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A Benchmark Pricing Strategy for Islamic Banks

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ABSTRACT

This paper aims to present a pricing strategy for Islamic banking products. It will demonstrate that the exchange of Shari'ah compatible products in competitive capital markets results in a price that will allocate financial resources efficiently and will serve as a robust substitute to London Interbank Offered Rate (LIBOR) and similar interest based benchmarks in dual banking systems. This rate will be observable and measurable in the capital market and efficiently allocate capital funds, serve as evaluator for investment projects, and restore a stable equilibrium in the financial markets. Further, this rate will facilitate interbank transactions and contribute to the development of interbank financial markets. It will also serve as a pricing mechanism for financial products exchanged between the Central Banks and commercial banks. Consequently, it will facilitate implementation of growth stimulating or inflation combatting policies. The paper presents a model of benchmark pricing for Islamic banking products which are linked to the performance of the real sector of the economy. A model of complete and competitive financial market in which products are exchanged by Shariah rules is presented and it is shown that the rate of return which is determined at long run equilibrium of this market equals both to cost of capital and at the same time to marginal time preference rate of the clients.

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1. Introduction

Since their emergence, Islamic banks in dual banking jurisdictions had to choose a profitable and competitive price strategy for their products. Despite some efforts, the applied strategies have not satisfied stake holders' expectations. The chosen benchmarks, i.e., the standardization of products prices with a base line in financial agreements, are mostly claimed to be linked to their counterpart Ribawi banks interest rates. In their study of the performance of Islamic banks in Malaysia, Abdul Rahman and Dean (2013) found that deposits in Islamic banks are closely pegged to the interest paid by Ribawi banks. Abdul Kader and Leong (2009) noticed that Islamic banks in Malaysia are exposed to interest rate risks, despite operating on interest free principle. Zulkhibri (2018) reports a high level of correlation between Islamic base retail financing and conventional lending rates on loans in Malaysia. He reports that between 2009 and 2012, the correlation of base lending rate of conventional bank and the Islamic base financing rate is about 76 per cent. Even though conventional and Islamic banks operate in different banking markets, it is surprising that the Islamic base financing rate closely tracks interest rates offered by conventional banks in Malaysia. Zulkhibri's findings are supported by other studies regarding the behavior of Islamic banks in Indonesia and Turkey. The rate of return on deposits and the interest rate are in tandem there (Akhatova et al. 2016; Aysan et al., 2017). Another study in Bangladesh found that there is no significance difference between the monthly average lending rate of Islamic and Ribawi banks (Ahmed, et.al. 2014). To show the importance of choosing a representative benchmark reference for Islamic banks, Al-Jallad (2018) examined the effect of misspecification of the profit rate on the pricing and valuation of Islamic derivatives in the context of Islamic Profit Rate Swap. Based on the findings, he concluded that development of an innovative Islamic benchmark rate that is universally acceptable and applicable is necessary for the continuous development of Islamic capital market. Not only this view is shared by many Islamic economists (Mirakhor, 2011, 2012,

2017, Mat Seri et al. 2017), but the choice of standard interest based benchmarks such as LIBOR and EUBOR have been criticized by the monetary authorities in the respective jurisdictions. The authorities of the Bank for International Settlements (2013) argue that interest rate benchmarks no longer represent the cost of actual transactions in the underlying markets and the source of funds for financial intermediaries. They emphasize that attributes of a good benchmark include robustness and resilience, reliability, usability and transparency.

The aim of this paper is to show that interest rates which are determined by Ribawi money markets do not have the stated attributes. Rather it is the price that is determined by the real asset-backed actual transactions in the Islamic financial market that has the referred desired attributes. To this end the paper reports, in the first part, the controversies over the use of interest rate benchmarks that are stated by monetary authorities and experts. The strands of research to explore a price benchmark in an Islamic financial market will be explored next. A price determination model for Islamic banks and a base for central bank authorities to adopt growth promoting and inflation curbing policies will be formulated and presented in the following section. The paper will conclude with recommendations to both the Islamic and central banks for adoption of a pricing strategy that is based on a complete and competitive Islamic financial market.

2. Literature Review

2.1. Controversies over the interest rate benchmark

Economists recommend that interest rate benchmarks should reflect the economic realities of the underlying market (Brousseau, Chailloux, and Durré, 2013). It is necessary for a financial market benchmark to reflect the cost of actual transactions in the underlying market and also the source of funds for financial intermediaries (IOSCO. 2013). LIBOR, however, was found inadequate as such a benchmark because it used to be constructed from a survey of a small set of banks reporting non-binding quotes rather

than actual transactions (Brousseau, Chailloux, & Durré, 2013). After the financial crisis in 2008 and changes to bank capital requirements a significant decrease in transaction volumes in the unsecured interbank lending market was followed. As a result of limited market activity and insufficient transaction data, LIBOR submissions increasingly relied on expert judgement from the panel banks. They used their expert judgement in the calculation of their submissions (International Islamic Financial Market, 2021). Some banks underreported their interest rate submissions to signal their financial strength and to profit from their large derivative positions (BIS 2013; Duffie and Stein 2015). Panel banks manipulated LIBOR submissions (Gyntelberg and Wooldridge, 2008) Vaughan and Finch (2017). Considering all these, the use of some major interest rate benchmarks such as LIBOR, EURIBOR, TIBOR and KLIBOR were widely criticized by the monetary authorities in many jurisdictions for not representing actual financial transactions.

Subsequently, in July 2017 the UK's Financial Conduct Authority announced that it would no longer compel panel banks to submit LIBOR after 2021. Other regulatory bodies across the globe followed suit in reviewing the status of their respective IBORs. By the end of 2021all new businesses are supposed to either be conducted in alternative rates or be capable of switching at limited notice. Bank of America (Financial Times, Nov.4, 2021) started to replace LIBOR, as it transitions away from the denounced lending benchmark. The reformed benchmark rates are ideally grounded in actual transactions and liquid markets rather than be derived from a poll of selected banks (Schrimpf and Sushko, 2019). Perhaps the most important reason for the described state of affairs is the reliance of global finance on debt-creating flows with all its instability characteristics (The European Financial Review October – November, 2011). This event could provide a golden opportunity for Islamic finance authorities to promote the long argued market rate that have been proposed by Islamic economists to be applied as standard benchmark in all financial markets (Khan & Mirakhor1989; Mirakhor; Al-Aabed, 2013, and Toutounchian, 2009).

2.2. Money and Capital

Money is a financial asset, according to Islamic jurists, but cannot be loaned or borrowed with additional pecuniary or non-pecuniary return (Cultural Section, Islamic Seminary 1381/2000). It plays important functions in the economy. In an Islamic economy, it can be demanded by economic agents for transactions and precautionary purposes. Contract governing rules such as prohibition of Riba, non-ambiguity in the terms of contract, no cheating, no harm doing to other parties directly or indirectly, and abstaining from illegitimate methods of income earning, leave little room for what is known as speculative demand for money. Furthermore, prohibition of Riba leaves no room for development of a market for money or charging any price for its lending (Toutounchian, 2009.) As said, from Shariah point of view money is a financial asset and is not bound to specific deal or transaction (Sadr, 2016 and Zulkhibri, 2018). Whence an agreement is reached and a contract is concluded, the fund that is exchanged is still a financial asset but transforms its legal status and acquires the attributes that are stipulated by the contract. The jurisprudential form of sale or participation contract transforms money from a financial asset to capital asset. Although there are controversies about the nature of capital (Toutounchian, 2009), for our expositional purpose, it may be defined as a resource that generates a flow of income over time (Hirshleifer, 1982). It is demanded by firms in either physical or financial form to be combined by labor and other inputs to create value added. Legitimacy of contracts with temporally fixed or variable rates of return contributes to formation of capital markets, both in the financial and real sector of the economy. Islamic banks are active players in financial capital markets. They supply financial services to entrepreneurs and demand them from the consumers (Sadr, 2016a and 2016b). Therefore, capital assets pricing strategy could be applied for the valuation of Islamic banking products. It follows that monetary policy which is carried out in Ribawi economy is not implementable in an Islamic framework. But the financial assets management is absolutely permissible and Central Banks can adopt that policy, as will be detailed below. The main

distinctive feature is that a financial sector independent from the real sector will not be formed in an Islamic economy. The two sectors are intermingled.

2.3. Cost of Capital and Interest Rate

Capital stocks are not homogenous and the stream of their return in different periods is not constant over time. For the purpose of exposition, assume that all capital instruments are uniform with identical life and flow of service at all periods. Then under certainty and perfect competitive condition, the market determines the price of capital assets and the rental income that they generate over time. The ratio of the rental income to the value of the stock, that are determined at long run equilibrium of the market is the return or equivalently per unit cost of capital per period. In such financial capital markets, all securities have the same yield and there is only one rate per period which is directly observable in the market. In the real world condition, however, a variety of securities are exchanged and thus, the cost of capital – or its return – is no longer any unique and observable magnitude. Rather, the cost and return must be inferred from the observable variable, namely, the prices of various kinds of claims represented by the different securities (Modigliani and Miller1, 966). If the structure of actual markets reforms and approaches that of a perfect, complete, and competitive market, where prices are efficient and fully represent the attributes of securities, then they converge to a single price at long run equilibrium. This single observable rate is called "the interest rate" by almost all economists in Ribawi system (Modigliani and Miller, 1966; Hirshliefer, 1982; and Friedman, 2008). Two phenomena may explain this nomenclature. The first is the legitimacy of loan contracts in Ribawi system and the dominant contractual form of interest-based lending and borrowing. Implicitly, economists assume that the contractual arrangements that are used for exchange of financial assets are loan contracts. Therefore, the cost of capital is the interest rate that entrepreneurs pay for their borrowed loan. It follows that the cost of capital is equal to the market interest rate under certainty

condition (Modigliani and Miller, 1958). The second reason for this conception might be the legacy of classical economists who perceived the loan and capital markets as mirror images of each other (Patinkin, 1962). In their system, prices of all goods and inputs are flexible and markets have a competitive structure. At all booming and recessing states of economy, prices adjust to market conditions and equilibrium will be restored at full employment level of resources. In such economic conditions where markets are competitive and price information is accessible, the best earning opportunities are sought in the real sector; there is no gain in speculative endeavors. Thus, money is borrowed only for transaction purposes. It follows that in the loan market, the borrowers are the firms who demand loan for investment projects. The suppliers are the consumers who lend their saving deposits to obtain interest income and maintain a smooth consumption pattern at future periods.

In the capital market, the demand side is composed of entrepreneurs who require funds for their investment activities, and the supply side is constituted by consumers who lend their savings to earn income. At long run, when both markets reach equilibrium, since the demanders and suppliers are identical in both markets, the price per unit and per period of capital would be equal to the interest rate that is determined in the loan market. Consequently, the equilibrium rate of return to capital, or equivalently the opportunity cost of capital is assumed to be equal to the interest rate. The only caveat is that since classical system is a real system and money has neutral role in the economy and is used only for transaction purposes, it is the real interest rate that would be equal to the cost.

Either cases that have been described, i.e. the conformity of the loan and capital markets in the classical treatments, and the contractual form of lending and borrowing in trade or investment ventures, has made economists refer to the cost of capital when they state real interest rate. Thus, in all capital theories presented by Bohm-Bawerk (1890) and Fisher (1930) and their successors, the price of capital and the functions that it performs in the

economy are all expressed in terms of real interest rate. This rate could be applicable in Islamic economic analyses only if it were not linked to and determined by the nominal interest rate. Since the real interest rate is not observable in financial markets, Fisher (1930), tried to relate it to an observable rate which is the nominal interest rate, i.e. the rate that is charged by Ribawi banks on applicants. Certainly, the real interest rate, as reported above, is not a genuine indicator of product price of Islamic banks due to prohibition of Riba. Wicksell introduced natural rate of interest. He defined it as "a certain rate of interest on loans which is neutral in respect to commodity prices and tends neither to raise nor to lower them" (Uhr, 1960). Alternative definitions of natural rate of interest have appeared later in the economic literature. In Laubach &Williams' (2016) definition, it is the real Fed fund rate that is consistent with stable inflation and absent shocks to demand and supply of aggregate output. Another economist maintains that monetary policy is neither expansionary nor contractionary when the interest rate is at its natural rate (Bernhardsen, 2005). Lubik & Matthes (2015) tried to calculate the natural rate with some theoretical restrictions. They indicated that natural rate has been above the real rate for a long time. Cowen (2015) comments that it is an old idea and historically strange. He adds that whether a given rate of interest both maintains full employment and stable inflation depends on the rate of productivity growth. No single rate of interest can perform both functions. Cowen further states that Keynes devoted great deal of efforts to knock down the notion of natural rate of interest. He also argued that in many settings there was no rate of interest whatsoever that would maintain capitalist stability. In post-war economics, the Keynesians worked to keep natural rates of interest concept out of mainstream macroeconomics (Cowen, 2015a).

Friedman expresses reservation about natural rate of interest concept. He states: what if the monetary authority chose the "natural" rate – either of interest or unemployed – as its target? He further laments that if the monetary authority knew the "natural" rate, and attempted to peg the market rate at that

level, it would not lead to determinate policy (Friedman 1968). Other than nominal, real and natural rate of interest, other economists have introduced "neutral rate of interest" as the rate at which monetary policy is neither expansionary nor contractionary (Bernhardsen, 2005). It is "the real interest rate level which in the medium term is consistent with a closed output gap". According to the author, "if the central bank aims to stimulate the economic activity, the interest rate must be set so that the real interest rate is lower than the neutral rate. If the central bank aims to dampen activity, the interest rate must be set so that the real interest rate is higher than the neutral rate."

One reason for multiple definitions of interest rate is that capital and loan markets are not mirror images. As Keynes observed during the great depression period, prices in the output and the capital market were not responsive to the depressed economic condition and the labor market did not move to full employment level. During such economic conditions, the demand for real investment declines, while the demand for speculative activities increases. Thus, the demand for money loaned is not all for transactions, but is also partly for speculation. It follows that the interest rate that is determined in loaned money market is not equal to the cost of capital. Since the former is controlled by the central bank, the important policy choice would be determination of the "equilibrium" interest rate. Realizing that transaction of loans is permissible, the aim of the monetary authorities would be determining an interest rate which would stabilize the inflation rate and stimulate capital investment and growth. Thus, alternative rates of interest are proposed by economists to guide the monetary policy. It follows that if there would be no market for lending and borrowing of money, the cost of capital would not be the interest rate that is charged for lending money. The only financial market formed in the economy would be the market for exchange of capital assets. The cost of and return to capital is determined endogenously by the capital market like the price of all other goods and the inputs that are determined by their own markets. Islamic banks are the important participants in the capital market since they provide

financial capital services (Sadr, 2016). Thus, all interest free mechanisms that are proposed for valuation of capital investments can be applied for determining the price of Islamic banks products.

Our review of interest is not complete without referring to Keynes criticism of economic stability condition in the classical model of the economy. He argued that the two real and nominal sectors of the economy are not concomitant. There is a coordination problem between the saving agents' incentives and that of entrepreneur firms. It is likely that all savings would not be channeled to productive employment-creating investment, but would be held or used for speculative activities. It is due to the role of interest in creating a wedge between saving and investment (Mirakhor and Alaabed, 2013). In his well-known General Theory of Employment, Interest and Money, he viewed interest as "rent" and those who demand it as "rentiers" (Keynes, 1936).

3. New attempts for price discovery

Three strands of literature have been developed to explain how the price of financial instruments is determined. The first focuses on the risk aversion or risk loving nature of investors and incorporates them in their utility function. The preference of this group is expressed by their marginal time preference rate. The second strand of literature has focused on determination of cost of capital when financial securities and assets have varied characteristics and different risk profiles in the capital market. Still, a third line of literature has dealt with the interest rate determination and how this rate assigns cost to capital and financial assets. In his study of pricing Islamic banks products in dual financial markets, Muhd Rahman Fitri (2007) opines that the use of base lending rate which is applied by Ribawi banks is permissible to be used as benchmark in pricing by Islamic banks. Additionally, he considers permissible the practice of imposing compensation upon defaulters and rebate upon early settlers as practiced in Malaysia. Ismail (2008) has suggested several pricing schemes that maybe applicable by Islamic banks. They are: cost-plus pricing, price-leadership model, credit-scoring system

and risk-based pricing, and firm profitability analysis. However, he notes that "many Islamic banking products today are priced directly off money market interest rates such as KLIBOR or LIBOR or the prevailing inter-bank fund rate, with narrow profit margins reflecting intense competition". A very comprehensive Islamic pricing benchmark study is carried out by Azmi Omar, et al (2010) at ISRA. The researchers tried to present a method and actual price benchmark for Malaysian Islamic banks based on the real sector in Malaysia. They applied both CAMP and the Arbitrage Pricing Model to estimate the cost of capital for different sectors of the economy recognizing different risk profiles that each sector faces. The estimate of expected returns based on such risk profiles formed the base benchmark cost of capital for the respective sectors.

Mirakhor (1996) proposes a method by which the cost of capital can be measured without resort to a fixed and predetermined interest rate. He suggests a procedure that utilizes Tobin's q in calculating the cost of capital in an economy where debt instruments have been removed. In the absence of a fixed and predetermined rate of interest, equity financing becomes the only source of financial capital, and as such, the economy's financial system becomes equity-based. Ali and Choudhry (2014) empirically applied Mirakhor's model on Malaysian firms to arrive at the cost of capital. They derived Q ratios at firm level and aggregated the same at industry level. Their findings suggest the model can be used to estimate cost of capital in any interest free economy. Iqbal (1999) also proposes a benchmark based on Tobin's q theory of investment as the q-based benchmark would be useful for firms and banks as well as governments and public institutions.

Others have suggested using equity premium instead of interest for adopting Shariah-based monetary policy. Essentially, the equity premium of an asset reflects the excess of expected return of the asset over the "risk-free" rate of return (Freeman & Davidson 1999). Zulkhibri (2018) calculated the historical equity premium in Malaysia in the 1980-2011 periods, and used the data to simulate his proposed monetary framework and

compared it with the results of the present conventional policy framework. He concluded that equity risk premium is not statistically significant as a proxy to be used in Islamic monetary policy framework in Malaysia. He proposed instead the Return on Equity to be a better alternative to replace the interest rate. Ahmed, S., et.al. (2014) suggest similar alternative by estimating the rate of return for any project on consideration of the cash flows in future which is expected to be relative to the invested capital. Shaikh (2019) proposes the nominal GDP growth rate as a benchmark rate for financial valuations and applies it in his study.

3.1. A Price Determination Model for Islamic Real and Financial Products

This section intends to present a model of benchmark pricing for Islamic banking products which are linked to the performance of the real sector of the economy. Building on the literature reviewed, a model of complete and competitive financial market in which products are exchanged by Shariah rules is presented and it is shown that the rate of return which is determined at long run equilibrium of this market equals both to cost of capital and at the same time to marginal time preference rate of the clients. Any product price, including that of Islamic banking products is determined by the preferences of demanders for the attributes of the products and the compensation of the suppliers for the cost they bear to produce them. The price of Islamic banking products also depends on the utility that the buyers obtain by purchasing them and the cost that banks bear to provide them. This price possesses the merits that economists have tried to attribute to capital by defining alternative interest rates.

Consider an exchange economy with only one type of product and deferred payment, namely Bai'e Mojjal or Nisyah. Assume a perfect competitive real asset market in which both the current price, P, and the future price P', of assets are competitively determined, when exchanged over time. Assume price efficiency, and that products are traded for one year period. The gain from trade for sellers is then: P' – P per one unit of product

price and the rate of return from trade is:

$$(P' - P) / P = n \quad (1)$$

It follows that the cost of trade for buyers who purchase on credit, is n per cent. Since we assumed all intertemporal transactions are carried out by deferred payment sales, and the undergoing contracts are Nisyah sales, we call the n rate of return, the Nisyah rate to make sure that it is determined in a complete Islamic real asset market. Assume now that, Salam instrument is also introduced into the market and its rate of return is n1, greater than n. All agents consequently prefer this instrument to the deferred payment. The shift into Salam products increases the demand price and ultimately lowers the rate of return until it becomes equal to n. If it gets lower, the agents would no longer demand it and eventually, the two price rates i.e., n1 and n, become equal. Similar arguments could be applied for the rate of return from other products, such as instalment sales, leasing, and hire purchase. It can, therefore, be concluded that, in the real asset market, no matter what Islamic instrument and contractual arrangements are used, as long as their rate of return can be negotiated and determined by the two sides of the business contract prior to its enactment, the price rates will ultimately converge to one equilibrium rate of return which is called the rate of Nisyah.

Suppose a product such as Modarabah is introduced into the market whose rate of return can only be predicted though the share of the two parties is negotiable in advance. The parties engaged will choose the Modarabah product if its expected rate of return exceeds the rate of Nisyah, i.e., $r > n$ in the contract period. Since other agents follow suit, demand for this product along with its price increases. Consequently, the realized and expected rate of return decline and eventually reach the rate of Nisyah at long run equilibrium of the market. The same conclusion can be drawn, if other types of products are offered to the market. Therefore, the long run equilibrium rate of return from trade in a complete and competitive real asset market is the Nisyah rate. While in short run, the return from profit and loss arrangements is expected to be higher than the Nisyah rate they will become equal to it in the long run.

4. Consumption and Saving Decisions

Consumers enter the goods market as sellers or buyers depending on their income distribution profile. If their future income is expected to be higher than their consumption expenses, they choose a Nisyah offer to buy goods more than their present income and pay the excess next year. If, on the other hand, they foresee a lower income flow in the future, they would save now to augment their consumption in the future. In either case, they interchange present for future consumption to the extent that their marginal time preference rate of consumption would become equal to the Nisyah rate. Suppose consumer's intertemporal utility function and budget constraint are:

$$U = U(C_0, C_1, ..., C_t) \tag{2}$$

$$(C_0, C_1 .... C_t, Y_0, Y_1, ... Y_t, n) = 0$$

Where, $C_0, ..., C_t$, are the flows of consumption expenditures from present to the year t and similarly, $Y_0, Y_1, ..., Y_t$ are consumer's income streams from now up to the year t. The rate of Nisyah is n. If we maximize the intertemporal utility function subject to the corresponding budget constraint, and the first and second order condition of maximization would hold, we obtain consumer equilibrium as under (Appendix 1):

$$\frac{MUC_t}{MUC_{t+1}} = 1 + n \tag{3}$$

The left hand side of this equation is the ratio of marginal utility of consumption at time t to that of one year later and can be written as

$$\frac{MUC_t}{MUC_{t+1}} = 1 + \rho \tag{4}$$

Where ρ shows the preference rate of consuming one more unit of commodity at period t, to the consumption of the same unit one year later. This time preference rate of consumption which is often positive will be equal to the rate of excess price ratios of the corresponding consumption bundle, or the rate of Nisyah at equilibrium market rate. Since,

$\frac{P'}{P} = \frac{P_{t+1}}{P_t} = 1 + n$, therefore, $\rho = n$. The intertemporal constrained utility maximization explains motivation of consumers to exchange their endowments over time. Further, it shows how long run equilibrium rate of return from exchange of consumer's goods over time is determined by the interaction of aggregate consumers (buyers) and saving agents (sellers) in the goods market. As illustrated in Appendix 1, consumers demand is a negative and saving agents' supply of assets is a positive function of the Nisyah rate. When the aggregate demand and supply of both parties match together the market equilibrium rate of Nisyah will be determined (Appendix 1).

Investment Behavior: Consider now a two sector economy; households and firms, where in addition to trade, would show investment activities in the economy. We have now a capital market in which investors undertake the two sets of contracts that we introduced before, i.e., using fixed and variable rates-of-return instruments to finance their projects. By maximizing the present value of net revenue subject to the production function, the entrepreneur derives his investment function. It is a function of prices of the products he produces and the inputs he employs and the rate of Nisyah (Appendix 2).

Firms undertake an investment project as long as the corresponding expected rate of return, r, is greater than the Nisyah rate: $r \geq n$

As said before, Nisyah rate, shows the opportunity cost of invested capital, i.e., the return that could be obtained otherwise, if the capital will be allocated to trading business under certainty condition. It also can be used to discount future income into the present, since it shows how much each unit of future income, if invested, would pay off today. To incorporate the risk of investment in the capital market, a risk premium could be added to the market rate of Nisyah. Evidently, if the rate of Nisyah increases in the capital market, fewer investment opportunities will be demanded by entrepreneurs. Therefore, one expects to notice that the firm's investment decision is inversely related to the Nisyah rate (Appendix 2). If we now add this

investment spending for capital goods in the production sector to that of consumers plan for purchasing consumption goods, we obtain the aggregate demand for intermediate and final goods in the economy.

The Financial Sector: Consider now the financial market in which intermediaries between consumers and investors channel the saving deposits into the latter avenues. These activities could be carried out with either ex ante agreed rate of return or ex post variable rate of return contracts. Since banks and agents in the stock market offer both sets of financial products, one can envisage that risk-averse consumers would buy the former products such as Murabahah and Ijarah, and the risk-tolerant opt for profit loss sharing arrangements, such as Musharakah and Mudarabah. Due to repeated transactions of the said products in a perfectly competitive and complete financial market, one expects similar behavior for saving and investment decisions to be observed here too, and consequently, in the long run, an equilibrium rate of return for the financial products will be determined. This rate would naturally be equal to the Nisyah rate in the real sector, in the absence of inflation.

It is worthwhile to pause now and analyze the interaction between the real and the financial sectors of the economy. Due to prohibition of Riba, no debt based product such as bonds or related derivatives will be issued by either the government or private firms. The products are shares or Sukuk of either public or private companies which have fixed or variable rates of return. Therefore, all financial assets in the respective market represent the entitlement to real properties, capital goods, or commodities and services; that is, they are all linked to real asset. In fact, no debt financing through loans will be performed in the financial sector. If, for example, the value of a share increases in the financial sector because of an increased demand for it, this price signal will be transferred to the real sector, and the price of respective equipment or construction would increase, too. Consequently, producers will increase their supplies to gain from the new market opportunity. Likewise, if due to achievement of efficiency in the operation or

construction of a plant, the expected future return increases, the price of the corresponding asset will go up in the financial market, assuming again a perfect competition in the latter sector. It is conceivable that there exists a direct relationship between the prices of assets in the real and financial sectors. Furthermore, additional income will be obtained in the financial sector only if added value is created in the real sector beforehand. Therefore, the creation of additional income in the financial sector of the economy is always in tandem with the value added in the real sector. In fact Shariah compatible contracts leave no room for gaining income in the financial sector without generating comparative surplus value in the real sector.

5. Conclusion

The choice of an interest free price benchmark has been a challenging issue for Islamic banks operating in dual banking systems. Analysis of their performance in the said jurisdictions reveals that their pricing strategies is linked to that of Ribawi banks and thus suffer from the misrepresentation problem of the financial sector like the Ribawi banks. To decouple Islamic finance from the latter pricing strategy, an alternative benchmark compatible with the Islamic financial transaction rules which would link the financial sector to the real sector of the economy is proposed in this paper. The presented model shows that the financial market in an Islamic setting fully represents the real sector, i.e. each financial asset has an underlying real asset. Also the Nisyah rate, the rate at which financial assets are exchanged, is determined endogenously by the real sector, and is an indicator for Islamic banks for pricing their products in the financial market. This rate would bring both the real and financial sectors into equilibrium and make them intermingled. The central banks could pursue growth promoting or inflation combating policies by implementing open market operation, i.e. exchanging capital assets which are thus priced in the financial market. Therefore, measures for development and completeness of the financial markets particularly for the Islamic banks and products should be undertaken. Laws

and regulations that define the rights of asset holders and facilitate their exchanges should be legislated. Judicial and political support for enhancement of market performance and security should be undertaken by public authorities. At the same time private banks should develop the products that are in demand by their clients at efficient and competitive prices. They should further collaborate with financial authorities to establish an Islamic interbank market to facilitate the exchange of the products and extend the scope of market operation.

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All authors had contribution in preparing this paper.

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The authors declare no conflict of interest

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Appendixes:

Appendix 1.

Max: $U=U(C_0,\ldots,C_t)$

ST: $\left[\sum_{t=0}^{T}\frac{y_t}{(1+n)^t}-\sum_{t=0}^{T}\frac{c_t}{(1+n)^t}=0\right]$

$C_t=\sum_{j=1}^{m}P_{jt}\,Q_{jt}$

$dU=\frac{\partial u}{\partial c_0}\,dc_0+\cdots+\frac{\partial u}{\partial c_t}\,dc_t=0$

$$-\frac{\partial c_{t+1}}{\partial c_t} = \frac{\partial u/\partial c_t}{\partial u/\partial c_{t+1}} = 1+\rho$$

$$L = \mathrm{U}(\mathrm{C0}, \ldots, \mathrm{Ct}) + \lambda\left[\sum_{t=0}^{T}\frac{y_t}{(1+n)^t} - \sum_{t=0}^{T}\frac{c_t}{(1+n)^t} = 0\right]$$

Assuming that U=U(.) is strictly quasi concave and forming the Lagrange function, we obtain the intertemporal consumption and saving functions depending on consumer's flow of income and the Nisyah rate :

$C_t = C_t(y_0, \ldots, y_{t,\ldots,} y_T, n) : \frac{\partial Ct}{\partial n} < 0$

$S_t = S_t(y_0, \ldots, y_{t,\ldots,} y_T, n) : \frac{\partial St}{\partial n} > 0$

Appendix 2.

Assume I_t, R_t and q_{jt} are investment, revenue and production function over t period, respectively where the output q_j is the function of x_k inputs and R_t denotes the revenue at period t.

$$I_t = \sum_{k=1}^{K}(r_{kt}\ x_{kt})$$

$$R_t = \sum_{j=1}^{m}(p_{jt}\ q_{jt})$$

$$h_t(q_t, x_{1t}, \ldots, x_{kt}) = 0$$

$$H(R_1, \ldots, R_{T+1}, I_0, \ldots, I_T) = 0$$

$$V = \left[\sum_{t=1}^{T+1}\frac{R_t}{(1+n)^t} - \sum_{t=0}^{T}\frac{I_t}{(1+n)^t} + \mu\, H(R_1, \ldots, R_{T+1}, I_0, \ldots, I_T)\right]$$

Maximizing above net present value function subject to the implicit investment opportunities gives the investment demand as function of m product and k input prices over time and the Nisyah rate:

$$I_t = I_t(n, p_{1t}, \ldots, p_{mt}, r_{1t}, \ldots, r_{kt}); \quad \frac{\partial I_t}{\partial n} < 0$$