



***RIBĀ*, PROFIT RATE, *ISLAMIC* RATE, AND MARKET EQUILIBRIUM**

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ABSTRACT

Muslim economists have suggested the profit rate to replace *ribā* in an *Islamic* economic system. While this suggestion is a step in the right direction, it still has problem since not all profits are *ḥalāl*, as for example, profits from gaming and liquor businesses are definitely *ḥarām*. This paper discusses the concept of *ribā* and differentiates it from the profit rate and *Islamic* rate. As *ribā* is prohibited in Islam, this paper explains the concept of *Islamic* rate, which is lawful in Islam as it is directly derived from the profits of *ḥalāl* business activities. The *Islamic* rate is the clearing mechanism in the money market and good market. The paper has also derived the money market equilibrium and good market equilibrium conditions or the *IS-LM* framework which can be used to analyze the efficacy of monetary and fiscal policy in an *Islamic* state. In order to clear the notion that the conventional banking system has been dictating the decision makings in the *Islamic* banking system in Malaysia, the paper uses the Toda-Yamamoto technique of Granger causality test to see the causality between the *Islamic* investment deposit rates, which are *Islamic* rates, of *Islamic* banking and the fixed deposit rates, which are *ribā*, of the conventional banking. The results are not conclusive as a number of *Islamic* investment deposit rates have caused the fixed deposit rates while some fixed deposit rates cause *Islamic* investment deposit rates, and yet some others show that there are no causality between the two types of rate.

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1. INTRODUCTION

One of the basic characteristics of an *Islamic* economic system is that it is free of *ribā*¹ or usury or interest rate. The Arabic word *ribā* means an increase in or addition to, but in practice *ribā* refers to the additional amount, in excess of the principal, that a lender charges a borrower. The *ribā* system was practiced in the money lending and barter trade activities even in the pre-Islamic period. During this period whenever a person borrowed money from a lender, the borrower asked the lender to extend the period of payment and in return the borrower had to pay the lender a fixed amount of money in excess of the principal. At the time of the revelations of the *Qur'ān* on *ribā*, there existed many forms of *ribā*. For example, when a person sold an item the buyer would be made aware of the period of payment. When the buyer failed to make repayment within this specified period, he was given more time to make the payment but the lender charged the borrower an additional amount. And in the case of lending money, the lender asked the borrower to repay the principal together with an additional amount of money within a specified period of time.

The *Qur'ān* and *ḥadīth* do not specifically define *ribā* and therefore there has been differing views among the *Islamic* scholars on the concept of *riba*. Fortunately, there are a number of verses in the *Qur'ān* and *ḥadīth* which are related to *ribā*. These two sources of reference have helped Muslim scholars to explain the concept of *ribā*. Specifically, *Allāh* says:

“Those who devour usury will not stand except as stands as one whom the Evil One by his touch hath driven to madness. That is because they say: “Trade is like usury,” but God hath permitted trade and forbidden usury. Those who after receiving direction from their Lord, desist, shall be pardoned for the past; their case is for God (to judge); but those who repeat (the offence) are companions of the fire: they will abide therein (forever). *Surah Al-Baqarah* (2): 275.

The Prophet condemns not only those who take *ribā* but also those who give *ribā* and those who record or witness the transaction involving *ribā*, reminding the Muslims that these people are all committing sins. The Prophet (*pbuh*) explains in his *ḥadīth* that *ribā* exists in cash loans, money transactions, and in barter trade whenever one party

receives an excess over and above the commodity being exchanged. The Prophet (*pbuh*) says:

“Every form of *ribā* is cancelled; principal indeed is yours which ye shall have; wrong not and you shall not be wronged. God has given His injunctions that interest is totally forbidden. I first start with interest (which people owe) to my uncle Abbas and declared it all cancelled.” He then on behalf of his uncle cancelled the total amount of *ribā* due on his loan from his debtors.

Thus, the essence of *ribā* is the excess, whether it is in the commodity exchange or in money exchange such as when one dinar is exchanged for two dinars. In the case of a barter trade, which is an exchange of goods for goods, *ribā* is committed when more of one commodity is exchanged for exactly similar commodity.

The main objective of this study is to develop an *Islamic* framework to analyze the impact of monetary and fiscal policy. Specifically the objectives are: to explain the concepts of *ribā*, profit rate, and *Islamic rate*; to develop an *IS-LM* framework of macroeconomic analysis in the context of *Islam*; and to determine whether *Islamic* banking activities in Malaysia are dictated by its conventional counterpart. The paper begins with the introductory remark about *ribā*, followed by a section on the *Islamic* banking system to explain its salient features including the profit rate and *Islamic* rate. Section three is the discussion on the money market equilibrium and the good market equilibrium. Section four tests the hypothesis that *Islamic* banking decisions in Malaysia are dictated by the conventional banking and the final section is the conclusion.

2. THE ISLAMIC BANKING SYSTEM

The *Islamic* state has an *Islamic* banking system and other *Islamic* financial institutions and financial intermediaries. They conduct their activities in accordance with the *sharī‘ah* and the banking rules and regulations, under the supervision of a central bank without *ribā* since *ribā* is *ḥarām* (unlawful) in *Islam*.

The distinguishing feature of an *Islamic* banking from its counterpart, the conventional banking, is that it is free of *ribā*. *Islam* prohibits Muslims

from taking as well as giving *ribā*. The prohibition of *ribā* is mentioned in four different revelations in the *Qur'ān*. The first revelation clarifies that charging interest is equivalent to taking away the wealth of *Allāh* from a person; the second revelation condemns it since *ribā* is a wrongful appropriation of wealth belonging to others. The third revelation asks all Muslims to avoid *ribā* altogether. The fourth revelation makes a clear distinction between interest and trade, asking Muslims to take only the principal and even forgo this principal if a borrower is unable to repay the loan. The *Qur'ān* warns those who disobey the prohibition of *ribā* that they are actually at war with God and His Prophet (*pbuh*).

It has been argued that profit rate helps to allocate resources efficiently. As the profit rate is determined by market forces therefore capital will flow into the sectors which offer the highest profit rate. The owner of capital may invest his capital by giving it to an entrepreneur with a viable economic project, idea, expertise, and experience and use the capital for production activities and they are permitted to share the profits between them. In the case of losses, it will be borne wholly by the owner of capital. This type of financing is termed as *muḍārabah* and it was practiced even in the pre-Qur'anic days. Another legitimate form of financing in *Islam* is based on equity participation termed as *mushārah* when the partners use their capital jointly to generate economic activities. Profits or losses will be shared between the partners according to the agreed upon formula based on the equity ratio.

Muḍārabah and *mushārah* are the two basic principles of *Islamic* banking. An *Islamic* bank provides depository facilities such as saving deposit, current account, and investment deposit and manages the *muḍārabah* funds of the depositors to generate profits subject to the rules of *muḍārabah*. The bank then uses the *muḍārabah* fund of the depositors to extend loans to the borrowers based on *muḍārabah* and other forms of *Islamic* financing. The bank may choose to enter into *mushārah* contracts with the borrowers of the funds, sharing profits and losses between them.

We shall assume that the central bank employs the fractional reserve banking system requiring all the *Islamic* banks to deposit certain percentage of the deposits at the banks with the central bank, called the required reserve ratio, which is the ratio of the required reserve as

the percentage of the total deposits at each *Islamic* bank. This means that all the *Islamic* banks are allowed to create and destroy money. An *Islamic* bank can only extend loans as long as it has excess reserves, where the excess reserve is the difference between the actual reserves and the required reserves.

2.1 PROFIT RATE

Allen (1968), Branson (1989) and Siddiqi (1983) define profit rate as the ratio of profit to capital. We shall adopt this definition of profit rate in this paper with slight modification. Khan (1986) and Haque and Murakhor (1986), on the other hand, define profit rate a little differently as the ratio of profit to investment but the basis is still capital since investment is the rate of change of capital stock. To make our discussion easier we define profit, in monetary terms, as the difference between the value of goods sold and the expenses incurred in the production of these goods; we denote this nominal profit as π . We begin with the aggregate production function

$$(1) \quad Y = A(K, L)$$

where Y is the output of *halāl* good and service, A is the total factor productivity, K is capital, and L is labor. The nominal profit, π , is given as:

$$(2) \quad \pi = PY - WL - r_k K$$

where P is the price of output or service, W is the wage rate, and r_k is the rental rate of capital (Sargent, 1987). The profit rate is defined as the nominal profit per rental value of capital written as $\pi/r_k K$.

For simplicity in our analysis, the profit rate is written here in percent as:

$$(3) \quad \frac{\pi}{r_k K} \times 100 = \rho$$

The *Islamic* bank extends loans to an entrepreneur using the *muḍārabah* fund and they share the profit/loss with an agreed upon profit sharing

ratios in percent as:

$$(4) \quad \mathcal{P}_{BD} : \mathcal{P}_E = 100$$

where, \mathcal{P}_{BD} is the share accrued to the bank as well as depositors, termed here as bank-depositor, with the understanding that a portion of which will be allotted to the *muḍārabah* fund depositors, while \mathcal{P}_E is the share of the profit accrued to the entrepreneur. Thus, when the bank negotiates its profit share with the entrepreneur the bank also has to consider that a part of its share here will be shared with depositors of *muḍārabah* fund.

Equation (4) could be written as:

$$(5.1) \quad \frac{\mathcal{P}_{BD}}{100} : \frac{\mathcal{P}_E}{100} = 1$$

Multiplying (5.1) by π then the total amount of profit shared by the bank-depositors and the entrepreneur are given respectively as:

$$(5.2) \quad \frac{\mathcal{P}_{BD}}{100} \pi : \frac{\mathcal{P}_E}{100} \pi = \pi$$

2.2 ISLAMIC RATE²

The term profit rate is not entirely appropriate in *Islam* since not all profits are *ḥalāl*. For example the profits from liquor and gaming businesses are *ḥarām*. Therefore in this paper, the profit is referred to the profit generated from *ḥalāl* business activities. Moreover the profit rate, defined in this paper, is the return to capital which is shared by three parties: the bank, entrepreneur, and depositors. We shall decompose the profit rate into three components, namely the portions that are accrued to the bank, entrepreneur, and depositors which are actually representing the rate of return to each one of them. And these returns are called the *Islamic rates* (of return) to avoid the confusion and ensure that they are referred to the *ḥalāl* rate of returns.

First, we begin by looking into how the profit rate, ρ , is apportioned to the two parties: bank-depositor and the entrepreneur according to the agreed upon profit sharing ratios. This can be calculated by

multiplying the profit sharing ratios of either (5.1) or (4) with ρ . Multiplying (5.1) with ρ we have:

$$(6) \quad \frac{\mathcal{P}_{ED}}{100} \rho : \frac{\mathcal{P}_E}{100} \rho = \rho$$

where, $\mathcal{P}_{BD}\rho$ is the share of profit rate for the bank-depositor, while $\mathcal{P}_E\rho$ is the share of profit rate for entrepreneur. For a given level of profit rate, the higher the profit sharing ratio allotted to the bank-depositor, the lower the share of profit rate accrued to the entrepreneur; this tends to discourage him from seeking more *muḍārabah* fund from the bank. Conversely, the higher the profit rate apportioned to the entrepreneur (that is the lower the profit rate share for bank-depositor) will encourage the entrepreneur to apply for more *muḍārabah* fund to increase investment. This implies that the term $\mathcal{P}_{BD}\rho$ is the *Islamic* rate of return apportioned to the bank-depositor or simply the cost of borrowing of *muḍārabah* fund from the point of view of the entrepreneur, which shall be termed as the *Islamic* lending rate denoted as i_{BD} . On the other hand, the term $\mathcal{P}_E\rho$ is the *Islamic* rate (of return) to the entrepreneur which shall be denoted as, i_E . Therefore $\mathcal{P}_{BD}\rho : \mathcal{P}_E\rho = \rho$ could be written as:

$$(7) \quad i_{BD} : i_E = \rho$$

From (7) it is now obvious that the rate of return to both parties will depend on their profit sharing ratios. The profit rate will depend on the economic performance of the *Islamic* economy over the business cycle. If the economy is in the up-swing, the profit rate is expected to be higher and the reverse is true when the economy is in the down-swing. The profit sharing ratios also depend on the business cycle as well as the liquidity condition of the *Islamic* banking system.

In a similar vein, we could disentangle the rate of return of bank-depositor, $\mathcal{P}_{BD}\rho$, into two components, namely the rate of return to the bank and the return to the depositors. Let the agreed upon profit sharing ratios between the depositors and bank respectively be:

$$(8) \quad \mathcal{P}_D : \mathcal{P}_B = \mathcal{P}_{BD}$$

where, \mathcal{P}_D is the share to the depositors and \mathcal{P}_B is the share to the bank. Multiplying (8) by the profit rate, ρ , we have,

$$(9) \quad \mathcal{P}_D \rho : \mathcal{P}_B \rho = \mathcal{P}_{BD} \rho$$

where, $\mathcal{P}_D \rho$ is the rate of return to the depositors but it is the cost of *muḍārabah* fund to the bank and we shall call this as *Islamic* deposit rate, i_D . The term $\mathcal{P}_B \rho$ is the rate of return accrued to the bank, denoted as i_B . Therefore we can write equation (9) as:

$$(10) \quad i_D : i_B = i_{BD}$$

where, $i_D = \mathcal{P}_D \rho$, $i_B = \mathcal{P}_B \rho$, and $i_{BD} = \mathcal{P}_{BD} \rho$.

Substitute (10) into (7) for i_{BD} , we have,

$$(11) \quad i_D : i_B : i_E = \rho$$

We have now derived the following terms: the *muḍārabah* deposit rate or *Islamic* deposit rate, *Islamic* lending rate, *Islamic* rate of return to the bank, and the *Islamic* rate of return to the entrepreneur. And it should be clear by now that the terms i_D , i_B , i_E and i_{BD} are all the *Islamic* rates of return and once the profit sharing ratios have been decided they move in the same direction as the profit rate, ρ , changes. Since all these variables are expressed in nominal term, they can be expressed in real terms by deducting the expected inflation rate, π^e . For example the real *Islamic* rate of return to the depositors is $i_D - \pi^e$. Alternatively, if one starts the analysis with the real profit, then the resultant *Islamic* rates of return will be in real terms.

2.3 INVESTMENT

An entrepreneur is assumed to be profit motivated, therefore the higher the profit share accrued to him the more fund he would like to borrow from the bank to carry out business ventures. That is the relationship between the profit share of the entrepreneur and his willingness to obtain *muḍārabah* funds from the bank is positive, the higher his share the more fund he would like to borrow. On the other hand, holding the profit rate constant, the lower the profit share accrued to the entrepreneur means the higher the profit share accrued to the bank-depositors. Thus, there is a negative relationship between the willingness of the entrepreneur to obtain fund from the bank with the profit share accrued to the bank-depositor. This means that, at a given level of profit rate, the higher the profit share goes to the bank-depositor, the lower will be the profit share accrued to the entrepreneur; this tends to discourage him from making more investment. Stating differently, the higher the rate of return accrued to the bank-depositor, the lower the rate of return obtained by the entrepreneur. The profit rate apportioned to the depositors, i_D , here termed as Islamic deposit rate, is the return to the *muḍārabah* fund, which is a cost to the bank while i_{BD} is the profit rate that goes to the bank-depositors which is the cost from the perspective of the entrepreneur and effectively it is the lending rate.

The *Islamic* rates are therefore derived totally from the profits of doing *ḥalāl* business projects and there is no element of *ribā*. That is for a given profit rate, the higher the profit sharing ratio apportioned to the owner of capital the less will be the share of profit rate goes to the entrepreneur. Thus, before the loans are extended both parties have to negotiate to arrive to the profit sharing ratios acceptable to them. Therefore we could postulate that the amount of investment to be undertaken by an entrepreneur is negatively related to the *Islamic* rate (of return) accrued to the bank-depositor i_{BD} (which is a cost to the entrepreneur), but positively related to Islamic rate (of return) accrued to the entrepreneur, i_E . We can write the investment equation for the j -th entrepreneur as:

$$(12) \quad I_j = I_{0j} + \phi_{1j} i_{BDj} + \phi_{2j} i_{Ej}$$

where I is investment, I_0 is autonomous investment, and ϕ_1 is slope of investment curve, $\phi_1 < 0$, and $\phi_2 > 0$.

3. MONEY AND GOOD MARKETS EQUILIBRIUM

There are a number of studies trying to develop the models of income determination in an Islamic economy focusing on the more simplified aggregate income-expenditure as well as the *IS-LM* models. Perhaps the earliest work to formulate a model of income determination in an Islamic economy, using the aggregate income-expenditure analysis, was introduced by Ahmad (1987). He divides the households into two categories: the *zakāt* payers and *zakāt* recipients. Consumption of *zakāt* payers depend on their disposable income while the consumption of *zakāt* recipients depend on the amount of *zakāt* payments they received from the *zakāt* authority. *Zakāt* collection depends on income while investment directly depends on income and negatively on savers' profit-sharing ratio. His model excludes the monetary sector.

Mahdi and Al-Asaly (1991) develop a model of income determination in an interest-free Islamic economy by replacing interest rate with profit-loss sharing ratio (PLS ratio) and add *zakāt* into the model. They define the PLS ratio as a percentage of expected profit given to the bank as an equity owner in business, that is the percentage of profit which goes to capital. The aggregate consumption is specified as a function of disposable income after deducting *zakāt* and tax payments. *Zakāt* is collected from saving while investment is negatively related to PLS ratio. The *IS*-curve is obtained when aggregate supply equals aggregate demand. By specifying the demand for money as directly related to income and negatively related to PLS ratio, the *LM*-curve is derived by equating the demand and supply of money.

Sattar (1991) develops Islamic *IS-LM* curves. He specifies the aggregate consumption as a function of income and non-human wealth such as the physical and financial assets. Investment is positively related to the expected (realized) rate of profits while government spending depends on the difference between the target output and actual output. He then derives the *GG*-curve which is positively sloped. By specifying the demand for money to be inversely related to the expected (realized)

rate of profits and equating the money demand and supply he obtains the *LM*-curve.

Another macroeconomic model of income determination for an *Islamic* economy was formulated by Hussain (1994). He also divides consumption into two groups: *zakāt* payers and *zakāt* recipients. Consumption of *zakāt* payers depend on their disposable income while the consumption of *zakāt* recipients depend the amount of *zakāt* payments received. *Zakāt* is collected from income while investment is inversely related to the real rate of profit that an investor has to share with a financier. He then derives the *IS*-curve. The demand for money is specified as directly related to income and negatively related to the real rate of profit that an investor has to share with a financier. The *LM*-curve is obtained by equating the demand and supply of money.

Khan (1996) derives the good market equilibrium by specifying the aggregate consumption as a function of disposable income after tax. There is no *zakāt* variable in the model, perhaps because he focuses more on the interest free economy as the title of the paper suggests. Investment is negatively related to profit sharing ratio. By substituting these equations into the national income identity, the *IS*-curve is obtained. To derive the *LM*-curve, he specifies the demand for money as negatively related to the profit sharing ratio and positively related to income and set the demand for money equals to its supply.

More recently, Yusoff (2006) formulates a simple model of income determination in an *Islamic* economy based on the aggregate income-expenditure analysis. 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, receives income in return, and then spends this on goods and services, while the other sub-group receives *zakāt* from the government. 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 *zakāt* from the household and business sectors and then disburses it to the eight categories of *zakāt* recipients. He then derives the general *zakāt* multiplier as well the balanced *zakāt* multiplier. The model has no monetary sector and therefore similar to Ahmad (1986). The major differences between Yusoff (2006) and the

previous models are with respect to the components of income. National income is comprised of wages, salaries, and profits, Yusoff (2006). *Zakât* is collected from wages and salaries, profits of corporate sector, and assets.

Yusoff (2010) extends his (2006) model to take into account the situation where some of the *zakât* recipients have income. Therefore the consumption of *zakât* payers depends on their disposable income while the consumption of *zakât* recipients depend on the amount *zakât* payment received as well as their income. The analytical results are very much similar to Yusoff (2006) but the *zakât* multipliers have become more sophisticated because they also depend on the income distribution between the *zakât* payers and the *zakât* recipients. Also, Yusoff (2010, 2011) provides panel data empirical evidence of the significant positive impact of *zakât* spending on real economic growth in Malaysia. Further empirical evidence of the impact of *zakât* expenditure on economic growth is provided by Yusoff and Densumite (2012) in their study on *zakât* distribution and growth in the Federal Territory of Malaysia.

3.1 ISLAMIC MONEY MARKET

Islamic money market refers to an *Islamic* financial market where the short-term *Islamic* financial instruments, with maturities of less than one year, are traded. The prices of these short-term *Islamic* securities are less volatile than the long-term *Islamic* financial instruments traded in the capital market, and therefore they are less risky and very liquid, that is they are readily marketable. If cash is needed, the short-term financial instruments can be sold very quickly without incurring much loss. By their nature, the short-term securities will mature in a short period and therefore if they can be held up to maturity they can be redeemed at face value. *Islamic* financial institutions with surplus fund will use the money market to lend the fund to the deficit *Islamic* financial institutions and earn some return. *Islamic* banks are the most important participants, as lenders and borrowers, in the *Islamic* money market as they need to adjust their statutory reserve requirement positions or they could invest their temporary surplus funds.

The *Islamic* money market plays an important role in the *Islamic*

banking system of an *Islamic* state to provide adequate short-term funding as well as for adjusting the portfolios of *Islamic* financial institutions. It also serves as an important channel through which monetary policy is effected to the various sectors of an economy. Specifically, the availability of the financial instruments and inter-bank investment would open the opportunities for the surplus banks to lend funds to the deficit banks, creating a mechanism of liquidity adjustment necessary to promote stability in the *Islamic* banking system. Malaysia has the *Islamic* inter-bank money market, which is a short-term intermediary to provide the opportunities for short-term investment based on *shariah* principle. The existence of *Islamic* inter-bank money market will enable the *Islamic* banks as well as banks participating in the *Islamic* banking scheme to match their funding requirements. In particular, the financial activities such as the *muḍārabah* inter-bank investment and interbank trading of *Islamic* financial instruments are done through the *Islamic* inter-bank money market. There are a number of financial instruments traded in the *Islamic* inter-bank money market in Malaysia. These include: *Islamic* Negotiable Instruments of Deposit, Negotiable *Islamic* Debt Certificate, *Muḍārabah* Interbank Investment, and *Wadī'ah* Acceptance.

3.2 DEMAND FOR AND SUPPLY OF MONEY

The demand for money refers to the quantity of monetary assets that individuals would like to hold in their portfolios such as cash and checkable deposits. Thus, the question of how much an individual wants to hold money is actually involving a portfolio allocation decision based on the expected return, liquidity, and risk of the monetary assets. Money is the most liquid asset and this is the main objective of holding money. But holding money earns low return, at best, and if money holding is in the form of currency, then it earns zero return. The low return from holding money is indeed the major cost of holding money since if the wealth is held in alternative assets such as bonds, they will generate higher return. Therefore the decision as to how much an individual will hold money will depend on his liquidity preference as well as the opportunity cost of holding money.

The major macroeconomic variables that affect the demand for money are the price level, real income, and *Islamic* rate which represent the opportunity cost of holding money. When the general price level is high, individuals will hold more money for transaction purposes since goods and services are becoming more expensive and therefore more money is needed to purchase even the same amount of goods as before. That is if the price level increases by 50% then we need to increase the money holding by 50% to buy the same quantity of goods. Thus, there is a proportional relationship between the demand for money and the price level.

As individuals and businesses conduct more transactions, they need to hold more money and therefore the demand for money increases. When individual's income rises, they purchase more goods and services of better quality and pay higher price, and therefore they need more money for transaction purposes. Similarly, large business firms which earn high income need to hold more money as they conduct more and larger transactions; and they also have to incur more expenditure to pay the salaries of their workers, raw materials as well as other supplies. Thus, there is a direct relationship between the demand for money and income, although it is less than proportional.

At a given level of risk and liquidity, the demand for money depends on the expected return of non-monetary assets or alternative assets such as bonds, which is the opportunity cost of holding money. An increase in the expected return of alternative assets would induce the wealth holders to hold more alternative assets and less money; therefore the demand for money falls.

We write the general nominal demand for money as:

$$(13) \quad M^d = P[L_1(Y), L_2(i)]$$

where P is the price level, Y is the income level, $L_1(Y)$ is the transaction demand for money, i is the *Islamic* rate to represent the opportunity cost of holding money and therefore $L_2(i)$ is the portfolio motive of holding money. Equation (13) could be rewritten as:

$$(13.1) \quad M^d = L(P, Y, i)$$

The demand for money can also be specified in real term as:

$$(14) \quad \frac{M^d}{P} = [L_1(Y), L_2(i)]$$

Specifically, we write the aggregate demand for money as:

$$(15) \quad \frac{M^d}{P} = \theta_1 Y + \theta_2 i$$

where, $\theta_1 > 0$ and $\theta_2 < 0$. The real money supply, \bar{M}/P , is determined exogenously by the central bank. The money market equilibrium is obtained when money supply equals money demand as:

$$\frac{\bar{M}}{P} = \frac{M^d}{P}$$

Substituting for M^d/P in (15), we have the money market equilibrium equation or the *LM*-curve as:

$$(16) \quad \frac{\bar{M}}{P} = \theta_1 Y + \theta_2 i$$

The short-term *Islamic* rate, i , is determined by the forces of supply and demand for money. Rearranging (16), we have,

$$(17) \quad Y = \frac{1}{\theta_1} \frac{\bar{M}}{P} - \frac{\theta_2}{\theta_1} i$$

Equation (17) is the *LM*-equation. By fixing the price level and money supply constant and vary Y and i , we obtain the *LM*-curve. It shows the various combinations of *Islamic* rates and income where money market is in equilibrium. The slope of *LM*-curve is given by:

$$\text{slope}_{LM} = - \frac{\theta_2}{\theta_1} > 0$$

That is the *LM*-curve is positively sloped since $\theta_2 < 0$. The basic determinants of *LM* – curve are the price level and nominal money stock. An increase in the price level shifts the *LM*-curve to the left while an increase in money stock shifts *LM* curve to the right.

3.3 GOOD MARKET

The good market is in equilibrium when the aggregate supply equals aggregate expenditure. We follow the approach suggested by Yusoff (2006) which was refined in Yusoff (2010). We shall further refine this model in the coming discussion. For a closed *Islamic* economy, the equilibrium between the aggregate supply and aggregate expenditure is given as:

$$(18) \quad Y = C + I + GZ + G$$

where, Y is the aggregate output, C is the aggregate consumption, I is the gross private domestic investment, Z is *zakāt* spending by the government to generate economic activities as suggested by the expanded interpretation of *aṣṅāf fī sabīlillāh* (Al-Qaradawi, 2000) where *zakāt* fund can be utilized for the production of public goods and services. He opines that *jihād* for the sake of God includes supporting His cause by social, economics, or political *jihād* as much as military *jihād*. He argues further that in today's world, we must add fighters of opposing ideologies since cultural colonialism is worse than military colonialism³. The addition of the variable GZ is the major difference between Yusoff (2006, 2010) and the present model adopted in this present paper. G is the general government spending using the non-*zakāt* fund, such as the tax revenues. On the practical side, the *Majlis Agama Islam Wilayah Persekutuan Malaysia* (The Islamic Religious Council Federal Territory of Malaysia) has been allocating more than 50% of *zakāt* fund to *aṣṅāf fī sabīlillāh*, Densumite and Yusoff (2013).

3.3.1 AGGREGATE CONSUMPTION

The aggregate consumption has two major components, namely aggregate consumption of the *zakāt* payers and the aggregate consumption of the *zakāt* recipients. The desired aggregate consumption of the *zakāt* payers is given as

$$(19) \quad C_1 = C_{01} + c_1(Y_1 - Z - T)$$

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

The desired consumption of the *zakât* recipients is

$$(20) \quad C_Z = C_{0Z} + c_Z GZ_H + c_2 Y_2$$

where C_{0z} is the autonomous consumption when the *zakât* recipients consume goods and services, for example from *ṣadāqah*, if they have no income and do not receive *zakât*, c_z is the marginal propensity to consume of *zakât* recipients with respect to *zakât*, GZ_H is the amount of *zakât* payment given by the government directly to the household sector such as the *zakât* disbursement to the *faqîr*, *miskîn* and the salaries to the *zakât* administrators, c_2 is the marginal propensity to consume of *zakât* recipients with respect to income Y_2 , $0 < c_z < 1$, $0 < c_2 < 1$. We would expect c_z to be relatively higher than c_1 .

The desired total aggregate consumption, C , is:

$$(21) \quad C = C_1 + C_Z$$

Substituting (19) and (20) into (21), we obtain,

$$(22) \quad C = C_{01} + c_1(Y_1 - Z - T) + C_{0Z} + c_Z GZ_H + c_2 Y_2$$

Simplifying and rearranging (22), we have,

$$(23) \quad C = C_0 + c_1 Y_1 - c_1 Z - c_1 T + c_Z GZ_H + c_2 Y_2$$

3.3.2 ZAKĀT COLLECTION

The *zakāt* collection from *zakat* payers is:

$$(24) \quad Z = Z_0 + \eta(Y_1 - C_{TE})$$

where, Z is the *zakāt* collection, Z_0 is the *zakāt* collection from non-income sources, η is the *zakāt* rate, and C_{TE} is the total *zakāt* exemptions which include personal and family expenses. A detailed discussion on *zakāt* exemptions is given in Kahf (1998: 531-532).

3.3.3 TAX COLLECTION

The tax collection is,

$$(25) \quad T = T_0 + \tau Y$$

where, T is the total tax collection, τ is the tax rate, T_0 is the autonomous tax collection, and Y is the income.

3.3.4 REDUCED FORM CONSUMPTION FUNCTION EQUATION

Substituting the *zakāt* equation (24) and tax equation (25) into the consumption equation (23), we obtain,

$$(26) \quad C = \alpha_0 + c_1 Y_1 - c_1 \eta Y_1 - c_1 \tau Y + c_Z G Z_H + c_2 Y_2$$

where, $\alpha_0 = C_0 - c_1 Z_0 + \eta C_{TE} - c_1 T_0$.

3.3.5 INVESTMENT FUNCTION

We have already derived the investment equation for a j -th entrepreneur. Now we write the aggregate investment equation as:

$$I = I_0 + \phi_1 i_{BD} + \phi_2 i_E$$

where, $\phi_1 < 0$ and $\phi_2 > 0$.

For simplicity, we drop from the investment equation. As the *Islamic* rates are moving in same direction, we could also therefore drop subscript of i_{BD} . The more simplified investment equation is:

$$(27) \quad I = I_0 + \phi_1 i$$

To be more precise, (27) could be specified as a function of real *Islamic* rate, $i - \pi^e$, rather than the nominal *Islamic* rate.

3.3.6 GOOD MARKET EQUILIBRIUM

The equilibrium income is determined when the aggregate income equals aggregate expenditure. Substituting equations (26) and (27) into (18), we obtain,

$$(28) \quad Y = \alpha_0 + I_0 + (c_1 - c_1\eta)Y_1 - c_1\tau Y + c_2GZ_H + GZ_G + G + c_2Y_2 + \phi_1 i$$

Defining $Y_1 = \alpha Y$ and $Y_2 = \beta Y$ where $Y = Y_1 + Y_2$ and substituting in (28), rearranging, and solving for Y , we have,

$$(29) \quad Y = \left\{ \frac{1}{1 - (c_1 - c_1\eta)\alpha + c_1\tau - c_2\beta} \right\} \{ \delta_0 + c_2GZ_H + GZ_G + G + \phi_1 i \}$$

where, $\delta_0 = (C_{01} + C_{02} - c_1Z_0 + \eta C_{TE} - c_1T_0 + I_0)$ Equation (29) is an *IS*-equation showing the relationship between output Y and *Islamic* rate, i . The slope of the *IS*-curve is given as:

$$\text{Slope}_{IS} \left(\frac{\phi_1}{1 - (c_1 - c_1\eta)\alpha + c_1\tau - c_2\beta} \right) < 0$$

Since $\phi_1 < 0$ therefore the slope is negative if:
 $[1 - \alpha(c_1 - c_1\eta - c_2\beta)] > 0$.

The basic determinants of *IS*-curve are the *zakât* spending and the general government spending. An increase in GZ_H , GZ_G or G will shift the *IS*-curve to the right.

3.4 MONETARY AND FISCAL POLICY

We shall now briefly illustrate the impact of monetary and fiscal policy using *IS-LM* curve framework in an *Islamic* economy. The major fiscal instruments are the *zakât* spending GZ_H and GZ_G and the general government purchases, G . An increase in GZ_H , GZ_G and G will shift the *IS*-curve to the right and therefore have the tendency to increase income. During the recession, the *zakât* collection falls and therefore the government utilizes the *zakât* surplus, accumulated during the boom periods, to disburse it during the recessionary time to boost economic activities, Yusoff (2010). The government could also increase its general spending, G , to boost the economic performance. The GZ_H , GZ_G and G could be reduced during the boom period to dampen the inflationary pressure.

Changes in money supply will affect economic activities. The major tools of monetary policy are the reserve ratio and open market operations (OMO). During the recession, the central bank may reduce the reserve ratio or buy the *Islamic* government securities on the open market. This will increase the liquidity in the economy, putting pressure for the *Islamic* rate to fall. A reduction in the *Islamic* rate will encourage investment by the entrepreneurs which will then increase economic activities.

4. IS THERE ANY RELATIONSHIP BETWEEN ISLAMIC INVESTMENT DEPOSIT AND FIXED DEPOSIT RATES?

Islamic banks and conventional banks provide depository facilities for the individuals, business enterprises, and institutions to deposit their saving and earn financial return. Muslims who save their saving in the *Islamic* banks will receive the return which is free of *ribā*. The major depository facilities are the *Islamic* investment deposits in the case of

Islamic banks and fixed deposits for conventional banks. The investment deposit fund is used by the *Islamic* banks to invest in profitable *ḥalāl* business ventures and the depositors will receive *ḥalāl* financial return, termed as *Islamic* investment deposit rate. The conventional commercial banks utilize the fixed deposits by extending loans to the individuals and business sector and the depositors will receive financial return, termed as fixed deposit rate which is not *ribâ* free.

4.1 DESCRIPTIVE STATISTICS AND ANALYSIS

We use monthly data of *Islamic* investment deposit rates and fixed deposit rates to represent the *Islamic rate* and *ribâ* respectively from January 2009 –June 2012. The data were collected from the Monthly Bulletin of Bank Negara Malaysia.

Figures 1 and 2 show the movements of fixed deposit rates and *Islamic* investment deposit rates respectively. It is clear that the longer the terms to maturity the higher are the rate of return for both conventional banks and *Islamic* banks. Furthermore, it is clear also that both the conventional deposit rates and *Islamic* rates move in the same direction.

FIGURE 1
Fixed Deposit Rates

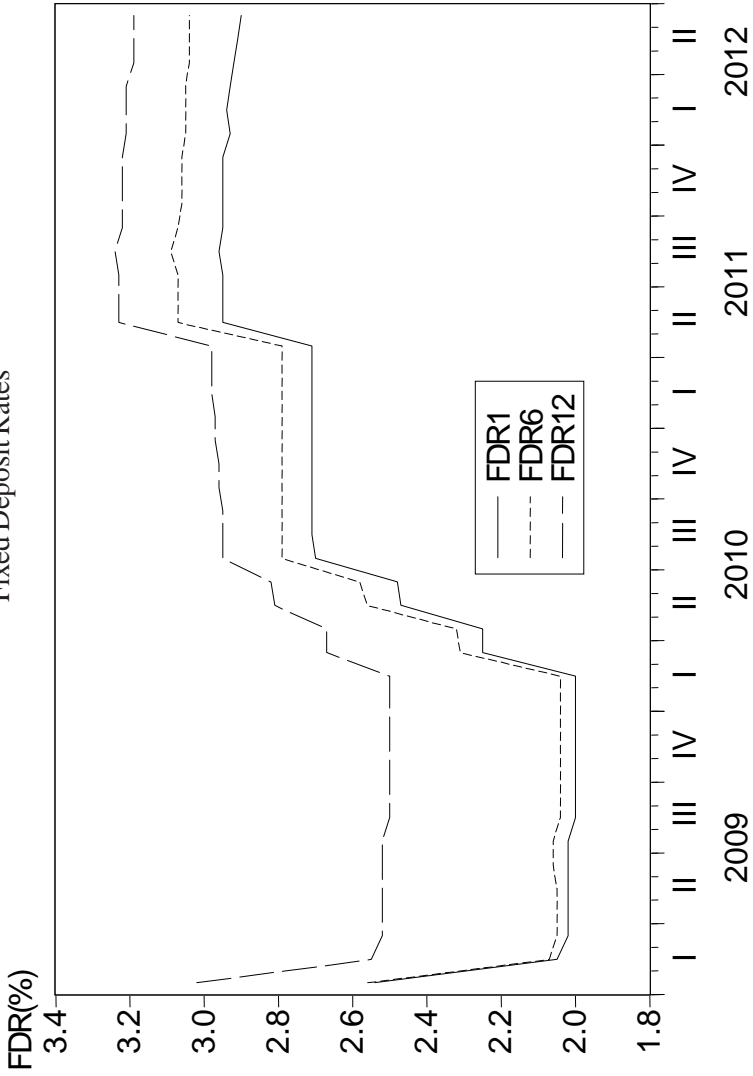


FIGURE 2
Investment Deposit Rates

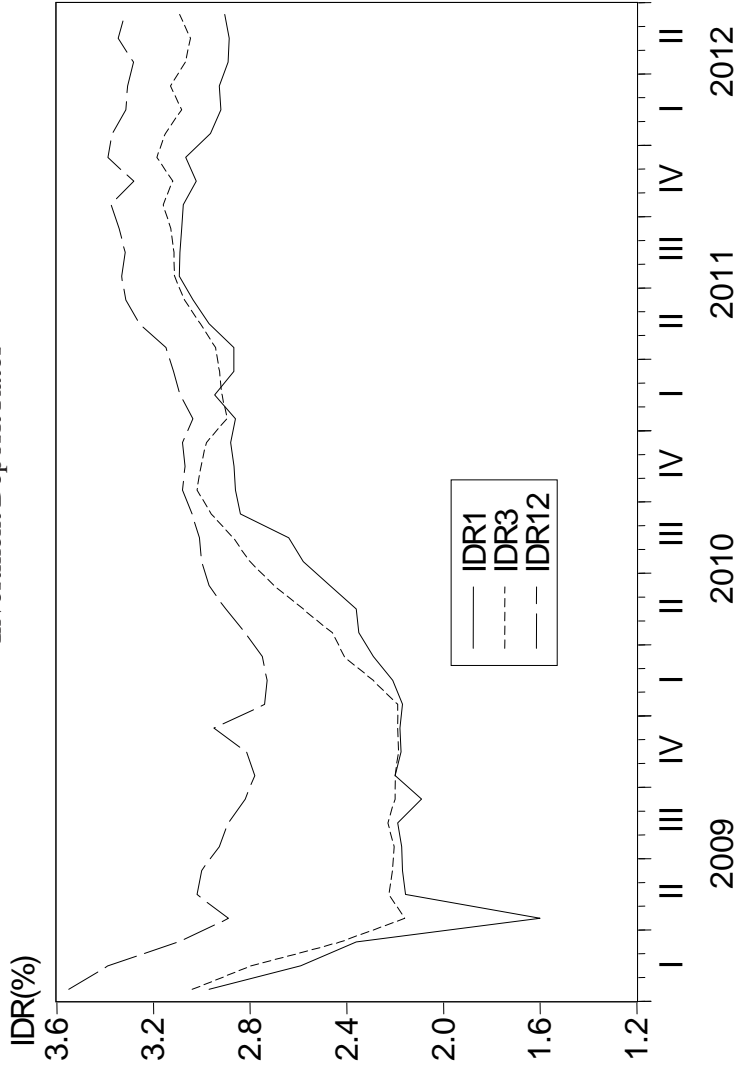


Table 1 shows the descriptive statistics of the 1-month, 3-month, 6-month, 9-month, and 12-month *Islamic* investment deposit rates (IDR) of *Islamic* banks and fixed deposit rates (FDR) of conventional commercial banks in Malaysia. On the average, the *Islamic* banks offer higher deposit rates than the conventional commercial banks. For example, the average 12-month *Islamic* investment deposit rate (IDR12) is 3.009 percent compared to 2.7583 percent in the case of 12-month fixed deposit rate (FDR12) of conventional commercial banks. Generally, the fixed deposit rates are more volatile than the *Islamic* investment deposit rates as indicated by their standard deviations.

TABLE 1
Descriptive Statistics

	IDR1	IDR3	IDR6	IDR9	IDR12
Mean	2.4972	2.6031	2.6896	2.7896	3.0093
Median	2.4150	2.6400	2.7000	2.7800	3.0050
Maximum	3.0357	3.0717	3.2200	3.3500	3.5500
Minimum	1.6000	2.1600	2.2800	2.3800	2.7300
Std. dev.	0.3662	0.3501	0.3098	0.3065	0.1933
	FDR1	FDR3	FDR6	FDR9	FDR12
Mean	2.3710	2.3986	2.4330	2.4506	2.7583
Median	2.3600	2.3900	2.4400	2.4550	2.7400
Maximum	2.9500	3.0000	3.0700	3.0900	3.2300
Minimum	2.0000	2.0300	2.0400	2.0500	2.5000
Std. dev.	0.3511	0.3527	0.3759	0.3829	0.2462

Notes: IDR_j denotes the jth-month *bn* investment deposit rate, FDR_j denotes the jth-month fixe deposit rate, j=1, 3, 6, 9, 12.

4.1 TODA-YAMAMOTO CAUSALITY TEST

A number of economists have argued with empirical evidences that the deposit rates of *Islamic* banks have been dominated and influenced by the deposit rates of conventional banks since conventional banks are much larger than the *Islamic* banks, at least in terms of assets. In other words, the conventional banks lead the banking sector. An empirical

study about *Islamic* banking in Malaysia was done Chong and Liu (2009) using monthly data from April 1995 to April 2004. They used a pair-wise Granger causality test and find that the conventional deposit rates have uni-directionally caused the *Islamic* deposit rates. In another study, Cevik and Charap (2011) use the VECM residual based Granger causality test on the monthly data from January 1997 to August 2010. The results have also indicated that the conventional deposit rates have Granger caused *Islamic* deposit rates with no feed-back. Thus, both studies seem to suggest that, in the case of Malaysia, conventional banking dictates *Islamic* banking.

In this paper, we shall further investigate the issue of the relationship between conventional banking and *Islamic* banking in Malaysia using a more recent data by employing the recently introduced Toda-Yamamoto causality technique. The Toda-Yamamoto's (1995) technique provides another way of testing Granger causality in level VAR without requiring the pre-testing for unit roots and cointegration ranks. We specify the level VAR model as:

$$(30) \quad IDR_t = \theta_0 + \sum_{j=1}^p \alpha_j IDR_{t-j} + \sum_{j=1}^p \beta_j FDR_{t-j} + \mu_{1t}$$

$$(31) \quad FDR_t = \theta_0 + \sum_{j=1}^p \theta_j IDR_{t-j} + \sum_{j=1}^p \delta_j FDR_{t-j} + \mu_{2t}$$

where, *IDR* is the *Islamic* investment deposit rate, *FDR* is the fixed deposit rate, $p = k + d$, and d is the maximal order of integration. The maximal order of integration is determined by testing the unit root of the series while the lag length k is selected by using the Aikake information criterion. Then we estimate a $(k + d)$ th order VAR by OLS. When we test the linear restrictions on the first k coefficient matrices, the coefficient matrices of the last d lagged vectors in the model are regarded as zero. In this study, $k = 4$ and $d = 1$. The causality test is applied by expressing as restrictions on the parameters of lagged variable of interest in VAR model up to k lags equal to zero using the modified Wald statistic. The test is less efficient but consistent and loss

of power due to over-fitting. The inefficiency is relatively large if $k = 1$ and $d = 1$ but it is relatively small when $k > 1$ and $d = 1$.

4.1.2 RESULTS AND DISCUSSION

The results of the ADF unit root test with 2 lags in Table 2 show that both of the IDR and FDR have unit roots in levels but the null hypotheses are rejected in first difference. These suggest that these variables are integrated of order one, $d = 1$.

TABLE 2
Results of ADF Tests for Unit Root

Variable	Level	First Difference*
IDR1	-1.4828	-6.0482
FDR1	-0.2915	-4.0814
IDR3	-1.2914	-5.4084
FDR3	-0.2200	-4.0595
IDR6	-0.1863	-5.4332
FDR6	-0.1603	-3.8158
IDR9	-1.5915	-7.1341
FDR9	0.9331	-3.8158
IDR12	-0.7890	-5.0944
FDR12	-1.9916	-10.1309

Notes: The values in the table are t-statistics, * indicates significant at 1% level.

TABLE 3
Results of Toda-Yamamoto Causality Test

FDR1 causes IDR1	18.2230 ^a (0.0011)
IDR1 does not cause FDR1	6.0019 (0.1990)
FDR3 does not cause IDR3	5.4483 (0.2443)
IDR3 does not cause FDR3	4.9865 (0.2887)
FDR6 does not cause IDR6	4.5582 (0.3357)
IDR6 causes FDR6	15.2287 (0.0042)
FDR9 causes IDR9	9.3942 (0.0520)
IDR9 does not cause FDR9	2.8847 (0.5773)
FDR12 causes IDR12	8.9296 (0.0629)
IDR12 does not cause FDR12	5.4483 (0.2443)

Note: ^a Chi-square statistics and the figures in the parentheses are the probabilities.

Table 3 shows the results of Toda-Yamamoto causality tests for 1-month, 3-month, 6-month, 9-month, and 12-month of *Islamic* investment deposit rates and fixed deposit rates. The lag length is 4 as suggested by the Akaike information criterion. Since $d = 1$ and $k = 4$, therefore $p = 5$. Generally, the results are mixed at best. Specifically, it is found that the 1-month fixed deposit rate causes the 1-month *Islamic* investment deposit rate with no feedback. On the other hand, the results also suggest that there exists no causality between the 3-month fixed deposit rate and 3-month *Islamic* investment deposit rate in either direction. For the 6-month case, it indicates that it is the *Islamic* investment deposit rate causing the fixed deposit rate and the causality is unidirectional. There exists a weak causality for both the 9-month and 12-month deposit

rates. Specifically, the 9-month and 12-month fixed deposit rate cause their respective 9-month and 12-month *Islamic* investment deposit rate, albeit weakly at 10 percent significant level.

5. CONCLUSION

The paper has discussed the concept of *ribā* which is prohibited in *Islam* and differentiates it from the profit rate and *Islamic* rate. The paper then explains the concepts of *Islamic* rate which is lawful in *Islām* as it is directly derived from the profits of *ḥalāl* business activities. In this model, the *Islamic* rate is the clearing mechanism in both money market and good market. It has also derived the money market equilibrium and good market equilibrium conditions or the *IS-LM* framework for monetary and fiscal policy analysis in *Islām*. In order to clear the notion that the conventional banking system has been dictating the decision makings in the *Islamic* banking industry in Malaysia, the paper uses the Toda-Yamamoto causality test to see the Granger causality between the *Islamic* deposit rates and the fixed deposit rates. The results are not conclusive as a number of *Islamic* deposit rates cause the fixed the deposit rates, while some fixed deposit rates cause *Islamic* investment deposit rates, and yet some show that there are no causal relationships between the two types of rate.

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ENDNOTES

1. See Ayub (2007), Chapter 3 and Hosein (1997), for discussion on the concept of *riba*.
2. This is not totally a new term. Bank Negara Malaysia has been using the term, *Islamic* interbank rate, for quite some time already.
3. For further discussion, see Al-Qaradawi (2000).

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