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 t*o 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 z*akat*, yet there is not much literature on macroeconomic model in an Islamic framework which incorporates z*akat* as one of the fiscal policy instruments to analyze the efficacy of fiscal policy to stabilize economic performance. Some argue that z*akat* 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 z*aka*t 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 z*akat* 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 z*akat* from the household and business sectors and disburses it to the eight categories of z*akat* 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; z*akat* administrator, one who is appointed to collect and administer z*akat*. 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

$$Y = C_I + C_Z + I \tag{1}$$

where Y is the national income, C_I is the consumption of z*akat* 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[1] (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 z*akat* and s*adaqah* 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[2].

Now define

$$Y = Y_1 + Y_2 \tag{2}$$

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

Dividing (2) by Y, we obtain

$$1 = Y_1/Y + Y_2/Y$$

$$= \alpha + \beta \tag{3}$$

where α and β 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

$$Y_1 = \alpha Y$$

$$Y_2 = \beta Y \tag{4}$$

We would expect α to be relatively higher than β. Equations (4) are important which will become more obvious later.

Aggregate Consumption

The desired aggregate consumption of the *zakat* payers is given as

$$C_1 = C_{01} + c_1(Y_1 - Z), \qquad 0 < c_1 < 1 \tag{5}$$

where C_{01} is the autonomous consumption of z*akat* recipients, where they will dispose their assets to purchase goods and services, when their income is zero, c_1 the marginal propensity to consume (MPC_1), and Y_1 is their income. Thus, $(Y_1 - Z)$ is the disposable income after deducting z*akat* payments. We would expect c_1 to be relatively low.

The desired consumption of the *zakat* recipients is

$$C_Z = C_{0z} + c_z G_{z} + c_2 Y_2, \qquad 0 < c_z < 1, \qquad 0 < c_2 < 1 \qquad (6)$$

where C_{0z} is the autonomous consumption where the z*akat* recipients consume goods and services from s*adaqah* if they have no income and do not receive z*akat*, c_z is the marginal propensity to consume of z*akat* recipients with respect to z*akat* (MPC_z), G_z is the amount of z*akat* spending, c_2 is the marginal propensity to consume of z*akat* recipients with respect to income Y_2 (MPC_2). 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

$$C_Z = C_{0z} + c_z(G_z + Y_2), \qquad 0 < c_z < 1, \qquad (6b)$$

The desired aggregate consumption, C, is

$$C = C_1 + C_z \qquad (7)$$

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

$$C = C_{01} + c_1(Y_1 - Z) + C_{0z} + c_z G_z + c_2 Y_2 \qquad (7a)$$

Simplifying and rearranging (7a), we have

$$C = C_{01} + C_{0z} + c_1(Y_1 - Z) + c_z G_z + c_2 Y_2 \qquad (7b)$$

We would expect C_{01} to be higher than C_{0Z} since the z*akat* payers can consume more at zero income in aggregate by disposing their wealth.

The *Zakat* Collection

The z*akat* collection from the z*akat* payers is

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

where Z is the z*akat* collection, z is the z*akat* rate, C_{0E} is z*akat* 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 z*akat* equation (8) into the consumption equation (7b) we obtain

$$C = C_{01} + C_{0z} + c_1 z (C_{0E} + C_{0N}) + c_1 Y_1 - c_1 z Y_1 + c_z G_z + c_z Y_2 + c_1 z A_0 \qquad (9)$$

Equation (9) suggests that the reduced form aggregate consumption depends directly on the income of z*akat* payers and z*akat* recipients, z*aka*t 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

$$Y = C_{01} + C_{0z} + c_1 z (C_{0E} + C_{0N}) + (c_1 - c_1 z) Y_1 + c_z G_z + c_2 Y_2 + I_0 + c_1 z A_0 \qquad (10)$$

Rearranging and simplifying,

$$Y = C_{01} + C_{0z} + (c_1 - c_1 z) Y_1 + c_1 z C_{0E} + c_1 z C_{0N} + c_z G_z + c_2 Y_2 + I_0 + c_1 z A_0 \qquad (10a)$$

Bringing Y_1 and Y_2 to LHS, we have

$$Y - (c_1 - c_1 z) Y_1 + c_2 Y_2 = C_{01} + C_{0z} + c_1 z C_{0E} + c_1 z C_{0N} + c_z G_z + c_1 z A_0 + I_0$$

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

$$Y - (c_1 - c_1 z) \alpha Y - c_2 \beta Y = C_{01} + C_{0z} + c_1 z C_{0E} + c_1 z C_{0N} + c_z G_z + c_1 z A_0 + I_0$$

Solving for Y, we obtain

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

$$+ c_1 z A_0 + I_0] \qquad (11)$$

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

$$Y = C_1 + S + Z \qquad\qquad (12)$$

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

$$C_1 + S + Z = Y = C_1 + C_z + I \qquad\qquad (12a)$$

Substracting C_1, we have

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

Thus, the national income equilibrium is determined when

$$S + Z = C_z + I \qquad\qquad (12b)$$

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

$$S + Z = C_{0z} + c_z G_z + \beta c_2 Y + I \qquad\qquad (12c)$$

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

$$I = I_p + I_{up} \qquad\qquad (13)$$

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

$$S + Z = C_z + I_p + I_{up} \tag{13a}$$

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 z*akat* exemptions, investment, and z*akat* disbursement.

The total differential of (13) is

$$dY = [1/[1 - \alpha(c_1 - c_1 z) - \beta c_2] \, [dC_{01} + dC_{0z} + c_1 z \, dC_{0E} + c_1 z \, dC_{0N}$$

$$+ c_z \, dG_z + c_1 z \, dA_0 + dI_0 \tag{14}$$

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},

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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 multipliers for $C_{01,}$ C_{0z} , C_{0E}, I_0, and A_0 are the same given as

$$\partial Y/\partial X_i = 1/[1-\alpha(c_1+c_1z) -\beta c_2] > 0 \tag{15}$$

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

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

$$\partial Y/\partial X_i = c_1z /[1-\alpha(c_1+c_1z) -\beta c_2] > 0 \tag{16}$$

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

$$\partial Y/\partial G_z = [c_z /[\{1 -\alpha(c_1 - c_1 z) - \beta c_2\}] > 0 \tag{17}$$

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

$$\partial Y/\partial G_z =[1/1-\alpha(c_1+c_1z) -\beta c_2] \tag{18}$$

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 $c_z < 1$.

THE BALANCED *ZAKAT*

Some economists argue that all the z*akat* 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 z*akat* collection equals to z*akat* disbursement, that is $G_z = Z$, and we shall call this as a balanced z*akat*.

Aggregate Consumption

Recall equation (7b) which is the aggregate consumption function when z*akat* collection is not equal to z*akat* 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 z*akat* fund is spent then $Z = G_z$, then (7b) becomes

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

Simplifying, we obtain

$$C = C_{01} + C_{0z} + c_1 Y_1 + (c_z – c_1)G_z + c_2 Y_2 \qquad (19)$$

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,

$$dY = \{1/[1 - \alpha c_1 - c_2 \beta] \} [dC_{01} + dC_{0z} + (c_z - c_1) dG_z + dI_0] \qquad (20)$$

The multiplier for $C_{01}, C_{0z} , C_{0E} , I_0$ are the same given as

$$\partial Y/\partial X_i = \{1/[\ 1- \alpha c_1 - \beta c_z] > 0 \tag{21}$$

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

The balanced *zakat* multiplier is given as

$$\partial Y/\partial Z_E = (c_z - c_1)/(1 - \alpha c_1 - \beta c_z) > 0 \tag{22}$$

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

$$\partial Y/\partial G_z = \{(1 - c_1)/[(1 - \alpha c_1 - \beta c_z]\} > 0 \tag{23}$$

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

$$\partial Y/\partial G_z = (1 - c_1)/(1 - c_1) = 1 \tag{24}$$

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, α and β. 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

$$Y_t = \theta_0 + \theta_1 GZ_t + \theta_2 X_t + u_t \tag{25}$$

where Y is the real output, represented by real GDP, GZ is the *zakat* expenditure, X are other variables that influence real output, and θ_0, θ_1, θ_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

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$$Y_{it} = \theta_0 + \theta_1 GZ_{it} + \theta_2 X_{it} + \delta_i + u_{it} \tag{26}$$

where i denotes the cross-section units represented by the fourteen states of Malaysia, θ_0 is the overall intercept, and δ is the fixed effect. The fixed effects model (FEM) assumes that the slope coefficients θ_1 and θ_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, δ_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

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1. Panel Least squares on Level

$$LGDP_t = -0.1706 + 0.5874 \ LZE_t$$
$$\quad\quad (2.0545) \quad\quad (0.1213)$$

Adjusted-R^2 = 0.3711, D-W statistic = 0.2495, F= 23.4278(0.0000)

2. Panel GLS on First Difference

$$\Delta LGDP_t = 0.0477 + 0.0024 \ \Delta LZE_t$$
$$\quad\quad (0.0013) \quad (0.0009)$$

Adjusted-R^2 = 0.9478, D-W statistic = 1.2698, F= 619.33(0.0000)

3. Panel GMM - GLS on First Difference

$$\Delta LGDP_t = 0.0414 + 0.0651 \ \Delta LZE_t$$
$$\quad\quad (0.0048) \quad (0.0293)$$

Adjusted-R^2 = 0.9204, D-W statistic = 2.0973.

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Notes: values in parentheses below each coefficient are the standard errors,

$\Delta LX = LX - LX(-1)$ where LX = { LGDP LGZE }

CONCLUSION

This study attempts to analyze the potential of z*akat* 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

Ahmad , Ausaf (1987). *Income Determination in an Islamic Economy*, International Centre for Research in Islamic Economics, Scientific Publication Centre, King Abdul Aziz University, Jeddah.

Ahmed, Ziauddin, Munawar Iqbal, and M. Fahim Khan (1983). Introduction. In Ahmed, Z. et al.(Eds.), *Fiscal Policy and Resource Allocation in Islam.* International Centre for Research in Economics, King Abdul Aziz University, Jeddah, Saudi Arabia ,1-25.

Ali, A. Yusuff (1983).*The Holy Qur'an: Text, Translation, and Commentary.* Brentwood, Maryland: Amana Corp.

Faridi, F. R. (1976). *Zakat* and Fiscal Policy. In Kurshid Ahmad (Ed.), *Studies in Islamic Economics*, International Centre for Research in Islamic Economics, King Abdul Aziz University, Jeddah ,119-130.

Faridi, F. R. (1983). A Theory of Fiscal Policy in an Islamic State, in Ahmed, Z. et al.(Eds.), *Fiscal Policy and Resource Allocation in Islam*, International Centre for Research in Islamic Economics, King Abdul Aziz University, Jeddah, Saudi Arabia , 27-52.

Greene, William H.(2003). *Econometric Analysis*. New Jersey: Pearson Education, Inc., 283 – 338.

Kahf, Monzer. (1989) *Zakat:* Unresolved Issues in Contemporary *Fiqh*. *Journal of Islamic Economics* (IIUM Journal of Economics &Management), Vol. 2, No. 1, 1-22.

Kahf, Monzer (1997). Introduction to the Study of *Zakah,* in Kahf, M.(Ed.), *Economics of Zakah: a Book of Readings*, Islamic Development Bank & Islamic Research & Training Institute, Jeddah, Saudi Arabia , 10-13.

Metwally, M.M. (1983). Fiscal Policy in Islamic Economy, in Ahmed, Z. et al.(Eds.), *Fiscal Policy and Resource Allocation in Islam*, International Centre for Research in Islamic Economics, King Abdul Aziz University, Jeddah, Saudi Arabia , 59-81.

Tahir, Sayyid (1989). Toward a Theory of Aggregate Output, Income, and Economic Inequalities Determination in an Islamic Economy. *Journal of Islamic Economics* (IIUM Journal of Economics & Management), Vol. 2, No. 2 , 95-108.

Yusoff, Mohammed B. (2006). Fiscal Policy in an Islamic Economy and the Role of *Zakat*, *IIUM Journal of Economics and Management*, Vol. 14, No. 2: 117 - 145.

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

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[1] This 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 z*akat* equation is given in Yusoff (2006).

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