs when zakat collection is automatically reduced during recession giving more money to the people to spend which tends to stimulate the economy; while during the boom period more zakat is collected, reducing the ability of the people to spend which tends to dampen economic activities. These reduce macroeconomic fluctuations. As a discretionary fiscal policy, the government varies the disbursement of zakat to the recipients whenever necessary during the phases of a business cycle. During the expansion phase, the government decreases zakat disbursement to reduce aggregate spending. Likewise, zakat disbursement is increased when the economy is in the downswing to increase aggregate spending. Empirical evidence using Malaysian data supports the hypothesis that zakat spending is a potent fiscal instrument to improve the economic performance. The results of panel data regression analysis indicate that zakat expenditure could significantly explain the variation in the real output. This suggests that Muslim countries should make serious effort to improve the efficiency of zakat collection and spending to generate growth and the development of ummah.

Keywords: zakat, fiscal policy, real output, panel data, Malaysia.
INTRODUCTION

In recent years there has been a relatively rapid progress in the development in the theory and practices of Islamic banking and finance. Indeed, we are quite successful in introducing the field of Islamic banking and finance into practice in both Muslim and non-Muslim countries. Although some Muslim scholars have reservations on the purity of the operations of Islamic banking, Islamic bond market, and Islamic stock market, the fact is very clear; we are moving forward and may Allah guide us into the right path. The same is not true in other fields of Islamic economics, in general. Specifically, there has not been much progress in the development of a concrete Islamic macroeconomic framework, at the conceptual and operational levels. It is hoped that with the cooperation among Muslim scholars, in the relevant disciplines, will generate serious interdisciplinary efforts to bring about the relevant ideas for the development of the field of Islamic macroeconomics or macroeconomics from an Islamic perspective. We must make an effort, struggle, and willing to face the difficult challenges and obstacles along the way. Our main goal now is to have an in-depth formal analysis of Islamic economics framework. By formal analysis we mean an economic analysis that uses more mathematics or at least diagrams to arrive to the conclusions so that we could minimize ambiguity. Indeed we need sustained research efforts, innovations, constructive criticisms, thoughtful and provocative discussions to pave the way for the development and progress of Islamic economic thoughts.

Although it has been recognized that the principal instrument of fiscal policy for an Islamic state is zakat, yet there is not much literature on macroeconomic model in an Islamic framework which incorporates zakat as one of the fiscal policy instruments to analyze the efficacy of fiscal policy to stabilize economic performance. Some argue that zakat is not an effective fiscal instrument to stabilize macroeconomic fluctuations since its channel of transmission to the real sector is only through nondiscretionary policy. Thus, Muslim
economists have differing views as to whether zakat could be used as a fiscal instrument for stabilization policy. Faridi (1983:44) advocates zakat to be a fiscal policy tool. He argues that zakat collection and its disbursement may act as stabilizing effect on an Islamic economy through the built-in stabilizer and as a discretionary stabilizer through the zakat disbursement. Ahmed et al.(1983) point out that there are a group of economists who are in favor of using zakat as a countercyclical policy as it is not obligatory to disburse all the zakat collection within a specific period which implies that some zakat proceeds could be withheld during an inflationary period and then use it during the recessionary period to improve the economic performance, while another group argue otherwise.

Metwally (1983) finds that zakat disbursement has the ability to increase the aggregate consumption since the marginal propensity to consume of the zakat payers is lower than that of zakat recipients. This implies that the zakat disbursement has a role in the national income determination; the higher the zakat expenditures the higher the increase in the equilibrium output. Tahir (1989) develops and introduces zakat in an Islamic macroeconomic model focusing on the determination of aggregate output associated with the degree of inequalities in an Islamic economy. He finds that the aggregate output depends on autonomous expenditures, income distribution, and zakat flows.

This paper here will advocate zakat as the major fiscal policy instrument in an Islamic state that can be used to stabilize macroeconomic fluctuations. This paper is indeed my humble contribution in the area of Islamic macroeconomics to analyze the impact of zakat in the determination of national income, which is an extension of Yusoff (2006) work. Toward this end, we divide the household sector into two groups: those who pay zakat and those who receive zakat, similar to the approaches taken by other Muslim economists, such as Ahmad Ausaf (1987) and Sayyid Tahir(1989). We then formulate equations of aggregate consumption and zakat from which the reduced form consumption equation is derived. The
direction of the impact of exogenous zakat disbursement on national income is determined through the zakat multipliers.

In this paper it is assumed that the amount of zakat disbursed to the recipients may be less or equal to the zakat fund depending on the economic situations. During the expansion phase of a business cycle, the zakat collection may be more than the zakat disbursement as more people are employed and there would be less eligible Zakat recipients, and therefore we should have the zakat surplus. During recession we would expect a fall in zakat collection and a rise in zakat disbursement as more people are eligible to receive zakat, which leads to zakat deficit and this deficit should be covered by the zakat surplus accumulated from the previous years. But zakat disbursement should be at most equal to the zakat fund available, termed as a balanced zakat. That is although the government can discretely change the amount of zakat to be disbursed, the total disbursement of zakat by the zakat authority, in a particular year, should be at most equal to the zakat fund available in that year. That is zakat deficit should be discouraged in Islam as it reflects extravagance but zakat surplus is encouraged as it reflects thriftiness. As Allah, Surah Al-Furqan: 67, says “Those who, when they spend, are not extravagant and not niggardly, but hold a just (balance) between those (extremes).”

In the subsequent discussion, we shall advocate the case where zakat spending is the major instrument of fiscal policy in an Islamic economy. The Islamic state employs the zakat policy to fine tuning and develop the economy. We then discuss the effect of zakat policy on equilibrium national income using a much simplified Keynesian model where zakat is formally introduced. The analysis and discussion are more formal in the sense that basic mathematics or calculus is used. By doing so we would hope that the argument will be less ambiguous.
THE MODEL FRAMEWORK

In an effort to make the analysis as simple as possible, we shall focus the discussion in the case where *zakat* is the only fiscal policy instrument. The model is a three-sector Islamic economy consisting of household, firm, and government sectors. The household sector is divided into two sub-categories: one category supplies the factor of production to the business and government sectors, receive income, in return, and then spend this on goods and services, while the other sub-group receives *zakat* from the government. The household is the major sector in terms of spending. Business firms employ labor and other factors of production to produce goods and services and then sell them to the household and government sectors. The government sector collects *zakat* from the household and business sectors and disburses it to the eight categories of *zakat* recipients, namely: the poor, one who has neither material assets nor means of livelihood; the needy, one with insufficient means of livelihood to meet basic needs; *zakat* administrator, one who is appointed to collect and administer *zakat*. Next is the new convert, one who has converted to Islam; slave, one who wants to free himself from bondage; debtor, individual who is in debt when he/she borrows money to buy halal basic needs; for the path of Allah, one who carries out activities for the cause of Allah; and finally, a wayfarer, one who is stranded in a journey.

National Income Identity

We write the national income identity for a closed economy as

\[ Y = C_I + C_Z + I \]  

(1)

where *Y* is the national income, *C_I* is the consumption of *zakat* payers, *C_Z* is the consumption of *zakat* recipients, and *I* is the private gross domestic investment. We shall not explain the concept of national income accounting in an Islamic economy since it has been discussed adequately in Yusoff (2006). The basic differences between these two papers are
as follows. The previous paper assumes that the zakat recipients have no income; they totally depend on zakat and sadaqah for consumption purposes. The present paper attempts to consider the case when some of the zakat recipients have more than sufficient income and those who have income but insufficient to cover their basic needs.  

Now define

$$Y = Y_1 + Y_2$$  \hspace{1cm} (2)

where $Y_1$ and $Y_2$ are the incomes accrued to zakat payers and recipients respectively.

Dividing (2) by $Y$, we obtain

$$1 = \frac{Y_1}{Y} + \frac{Y_2}{Y}$$

$$= \alpha + \beta$$  \hspace{1cm} (3)

where $\alpha$ and $\beta$ are the proportions of $Y_1$ and $Y_2$ in national income or simply the income distribution between the two groups. Solving for $Y_1$ and $Y_2$ in terms of $Y$, we have

$$Y_1 = \alpha Y$$

$$Y_2 = \beta Y$$  \hspace{1cm} (4)

We would expect $\alpha$ to be relatively higher than $\beta$. Equations (4) are important which will become more obvious later.

**Aggregate Consumption**

The desired aggregate consumption of the zakat payers is given as

$$C_i = C_{0i} + c_i(Y_i - Z) , \quad 0 < c_i < 1$$  \hspace{1cm} (5)

where $C_{0i}$ is the autonomous consumption of zakat recipients, where they will dispose their assets to purchase goods and services, when their income is zero, $c_i$ the marginal propensity to consume (MPC), and $Y_i$ is their income. Thus, $(Y_i - Z)$ is the disposable income after deducting zakat payments. We would expect $c_i$ to be relatively low.

The desired consumption of the zakat recipients is
\[ C_Z = C_0z + c_z G_z + c_2 Y_2, \quad 0 < c_z < 1, \quad 0 < c_2 < 1 \] (6)

where \( C_0z \) is the autonomous consumption where the zakat recipients consume goods and services from sadaqah if they have no income and do not receive zakat, \( c_z \) is the marginal propensity to consume of zakat recipients with respect to zakat (MPCz), \( G_z \) is the amount of zakat spending, \( c_2 \) is the marginal propensity to consume of zakat recipients with respect to income \( Y_2 \) (MPC2). We would expect \( c_z \) and \( c_2 \) to be relatively higher than \( c_1 \). If \( c_z \) equals to \( c_2 \) then equation (6) reduces to

\[ C_Z = C_0z + c_z (G_z + Y_2), \quad 0 < c_z < 1, \] (6b)

The desired aggregate consumption, \( C \), is

\[ C = C_1 + C_z \] (7)

Substituting (5) and (6) into (7), we obtain

\[ C = C_0l + c_1(Y_1 - Z) + C_0e + c_z G_z + c_2 Y_2 \] (7a)

Simplifying and rearranging (7a), we have

\[ C = C_0l + c_l(Y_1 - Z) + C_0z + c_z G_z + c_2 Y_2 \] (7b)

We would expect \( C_0l \) to be higher than \( C_0z \) since the zakat payers can consume more at zero income in aggregate by disposing their wealth.

**The Zakat Collection**

The zakat collection from the zakat payers is

\[ Z = z (Y_1 - C_{0E} - C_{0N}) + z A_0 \] (8)

where \( Z \) is the zakat collection, \( z \) is the zakat rate, \( C_{0E} \) is zakat exemptions, \( C_{0N} \) is the nisab level, and \( A_0 \) is the initial amount of asset holdings\(^3\).

**The Reduced Form Consumption Equation**

Substituting the zakat equation (8) into the consumption equation (7b) we obtain
\[ C = C_{01} + C_{0z} + c_1 z (C_{OE} + C_{ON}) + c_1 Y_1 - c_1 z Y_1 + c_2 G_z + c_2 Y_2 + c_1 z A_0 \] \hspace{1cm} (9)

Equation (9) suggests that the reduced form aggregate consumption depends directly on the income of zakat payers and zakat recipients, zakat disbursement, and asset holdings or wealth.

**AGGREGATE INCOME-EXPENDITURE ANALYSIS**

We shall employ a simplified Keynesian aggregate income and aggregate expenditure approach to determine the equilibrium national income. Gross investment expenditure is assumed to be exogenous. The equilibrium income is determined when the aggregate income equals aggregate expenditure.

Substituting the aggregate private consumption (9) into the national income identity (1), we obtain

\[ Y = C_{01} + C_{0z} + (c_1 - c_1 z)Y_1 + c_2 G_z + c_2 Y_2 + I_0 + c_1 z A_0 \] \hspace{1cm} (10)

Rearranging and simplifying,

\[ Y = C_{01} + C_{0z} + (c_1 - c_1 z)Y_1 + c_1 z C_{OE} + c_1 z C_{ON} + c_2 G_z + c_2 Y_2 + I_0 + c_1 z A_0 \] \hspace{1cm} (10a)

Bringing \( Y_1 \) and \( Y_2 \) to LHS, we have

\[ Y - (c_1 - c_1 z)Y_1 + c_2 Y_2 = C_{01} + C_{0z} + c_1 z C_{OE} + c_1 z C_{ON} + c_2 G_z + c_1 z A_0 + I_0 \]

Substituting \( Y_1 = \alpha Y \) and \( Y_2 = \beta Y \) into (12) and rearranging, we obtain

\[ Y - (c_1 - c_1 z) \alpha Y - c_2 \beta Y = C_{01} + C_{0z} + c_1 z C_{OE} + c_1 z C_{ON} + c_2 G_z + c_1 z A_0 + I_0 \]

Solving for \( Y \), we obtain

\[ Y = [1/1 - \alpha (c_1 - c_1 z) - c_2 \beta] [C_{01} + C_{0z} + c_1 z C_{OE} + c_1 z C_{ON} + c_2 G_z + c_1 z A_0 + I_0] \] \hspace{1cm} (11)
Equation (11) suggests that national income is determined by the amount of zakat spending, $G_z$, asset holdings, and investment. Given the values of the parameters and the exogenous variables in the RHS, we can then calculate the equilibrium national income.

The Saving-Investment Approach

The national income can also be decomposed according to how it is used, given as

$$Y = C_1 + S + Z$$

where $S$ is aggregate saving. That is the national income or output is used for consumption, paying zakat due, and saving. Therefore this equation is always true

$$C_1 + S + Z = Y = C_z + C_z + I$$

(12a)

Substracting $C_1$, we have

$$S + Z = Y - C_1 = C_z + I$$

Thus, the national income equilibrium is determined when

$$S + Z = C_z + I$$

(12b)

Equation (12b) says that the national income equilibrium is determined when leakage ($S + Z$) is equal to injection ($C_z + I$). Substituting for $C_z$ we have

$$S + Z = C_{sz} + c_z G_z + \beta c_2 Y + I$$

(12c)

Equilibrating Mechanism

The investment, $I$, in equation (16) is the actual investment realized by the producers. It consists of planned investment, $I_p$ and unplanned investment or a change in inventory, $I_{up}$, which can be written as

$$I = I_p + I_{up}$$

(13)
Substituting (17b) into (16), we have

\[ S + Z = C_z + I_p + I_{up} \]  \hspace{1cm} (13a)

The unplanned investment \( I_{up} \) could be positive or negative or zero which occurs due to the unexpected changes in the supply and demand conditions. When the unplanned investment is zero, it means that the economy is producing exactly as the consumers demand and therefore the economy is at equilibrium. The equilibrium income is determined when the unplanned investment is zero or when planned investment equals actual investment. When the unplanned investment is positive it means that the economy is producing more than the consumers demand; the sellers stop making orders from the producers signaling to the producers that they should reduce production and get rid the inventory to zero to achieve equilibrium output. When the unplanned investment is negative it means that the economy is producing less than the consumers demand; the sellers increase orders signaling to the producers that they should increase production to move toward equilibrium output. In this model, the inventory plays as an important mechanism to equilibrate supply and demand in the economy. Thus, the unplanned investment is the equilibrating mechanism of this simple model.

The Multipliers

Since this study focuses on the impact effect of zakat on equilibrium income, we shall now derive the multipliers for the zakat exemptions, investment, and zakat disbursement.

The total differential of (13) is

\[ dY = \left[ \frac{1}{1 - \alpha(c_1 - c_1 z) - \beta c_2} \right] \left[ dC_{01} + dC_{0z} + c_1 z dC_{0E} + c_1 z dC_{0N} + c_z dG_z + c_1 z dA_0 + dI_0 \right] \]  \hspace{1cm} (14)

Equation (14) shows the effects of the changes in each of the exogenous variables on the endogenous variable, \( Y \). The \( nisab, C_{0N} \) is fixed therefore \( dC_{0N} = 0 \). The multipliers for \( C_{01} \),...
The multipliers for $C_{01}$, $C_{0z}$, $C_{0E}$, $I_0$, and $A_0$ are the same given as

$$\frac{\partial Y}{\partial X_i} = \frac{1}{1 - \alpha(c_1 + c_1z) - \beta c_2} > 0$$

where $X_i = (C_{01}, C_{0z}, I_0)$.

The multipliers for $C_{0E}$ and $A_0$ are the same given as

$$\frac{\partial Y}{\partial X_i} = \frac{c_1z}{1 - \alpha(c_1 + c_1z) - \beta c_2} > 0$$

where $X_i = (C_{0E}, A_0)$.

Since the denominator is positive, all these multipliers are positive and therefore economic activities could be increased by raising the exemption levels, investment, and asset holdings. During recession the government may want to increase the exemption levels to encourage private spending whereas during the boom period the government may want to reduce the exemption levels to discourage spending by the household and the business sectors.

The multiplier for zakat, $G_z$, is obtained as

$$\frac{\partial Y}{\partial G_z} = [\frac{c_z}{1 - \alpha(c_1 + c_1z) - \beta c_2}] > 0$$

The zakat multiplier depends on the marginal propensity to consume of zakat recipients, $c_z$. Since $c_z > 0$, therefore the zakat multiplier is positive, implying that an increase in zakat expenditure will increase economic activities. The zakat disbursent, $G_z$, is at the disposal of the government or the zakat authority.

In a special case where $c_z = 1$, the zakat multiplier (17) becomes

$$\frac{\partial Y}{\partial G_z} = \frac{1}{1 - \alpha(c_1 + c_1z) - \beta c_2}$$

showing that, in this special case, when all the zakat received by the zakat recipients is spent for consumption, then the zakat multiplier is the same as the the multipliers of $C_{01}$, $C_{0z}$, and $I_0$, but its impact on equilibrium income is higher than the case when $c_z < 1$. 

$C_{0z}$, $C_{0E}$, $I_0$, $A_0$, and $Z_E$ are obtained by taking partial derivatives of (14) with respect to each of the respective variables.
THE BALANCED ZAKAT

Some economists argue that all the zakat collection in a particular year should be disbursed in that year. The effects of this strategy in an economy can be analyzed by imposing a restriction that zakat collection equals to zakat disbursement, that is $G_z = Z$, and we shall call this as a balanced zakat.

Aggregate Consumption

Recall equation (7b) which is the aggregate consumption function when zakat collection is not equal to zakat disbursement given as

$$C = C_{01} + C_{0z} + c_1(Y_1 - Z) + c_z G_z + c_2 Y_2$$

(7b)

If all the zakat fund is spent then $Z = G_z$, then (7b) becomes

$$C = C_{01} + C_{0z} + c_1(Y_1 - G_z) + c_z G_z + c_2 Y_2$$

Simplifying, we obtain

$$C = C_{01} + C_{0z} + c_1 Y_1 + (c_z - c_1) G_z + c_2 Y_2$$

(19)

The Multipliers

Substituting for C of (19) in national income identity (1) and taking the total differential, we obtain

$$Y = C_{01} + C_{0z} + c_1 Y_1 + (c_z - c_1) G_z + c_2 \beta Y + I_0$$

Simplifying and rearranging,

$$Y = [1/(1 - c_1 \alpha - c_2 \beta)] \{C_{01} + C_{0z} + (c_z - c_1) G_z + I_0\}$$

Taking total differential,

$$dY = \{1/[1 - c_1 \alpha - c_2 \beta]\} \{dC_{01} + dC_{0z} + (c_z - c_1) dG_z + dI_0\}$$

(20)

The multiplier for $C_{01}$, $C_{0z}$, $C_{0E}$, $I_0$ are the same given as
\[
\frac{\partial Y}{\partial X_i} = \frac{1}{1 - \alpha c_1 - \beta c_z} > 0
\]

where \( X_i = (C_{01}, C_{0z}, C_{0E}, I_0) \).

The balanced zakat multiplier is given as

\[
\frac{\partial Y}{\partial Z} = \frac{(c_z - c_1)}{(1 - \alpha c_1 - \beta c_z)} > 0
\]

If \( c_z > c_1 \) then \( (c_z - c_1) > 0 \), therefore the zakat multiplier is positive, implying that an increase in zakat collection and the subsequent disbursement and spending by the recipients will increase economic activities. In this case, the effect of an increase in zakat depends crucially on the differential between the marginal propensity to consume by the zakat payers, \( c_1 \), and the zakat recipients, \( c_z \); the higher the value of \( c_z \) and the lower the value of \( c_1 \) the higher the value of multiplier and therefore the more effective is the effect of zakat on economic activities.

**Special cases:** In a special case where \( c_z = 1 \), the zakat multiplier is

\[
\frac{\partial Y}{\partial G_z} = \frac{(1 - c_1)}{(1 - \alpha c_1 - \beta c_z)} > 0
\]

Since \( 0 < c_1 < 1 \), the zakat multiplier for this special case is positive; an increase in zakat spending will be unambiguously raising the economic activities. The multiplier is larger than the case of \( c_z < 1 \).

When \( c_z = 1, \beta = 0, \alpha = 1 \), then

\[
\frac{\partial Y}{\partial G_z} = \frac{(1 - c_1)}{(1 - c_1)} = 1
\]

Under these conditions a dollar of zakat disbursed by the government would generate a dollar of income. This occurs only when all the zakat recipients have no income and they spend all the zakat received.
Size of Zakat Multiplier and Income Distribution

The impact of zakat spending on national output depends on the magnitude of its multiplier and two of the parameters in the multiplier are the income distribution parameters, $\alpha$ and $\beta$. Therefore it is logical to ask whether we could change the income distribution parameters to increase the size of the multiplier. The answer, however, is not obvious because as more wealth is redistributed in favor of the poor, the rich then become relatively poorer and, as a result, their marginal propensity to consume increases while the marginal propensity to consume of the poor falls. Since both MPCs determine the size of the multiplier, therefore the income redistribution may not have much effect on the size of zakat multiplier and thus has little direct impact on national income.

EMPIRICAL MODEL AND ESTIMATION TECHNIQUES

Equation (11) is our basic empirical model which, generally, can be written as

$$Y_t = \theta_0 + \theta_1 GZ_t + \theta_2 X_t + u_t$$

(25)

where $Y$ is the real output, represented by real GDP, $GZ$ is the zakat expenditure, $X$ are other variables that influence real output, and $\theta_0$, $\theta_1$, $\theta_2$ are the parameters to be estimated, and $u$ is the disturbance term. All the variables are in logs. We expect the zakat expenditure is positively related to GDP; an increase in zakat spending would raise income. This study uses panel data$^4$ to analyse the effect of zakat on real output. Panel data analysis has the ability to exploit the rich information inherent in the cross-section and time series analyses. It also takes into account the heterogeneity of individual cross-sectional units by allowing for individual-specific effects and gives more variability and degrees of freedom.

We shall employ panel data with fixed effect model and therefore equation (25) is rewritten as
\[ Y_{it} = \theta_0 + \theta_1 GZ_{it} + \theta_2 X_{it} + \delta_i + u_{it} \]  

(26)

where \( i \) denotes the cross-section units represented by the fourteen states of Malaysia, \( \theta_0 \) is the overall intercept, and \( \delta \) is the fixed effect. The fixed effects model (FEM) assumes that the slope coefficients \( \theta_1 \) and \( \theta_2 \) are constant for all cross-section units while the intercept varies over individual cross-section units but does not vary over time. The intercept, \( \delta_i \), takes into account of the heterogeneity influence from unobserved variables which may differ across the cross-section units. Prior to the estimation of equation (26), we first test the stationarity of the series. There are several methods which can be used for testing the presence of a unit root of panel data. In this study, we use the Hadri z-statistics, where the null hypothesis is no unit root.

**Sources of Data**

The study uses Malaysian data from 2003 to 2006 as the published data on zakat expenditure are only available for the most recent years while a few states having missing values. We therefore decided to use panel data where the cross-section units are the 14 states in Malaysia. Moreover, zakat is collected and spent by each state. The annual data on zakat expenditure and GDP were obtained from the Pusat Pungutan Zakat, Majlis Agama Islam Wilayah Persekutuan (Zakat Collection Centre, Islamic Religious Council of Federal Territory) and Economic Planning Unit (EPU) respectively.

**RESULTS AND DISCUSSION**

In the empirical estimation, we ignore other variables, \( X \), in equation (26) and focus only on zakat since the data on other variables are not available at the moment. Since we are using the panel data, OLS estimation may be inappropriate as the errors are likely to be
contemporaneously correlated across time and across-section units, although, we still report
OLS estimates for comparison purposes. The most appropriate technique of estimation is the
Generalized Least Squares (GLS). To avoid biasness in the estimates due to possible
endogeneity of the regressor, GZ, we then use the GMM technique estimation on the GLS
transformed data using the lagged dependent and independent variables as instruments.
Before the GMM technique is applied, we test for the existence of unit root in the series (not
reported here). The Hadri z-statistics, where the null hypothesis is no unit root, indicate that
both GDP and zakat spending have unit roots on levels but the hypotheses of no unit roots on
the first differences are accepted. These suggest that we should estimate the model using
GMM technique on the first differences to avoid spurious regression results.
The results of the regression analysis are given in Table 1. The least squares estimates
suggest that zakat has the ability to influence the real GDP. But the D-W statistic is highly
significant suggesting that the error terms are correlated across time. When the model is
estimated with AR (1), then zakat is no longer significant but the AR (1) coefficient is highly
significant.
We then re-estimate the model on the first difference by the Generalized Least Squares(GLS)
using the seemingly unrelated (SUR) model where both autocorrelation and correlation
among the cross-section units are corrected. The results indicate that the coefficient on zakat
is highly significant. The goodness of fit is high at about 95 percent. The F-statistic is also
high, rejecting the null that the effect of zakat on real GDP is zero. But the D-W statistic is
still significant suggesting that autocorrelation is not fully eliminated.
We further re-estimate the model on first difference by the generalized method of moments
still using SUR model to correct both of the contemporaneous correlation across time and
equations. The results show that the goodness of fit is still high at 92 percent, the zakat
coefficient is highly significant, and the D-W statistic is insignificant.
# TABLE 1: Panel Regression Results

<table>
<thead>
<tr>
<th>1. Panel Least squares on Level</th>
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<tbody>
<tr>
<td>( LGDP_t = -0.1706 + 0.5874 LZE_t )</td>
</tr>
<tr>
<td>( (2.0545) \quad (0.1213) )</td>
</tr>
<tr>
<td>Adjusted-( R^2 = 0.3711 ), D-W statistic = 0.2495, F= 23.4278(0.0000)</td>
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</tbody>
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<tr>
<th>2. Panel GLS on First Difference</th>
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<tbody>
<tr>
<td>( \Delta LGDP_t = 0.0477 + 0.0024 \Delta LZE_t )</td>
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<tr>
<td>( (0.0013) \quad (0.0009) )</td>
</tr>
<tr>
<td>Adjusted-( R^2 = 0.9478 ), D-W statistic = 1.2698, F= 619.33(0.0000)</td>
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<th>3. Panel GMM - GLS on First Difference</th>
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<tbody>
<tr>
<td>( \Delta LGDP_t = 0.0414 + 0.0651 \Delta LZE_t )</td>
</tr>
<tr>
<td>( (0.0048) \quad (0.0293) )</td>
</tr>
<tr>
<td>Adjusted-( R^2 = 0.9204 ), D-W statistic = 2.0973.</td>
</tr>
</tbody>
</table>

Notes: values in parentheses below each coefficient are the standard errors,
\( \Delta LX = LX - LX(-1) \) where \( LX = \{ LGDP \quad LGZE \} \)
CONCLUSION

This study attempts to analyze the potential of zakat as a fiscal policy instrument in an Islamic state using a simple Keynesian model. We formulate the consumption equations for both the zakat payers and recipients, and zakat collection to derive an equilibrium equation in the good market showing the relationship between zakat spending and real output. Empirical evidence using Malaysian panel data supports the hypothesis that zakat spending is a potent fiscal instrument to generate economic growth. It is suggested here that Muslim countries must make all effort to establish zakat as the major tool to spur economic growth. In order to make this a success, we must organize zakat collection and zakat spending in the most effective and efficient manner. As long as zakat collection and spending are disorganized, we can never achieve the potential of zakat as an effective fiscal instrument.

REFERENCES


Zakat Collection Centre (Pusat Pungutan Zakat). Zakat Report, Federal Territory, Kuala Lumpur, Malaysia (various issues).

1This is the revised version of the same, presented at the National Seminar on Macroeconomics in an Islamic Perspective, Kuala Lumpur, 2004 where government spending and taxes are included in the model.

2 This point was raised by Dr. Mabid Ali Al-Jarhi at the National Macroeconomics Seminar 2004.

3 A more detailed discussion on the derivation of zakat equation is given in Yusoff (2006).

4 For a more detail discussion on panel data, refer to Greene (2003).