Islamic Models of Growth and Wealth Creation

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Abstract
Islamic Model of Economics is surrounded by other models of economics i.e. western economics. And there seems to be unrelenting effort at collaborating to tackle peculiar issues i.e. "Growth and Wealth Creation". And since it is evident that other models of economics can thrive by Islamic Models Economics, this paper enumerates succinct challenging facts about several Islamic Models and proffers effective, efficient and sustainable Islamic Economic Model in the face of adversities.
Keywords: Currency, Resources, Population, (Un) Employment, Globalization

I. Introduction

Islamic law (the shariah) guarantees the maintenance, growth, equitable and fair allocation of resources between the rich and poor in the society by way of its established institutions i.e. regulatory and financial agency - government and banks (Ismail, 2010). This, wealth is created through zakat (wealth tax), inheritance and revenue generated from natural resources i.e. oil, minerals, agriculture, etc. (Choudhury). Financial sector i.e. Islamic banks are vital stakeholders in promoting economic growth and development through its shariah compliant services i.e. interest free banking etc. (Furqani and Mulyany, 2009).

Undoubtedly, according to the "World Islamic Banking Competitiveness Report 2013–14" assets of Islamic banks with Commercial banks globally are projected to exceed US$1,7tin 2013, implying an annual growth rate of 17.6%. In addition, (Kayed and Kayed p: 13) citing works of other researchers buttress the point that Islamic finance ""is based on themes of Community Banking, Ethical and Socially Responsible Investments and Affinity Marketing"". In addition, Said (2012) carried out an empirical analysis which revealed that Islamic banks are more resilient to causes of financial crisis. Similarly, Ouerghi (2014) used the "t-test for equality means" during the 2007 to 2008 global financial crisis and thereafter the crisis (2009 to 2010) in the aspect of "profitability, liquidity, efficiency, capital adequacy and leverage." Whereby, the result shows "that conventional banks are more profitable than Islamic banks during crisis", while "Islamic banks are more profitable only in the post crisis period.". He adds: "IBs have higher level of solvency than CBs for the whole period and even for the post crisis period when we consider the two periods separately. The loan to deposit ratio is significantly larger for IBs for the post crisis period, this signify that IBs convert a larger part of their deposit to loans. Our results support the hypothesis that Islamic banks efficiency is better than conventional banks during crisis period. The second investigation uses the Z-score as an indicator of bank stability in order to study the impact of the crisis on IBs and CBs. From the second investigation, we conclude that small banks fared better than large ones, IBs are less financially stable than CBs and large IBs perform better than large CBs, as suggested by Cihak and Hesse (2008)."

Arguably, despite undeniable facts about Islam model of economics over conventional economics, there seems to be little mention or consideration of salient variables i.e. finite resources and population growth in formulation/development of mainframe Islamic economics. Nevertheless, Chapra (2001, p: 33) in his book: "WHAT IS ISLAMIC ECONOMICS?" defines Islamic economics "as that branch of knowledge which helps realize human well-being through an allocation and distribution of scare resources that is in conformity with Islamic teachings without unduly curbing individual freedom or creating continued macroeconomic and ecological imbalances.". Therein acknowledgement of "scare resources" (i.e. finite resources as stated above) is made. In contrast, numerous literatures exists of Islamic scholars and academician opposed to this salient fact of "scare resources"; and in addition, the issue of population growth as it matters in sustainable Islamic economics. Of them are: Alhaji Usman Faruk, one-time governor of North Western state, Nigeria, as cited in the publication "The Muslim view on population control", 1994, EIR; and Hasan (2011) in his paper: "Scarcity, self-interest and maximization from Islamic angle" argue "that stocks of resources that God has provided are inexhaustible. But important is the availability of resources out of stocks to mankind". Ironically, these views ignores the underlining wisdom behind Allah's injunctions on Muslims to procreate as Roudi-Fahimi (2004, p: 2) in her paper "ISLAM AND FAMILY PLANNING" citing chapter 30 verse 21, chapter 7 verse 189, and chapter 16 verse 72 on the Quran argues on; "family planning" – as an antidote toward balanced population growth for a sustainable Islamic economy.

As a result, the aforementioned variables are crucial in any Islamic models and Islamic economic and development policy.

II. The Model

As structured on Benes & Kumhof (2012) paper on "The Chicago Plan Revisited", this model comprises of a

mining sector (resources), a population sector (population), a banking sector (banks), and a government. It characterizes numerous nominal and feasible rigidities. A detailed model with several sectors and several rigidities with advantage for the task set in this paper. Firstly, it generates an empirically realistic and consistent scenario of the conventional and Islamic economics, based on accurate estimate of relevant micro and macroeconomic data. Secondly, it makes this model: Islamic Model of Growth and Wealth Creation (IMGWC) "consistent with the findings of the empirical" DSGE (Dynamic Stochastic General Equilibrium) literature, "which has identified a number of nominal and real rigidities that are critical for the ability of such models to generate reasonable impulse responses.". The choice of this model structure on the aforementioned "Chicago Plan" (i.e. 100% reserve banking) model is borne out of necessity and absence of needed Islamic literatures on Islamic economics as Chapra (2001, p: 46) revealed in his book, "Lag in the Development of Theory" of Islamic economic. Nevertheless, several Islamic literatures of Islamic economics are referenced in this model.

The mathematical representation of the model of this paper is represented as:

$$EIMGWC^1 = \frac{c + a1\,(PYOTDR) + a2\,(CRETMRDC)}{d + b1\,(PGR) + b2\,(UNEMPGR) + b3\,(BS) + b4\,(FS) + b5\,(ITS) + b6\,(CR) + b7\,(PR) + b8\,(NMD) + b9\,(GBC)}$$

[1]

Where

EIMGWC denotes the Efficiency of the Islamic Model of Growth and Wealth Creation;

PYOTDR denotes the Projectable Year of Total Depletion of Resources, which is derived by subtracting the Discovered Finite Nonrenewable Resources (DFNRR) from the Consumption Rate (CR) [DFNRR – CR] 1.; and the sum of equation 1added to the subtracted sum of the Recoverable Finite Nonrenewable Resources (RFNR) minus the Consumption Rate (CR) [RFNR – CR] 2;

CRETMRDC denotes the Capacity of Renewable Resources to meet Reasonable Demand and Consumption, which is derived by subtracting the Discovered/Explorable Renewable Resources (DRR) minus the Consumption Rate (CR) [DRR – CR] 1.; and the sum of equation 1 added to the subtracted sum of the Future Expansion and Efficiency of Renewable Resources (FEERE) minus Consumption Rate (CR) [FEERE – CR] 2;   [1a]

PGR denotes Population Growth Rate (arithmetic growth constant), is derived by dividing population (p) over time (t) [p/t];

UNEMPGR denotes the Unemployment Growth Rate;

BS denotes banking stability (Islamic Banking (Economic) Growth and Wealth Creation), is derived by Efficiency of Islamic Banking Products divided by the Size and Capacity of the market/economy divided by the Rate of Demand for Islamic Banking Products;

FS denotes Fiscal Stability;

ITS denotes International Trade Stability;

CR denotes Consumption Rate;

PR denotes Poverty Rate;

NMD denotes Natural and Man-made Disaster;

GBC denotes Government Budget Constraint (i.e. revenue generation i.e. tax (zakat));

A. Resources

Krautkraeme (2005, p: 12-13), in his paper "Economics of Natural Resources Scarcity: The State of the Debate" formulated three (3) measures "used as indicators of resources scarcity", namely: 1) price; 2) extraction cost; and 3) user cost, for "optimal resource extraction"; and is represented:

$$P = Cq + \lambda \qquad [2]$$

where

P denotes the extracted resource price

Cq denotes marginal extraction cost

λ denotes the user cost"

Krautkraeme, further explained that the "user cost captures the nonextractive economic cost of current depletion, including the forgone regeneration for a renewable resource and the forgone future use of a nonrenewable resource. It also includes any contribution of the resource stock itself to the net benefit of extraction—for example, a more abundant resource stock may decrease extraction or harvest cost."

Lara (2004, p: 23) in her "handbook": "Mathematical Modelling, Sustainability and Management of Natural Resources" stated the 1992 Rio Declaration mathematical model/formula to achieve sustainable development and reconcile ecology and economy as follows:

Water + fisheries + forestry + industries + pollution = sustainable development   [3]

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[1] IMGWC (i.e. efficient, effective and sustainable framework for growth, wealth creation and management)

Kolawole (2013, p:176, 189) in his study "ECONOMIC DEVELOPMENT PLANNING MODELS: A THEORETICAL AND ANALYTICAL EXPOSITION" explored several planning models used by several

economies. His findings shows certain models are "weak in their applicability", while "models like Leontief Input-Output model and the Linear programming model" are "relevant in efficacy to the development of economies via sectoral and inter-industry interdependence, aggregate demand, and growth in output.". I.e. represented as:

$$\sum_{j=1}^{n} xij + Y_i = X_i \qquad [4]$$

Where "Y_i is the sum of the flows of the products of the industry, to consumption, investment and exports, net of imports."

Equation (3) "shows the conditions of equilibrium between demand and supply. It illustrates the flows of outputs and inputs to and from one industry to other industries and vice versa. In the analysis of input-output, the system of equations" (3) "presents the conditions of internal consistency of the plan. The plan would not be feasible without them because if these equations are not satisfied, there might be excess of some goods and deficiency of others.".

With regards to equation 1 and 1a, I represent the model for resources as:

c + a1 (*PYOTDR*) + a2 (*CRETMRDC*)

$$[5]$$

B. Population

The following conditions for effective and reliable population forecast; and arithmetic/linear formula for population growth rate from the lecture note: "Lecture N0. Population Projection" of the Cal Poly Pomona: www.cpp.edu/~fjjanger/ce351/351_01.doc as follows:

the conditions:

- "Population forecasts depend on the amount and type of data available
- Population forecasts also depend on the resources available i.e. the amount of money that you are willing to spend.
- Forecasts are susceptible to error if for no other reason that nobody knows the future."

the formula:

$$\frac{dP}{dt} = K_a$$

$$P = P_1 + K_a (t - t_1)$$

$$K_a = \frac{P_2 - P_1}{t_2 - t_1}$$

$$[6]$$

P = population
t = time
K_a = arithmetic growth constant"

Yi, Zizheng, & Leng (p:3, 6), in their study "Study of Mathematical Models for Population Projection" examined three (3) models for population growth forecasting. Here, Malthus's model is represented as follows:

$$[7]$$

$$\begin{cases} \dfrac{dP}{dt} = \lambda P, \lambda > 0 & (2.1.1) \\[2mm] P(t_0) = P_0 > 0 & (2.1.2) \end{cases}$$

Where λ in equation (2.1.1) expresses population growth rate and it reflects a strong impact on how fast the population will grow. (2.1.1) indicates $\dfrac{dP}{dt}$ increases to infinity as t increases, i.e. the model population increases to infinity as time goes to infinity. (2.1.2) expresses the population size when $t = t_0$. Malthus's model voices such principles:

(1)   Food is necessary for human existence;
(2)   Human population tends to grow faster than the power in the earth to produce subsistence and that
(3)   The effects of these two unequal powers must be kept equal.
(4)   Since humans tend not to limit their population size voluntarily, population reduction tends to be accomplished through the "positive" checks of famine, disease, poverty and war."

With regards to equation 6 and 7, I represent the model for population as:

$$\overline{d \; + \; b1 \; (PGR)}$$

[8]

C. The Current Islamic Banking System Under Fractional Reserve Banking

Sani, Arfah, Meera &Aziuddin in their paper "Fractional Reserve Banking and Maqasid al-shariah: An incompatible Practice", used "logical deductions from Qur"an and Hadith to show how fractional reserve banking violates the objectives of shariah (maqasid al-shariah)"; and they further revealed that Fractional Reserve Banking (FRB)"is practiced by all commercial banks (Islamic and conventional)" which is against the "objectives of Islamic law (maqasid al-shariah)". Nevertheless, literatures and mathematical models of Islamic finance/banking is presented under the current system of FRB notwithstanding the Islamic Banking System Under The Gold Dinar (100% Commodity Backed Money) model that is presented under Section D. of this paper. Meera & Labrani (2009 p: 243-244) in their paper "Gold Dinar: The Next Component in Islamic Economics, Banking and Finance" submitted that "operating within the fiat money and fractional reserve banking system, the Islamic bank, just like its conventional counterpart, also does create money out of thin air, but lend out the money using Islamic principles though. Islamic banks are, therefore, also responsible for the numerous socio-economic problems caused by fiat monetary system, instead of being solution providers. The fiat money is also a major cause for inflation and destabilization of the current global economy because it allowed the United States to accumulate huge trade deficits which otherwise would have been impossible under the gold standard. Additionally, the introduction of fiat money into the economy in the form of debt (i.e. through multiple credit creation) has significant implications on the overall capital structure in an economy. Corporations and governments would ultimately fall into the debt trap.".

Siyanbola (2013: p.71-74) quoting Visser, et al, (1998) and Birnie (1958) in his study tiled: "ISLAMIC BANKING AS A PANACEA FOR ECONOMIC INSTABILITY IN NIGERIA" disclosed that religious establishments of Buddhisim, Christianity, Hinduism, Islam and Judaism; philosophers i.e. Aristotle, Cicero, Plato, Plutarch, Seneca; and economist i.e. Margrif Kennedy amongst others criticise usury (interest). Siyanbola concluded that interest free banking i.e. Islamic Finance "is a just financial system that promotes equity and income redistribution, it is also a veritable alternative framework that can protect Nigeria and the entire world from the economic meltdown and debt burden as it is a right step towards a desirable financial sector in the country."

Ascarya (2013: 8-9) quoting other studies in his study: "SOLUTIONS TO PREVENT FINANCIAL CRISIS IN ISLAMIC ECONOMIC PERSPECTIVE: ANP APPROACH", listed five (5) Islamic solution to financial crisis, as follows:

"1) behavior control, including education-*dakwah*, enforcement and supervision of regulation in Islamic market conduct, self-control, avoid debt, and encouragement of *infaq-sadaqah* (Chapra, 2008; Iqbal and Khan, 2004); 2) external control, including disaster-crisis management, fair international trade, capital flow management, Islamic free trade area, Islamic economic union, and international gold standard (Khan and Thaut, 2008; Ali, 2006-2007; Meera and Larbani, 2004; Ahmed, 2001); 3) good governance, including transparency, credibility, accountability, internal control, establishment of *hisbah* institution, and assignment of the right man in the right place (Othman, *et al.*, 2012; Smolo and Mirakhor, 2010; Khan, 2001); 4) stable monetary system, including prohibition of *ribā*, international single currency system with gold (backed) standard, Islamic narrow banking system, prohibition of *maysir*, securities should be asset backed, and debit card to replace credit card (Othman, *et al.*, 2012; Al-Masri, 2009; Obaidullah, 2005); and 5) sustainable fiscal system, including obligatory zakat system, redistribution of idle assets, Islamic tax system if necessary, balanced budget, inventory management of strategic commodities, and PLS domestic *sukuk* if necessary to finance infrastructure projects (Iqbal and Khan, 2004; Kahf, 2000; Oguz and Tabakoglu, 1991)"

Abdul Wahab, A. O. et al. (2014) in their paper "A comparative study of Islamic financial system and conventional financial system" gave a succinct comparison and distinction (i.e. that "it is obvious that Islamic financial institution offer more opportunity for Muslim to participate in Islamic financial market that complied with Shari'ah" and that the "emergence of Islamic financial market has benefitted the entire global economy which provide comprehensive Shari'ah compliance products") of Islamic banking to conventional banking system products as follows: a) deposits; b) financing and investments; c) overdrafts/credit cards; d) short terms loans; e) medium to long term loans; f) leasing; g) agricultural loan; h) housing financing; and i) investment.

Similarly, there are numerous literatures on Islamic Banking that are relevant to buttress the model presented herein. Nevertheless, further reference is made herein to Islamic Banking Products that makes Islamic Banking distinct and preferred choice. Amongst them are: Bai'al inah (Sale and Buy-back agreement), Bai'bithaman ajil (deffered payment sale), Bai'muajjal (Credit Sale), Musharakah (Joint Venture), Mudharabah (Profit sharing), Musawamah, Hibab (Gift), Ijarah (Lease (Ijarah Thuma al bai (Hire Purchase), Ijarah-wal-iqtina)), Qard Hassan/Qardul Hassan (Benevolent loan), Takaful (Islamic Insurance), Wadiah (Safekeeping), Siyanbola (2013: p 80-83). Furthermore, Murabaha (cost-plus financing), Salam (advance purchase), Bai bi-thamin ajil (deferred payment financing), Istisnaa (commissioned manufacture), Sukuk (participation securities (bond) (Ijara sukuk, Mudaraba sukak, Musharaka sukuk, Murabaha sukuk)), Lewis, (2007: p 51-59) "Handbook of Islamic Banking".

The mathematical representations of these models are as follows:

Inyat (1993: p 87-122) in his doctoral thesis "THEORY AND PRACTICE OF ISLAMIC BANKING IN PAKISTAN" developed a model of "interest free Islamic economic system using micro economic foundations for macro economic analysis." Inyat adopted the "the conventional utility maximization approach" that shows "that the marginal productivity of the lender and the borrower is similar in nature and analogous to western theories of fixed interest case." He further revealed that the "micro foundation" of his model analyzed on the "Keynesian framework" "replacing the institution of interest by Musharakah finance,…is operative on variable return on capital instead of fixed pre-determined return.". Inyat presented Musharakah "case" as follows:

$$Max\ U(C1)+ \propto U(C2)$$

[9]

Subject to:

$$C1\ = m1 + B - Q$$

[10]

$$C2 = f(Q) - S[f(Q) - Q] - B$$

[11]

Where S is the share of profit to the lender in the second period and is a function of Q such that S' (Q) > 0"
Inyat defines the constraint of the lender (bank) as:

$$Max\ U(C1)+ \propto U(C2)$$

[12]

Subject to:

$$C1 = m1 - Q$$

[13]

$$C2 = f(Q) + B - S\ [f(Q) - Q]"$$

Equilibrium in money market:

$$Md = f(Y,S)$$

[14]

Where $\frac{\propto M}{\propto Y} > 0$ and $\frac{\propto M}{\propto S} < 0$. In linear form thus

$$Md\ =\ Ky + IS$$

[15]

The supply of money is assumed to be determined by the monetary authorities and is exogenously given such that:

$$Ms =\ Ms$$

[16]

Inyat presented the "equilibrium in money market" as follows:

$$\overline{M3} = Ky\ + IS"$$

Novriana Sumarti, et al. (2015)in their paper "Some Problems on the Making of Mathematical Modelling of a Profit-Loss Sharing Scheme Using Data Simulation" enumerated "three main problems in the process of formulating the mathematical model" of the Profit-Loss Sharing Scheme (PLS) which are:
1) "providing the appropriate amount of data to be implemented in the model";
2) "determining the objective function for the optimization of the portion of profit share";
3) "determining the appropriate values of the parameters for certain types of traders"

The above named problems in the "process of making a mathematical model of micro-investments based on a musharakah PLS concept…implemented for low-income traders in a local traditional market.". Similarly, they discovered "a significant result in determining the appropriate values of the parameters that explain the potential capability of the traders in handling larger amounts of capital to be invested in order to achieve" their "main goal.". In the same vain, "a mathematical assessment on the robustness of profit and loss sharing (PLS) based contract against asymmetric information problems…." "show that PLS scheme has an inherent mechanism to overcome adverse selection and moral hazard problems. Specifically, it" was "shown that PLS contracts is relatively immune to the problems. This is due to the so called incentive compatible mechanism provided by PLS contracts. The proposed "a risk-pooling mechanism to seize the risk exposure."Bakhtiar, Sugema & Irfany (2014) "Mathematical Assessment on the Robustness of PLS Mechanism Against Adverse Selection and Moral Hazard Problems"

Meera& Abdul Razak (2009) in their paper "Home Financing through the Musharakah Mutanaqisah Contracts: Some Practical Issues" argued in their comparison of *al-Bay'Bithaman Ajil* (BBA) and the *Musharakah*

Mutanaqisah Partnership (MMP) contracts that the BBA was inefficient and "unislamic" in long-term contract.

Abd Rajak& Nurfadhlina (2014) in their paper "A Modification of Bai Bithaman Ajil Instrument through Musharakah Mutanaqisah: Fixation of Robust Optimisation into Rule 78" developed a mathematical model of the "Bai Bithaman Ajil (BBA)" which "is a financing instrument based on deferred instalment" that "is proven to be conforming towards Shariah as its ownership is shared between the bank and consumer."; and in their effort to make this product shariah compliant, they "schemed" this "new model in which the original model of Bai Bithaman Ajil is embedded with profit sharing ratio exist in Musharakah Mutanaqisah" as follows:

$$\beta = \frac{P+Un}{n} [17]$$

where,

β : Periodical payment of BBA contract

P : Principal

$n\ U$: Profit margin

n : Period"

Based on the Malaysian market of Islamic banking and those offered by banks globally, Abdul Halim & Hafizah (p:14-17)in their paper: "The Critique Of Islamic Hire Purchase Instrument And Its Improvement" developed a "better" mathematical model of the "Islamic hire-purchase instruments" on the principle of "profit and loss sharing" method "based on the musyarakah mutanaqisah principle" "in terms of Shari'ah compliance against existing formula". And this "improved model with an optimized sharing ratio is a pioneering work and is suitable to be used globally, especially in Malaysia, without doubt by Muslims.". Summary of their model as follows:
"

$$B^{pp} = \sum_{t=0}^{T-1} Pu_{t+1}(\omega)\theta_t^{pp}$$

[18]

and

$$B^{p} = \sum_{t=0}^{T-1} Pu_{t+1}(\omega)\theta_t^{p}$$

19]

Where

P	:	principal or lessor's investment
a_{t+1}	:	periodic principal payment at time interval $t+1$
X_t	:	lessor's ownership at time interval t
Y_t	:	lessee's ownership at time interval t
θ_t^{pp}	:	lessor's profit sharing ratio at time interval t
θ_t^{p}	:	lessee's profit sharing ratio at time interval t
B_t^{pp}	:	lessor's benefit at time interval t
B_t^{p}	:	lessee's benefit at time interval t
$u_{t+1}(\omega)$	:	profit rate at time $t+1$
r_f	:	risk-free rate

$$\{min\{\vartheta_t^{pp} : P_{\{}u_{t+1}(\omega) : \vartheta_t^{pp} \geq \frac{(X_0 - ta)r_f}{u_{t+1}(\omega)P}\} \geq 1\} : u_{t+1}(\omega) \in U\}$$

[20]

        "Based on equation" (20), "the optimize PSR gain through the highest probability of $u_{t+1}(\omega)$ given all $u_{t+1}(\omega)$ value entered fulfill the constraint. If any of the $u_{t+1}(\omega)$ from the $u_{t+1}(\omega)$ vector fail to fulfill the constraint, there will be no feasible set and thus there is no optimize PSR available. Thus," they "disparage the profit rate set as small as possible (detail refer to"[20]).

        Similarly, Abdul Halim & Hafizah (2013) in their paper "A Validation of Profit Sharing Ratio Determination Mathematical Model for Islamic Hire-Purchase Contract" validated the above model.

        Nadeem in his paper:"Islamic Business Contracts and Microfinance A case of Mudaraba" developed a model for Mudaraba, as follows:

        Profit Share of Microfinance program + Price of one Share from capital = Total Monthly Payment

[21]

        Amin, Hanudin et al. (2014) in their study "Willingness to Be a Partner in Musharakah Mutanaqisah Home Financing: Empirical Investigation of Psychological Factors" examined "effects of attitude, subjective norm and perceived behavioral control on the intention to be a partner in a musharakah mutanaqisah context" by extension of the Theory of Planned Behavior (TPB).

        Hasan (2012) in his paper "Mortgage contracts in Islamic home finance: Musharakah Mutanaqisah program vs. Zubair diminishing balance model" developed a model: the Zubair Diminishing Balance Model (ZDBM) that proves to be more efficient and resolve issues (i.e. "back door interest-taking that infests the current Islamic home financing") peculiar with the Musharakah Mutanaqisah Program (MMP).

        Yasok & Zakaria (2010, p:29-30) in their paper "Analysis of Profits Obtained from *Sukuk* Investment using *Ijarah* and *Musyarakah* Mutanaqisah Concepts" used two (2) mathematical models namely: 1) Ijarah Model and 2) Musyarakah Mutanaqisah Model and discovered "that the profit obtained under the musyarakah mutanaqisah model is higher compared to the one under ijarah.". Thus, they opine that the "musyarakah mutanaqisah principle should be seriously considered as an alternative to other Islamic concepts already available in the sukuk market.". The above named mathematical models as follows:

Ijarah Model

"Profit = Proceed at Future Value – Proceed at Present Value

[22]

$$\text{Price} = 100\left(1 + \frac{r}{200}\right)^{-t} + \sum_{k=1}^{t} \frac{c}{2}\left(1 + \frac{r}{200}\right)^{-k}$$

[23]

$$\text{Proceed at Present Value} = \frac{\text{Redemption Value} \times \text{Price}}{100}$$

[24]

$$\text{Future Value} = \sum_{k=1}^{t-1} \frac{c}{2}\left(1 + \frac{r}{200}\right)^{k-1} + 100$$

[25]

$$\text{Proceed at Future Value} = \frac{\text{Redemption Value} \times \text{Price}}{100}$$

Where

c	Coupon rate
r	Yield to maturity rate
t	Periodic Payment number;
N	Number of semi-annual lease payments between the issue date and maturity date

Musyarakah Mutanaqisah Model

$$U_t = k\left\{100[(1+r)^t - 1] - B\left(\frac{(1+r)^t - 1}{r} - t\right)\right\} \text{where}$$

[26]

$$B = \frac{100k\left[(1+r)^{10} - 1\right] + 100}{10(1-k) + k\frac{(1+r)^{10}-1}{r}} \qquad C_t = rk\left(100(1+r)^t - 1 - B\frac{(1+r)^t - 1}{r} - t\right)$$

[27]

Where

k Profit-sharing rate as agreed by investor and issuer
r Profit rate on single semi-annual payment
B The amount of periodic payment by the issuer to the investor
Ct The amount of semi-annual profit for investor at the end of t - 1 period"
Ismail&Arshad (2010) in their study:"Pricing on the Islamic Banking Products" examined the current pricing system of Islamic finance products under the "KLIBOR or LIBOR or the prevailing inter-bank fund rate", and concluded that it is imperative to develop a better pricing mechanism that would yield an equitable return to parties in accordance with the shariah.

And despite fact that "Islamic finance remains a demand-driven market, with scarce supply, still hampered by a limited range of Islamic financial centers and their variously regulated environments", market for Islamic finance is increasingly growing at a faster rate than projected i.e. largely due to the "uncertain recovery elsewhere in the world's financial markets"; and assets of Islamic financial institutions is expected to exceed the $1.4 trillion and, sustain "double digit growth" in the next two to three years. (Standard and Poors' 2014 Outlook on Islamic Finance).

Bitar in his paper "BASEL III REQUIREMENTS AND THE STABILTY OF ISLAMIC AND CONVENTIONAL BANKS" used the Z-score "the adjusted return on assets and the adjusted return on equity as indicators of individual bank stability to proxy the impact of Basel III framework on the stability of Islamic and conventional banks. Using a panel of 11487 conventional commercial banks and 146 Islamic banks across 76 countries during the 2005 to 2011 period.". His analysis compared "the impact of capital, liquidity and leverage requirements on the stability of the banking sector by emphasizing the differences and the similarities between Islamic and conventional banks.". His findings that:

The "capital ratio affects positively the Z-score of conventional but""no evidence for a significant relationship between capital ratio and the stability of Islamic banks. As for sensitivity checks, the two others risk adjusted measures show" "that Islamic banks with higher capital ratio have lower adjusted return on assets and lower adjusted return on equity in comparison with conventional banks. These results indicate that capital risk relationship is not the same between Islamic and conventional banks."

The "Liquidity ratio is positively correlated with the Z-score and the adjusted return on equity of Islamic banks in comparison with conventional banks but not for the adjusted return on assets. Therefore, Islamic banks with higher maturity match have higher Z-score and higher adjusted return on equity in comparison with conventional banks."

There is "a positive and significant relationship between liabilities to assets ratio and the adjusted return on assets of Islamic and conventional banks but not for Z-score. The results also indicate that conventional banks with higher leverage have lower Z-score and higher adjusted return on equity.". Furthermore, his findings shows "that there are important variations across countries and levels of different quantiles."

Bitar further considered "a set of proxies to investigate the impact of capital, liquidity and leverage on the return on assets, return on equity, net interest margin and cost to income ratios of Islamic and conventional banks." He found "that banks with higher equity to deposits have higher return on assets and lower cost to income; banks with higher equity to net loans have lower return on assets, lower return on equity and higher cost to income." And "as for liquidity", he found "that Islamic banks with higher liquid assets to deposits have higher return on assets and higher net interest margin in comparison with conventional banks; Islamic banks with higher loans to assets have lower return on assets, higher net interest margin and lower cost to income in comparison with commercial banks. For leverage," he found "that Islamic banks with higher equity to assets ratio have higher return on assets, higher net interest margin and lower return on equity in comparison with commercial banks; Islamic banks with higher liabilities to total assets have lower return on assets, lower net interest margin and lower cost to income in comparison with conventional banks.". Though there were limitations in his study, he "did not include a powerful variable to measure the impact of the financial crisis."; he "did not split" his "sample between large and small banks to study the relationship between bank size, regulation and financial stability."; and "the time period" was "very short.". Furthermore, he found "a lot of complexity when analyzing and considering" his "main variables especially that Bankscope data base do not take into account the particularities of Islamic banks.". And he suggested that future research work should "be intensified when it comes to Islamic banks regulatory framework. Studies should be deepening when adapting the Basel III guidelines on Islamic banks. Islamic regulatory organizations are invited to use Islamic financial principles and concepts to create their own structure of ratios rather than imitating Basel framework.", he added.

Čihák &Hesse(2008) in their study:"Islamic Banks and Financial Stability: An Empirical Analysis" used the "z-score as a measure of stability" of "individual Islamic and commercial banks in 18 banking systems with a substantial presence of Islamic banking" and, they discovered "that (i) small Islamic banks tend to be financially stronger than small commercial banks; (ii) large commercial banks tend to be financially stronger than large Islamic banks; and (iii) small Islamic banks tend to be financially stronger than large Islamic banks, which may reflect challenges of credit risk management in large Islamic banks". In addition, they found that "market share of

Islamic banks does not have a significant impact on the financial strength of other banks.". They further presented that their adjustment for "differences in variables such as bank size, the structure of the balance sheet, and system-wide variables," "reflect characteristics of Islamic banks. A plausible explanation for the above findings is that it is significantly more complex for Islamic banks to adjust their credit risk monitoring system as they become bigger. Given their limitations on standardization in credit risk management, monitoring the various profit-loss-arrangements becomes rapidly much more complex as the scale of the banking operation grows, resulting in problems relating to adverse selection and moral hazard becoming more prominent. Another possibility is that small banks concentrate on low-risk investments and fee income, while large banks do more PLS business.". Also, they cited Yudistira (2004) finding that merger of "small Islamic banks should be encouraged from an efficiency viewpoint"; and in addition, their findings "suggest that to reap these efficiency benefits, appropriate attention needs to be paid also to prudential risks, which—other things being equal—tend to be greater for larger Islamic banks.". Though they hold that their discovery "should be viewed as preliminary, given the numerous caveats relating to the cross-country data on Islamic banks. These caveats include less than complete coverage of the database, reliance (in part) on unconsolidated statements, and the fact that" they "focused on fully-fledged Islamic banks and not on Islamic "windows" or Islamic branches operated by some commercial banks. Furthermore, data limitations prevented" them "from taking fully into account all aspects of Islamic financial contracts, for example, by distinguishing between PLS and other investments."

Similarly, Said (2012 p: 180-181) in his paper: "Efficiency in Islamic Banking during a Financial Crisis-an Empirical Analysis of Forty-Seven Banks" utilized the "on-parametric technique", "Data Envelopment Analysis (DEA)" and "*t* test" to test "the hypothesis" on the efficiency of Islamic banks during the 2006 and 2009 financial crisis; and his study concluded "that large Islamic banks showed an increase in efficiency during 2006 to 2008 and decline during 2009. However, small to medium Islamic bank sample started at a lower level of efficiency. In addition, the results showed that the efficiency of Islamic banks operates in Middle Eastern and non-Middle Eastern Counties have increased during an economic crisis.".

Furthermore, Said used the Data Envelopment Analysis (DEA) model; citing Farrell's multiple outputs and multiple inputs to calculate the efficiency of banks, the formula as follows:

Efficiency = the weighted sum of inputs/the weighted sum of outputs

[28]

Said further cited Yudistira's DEA analysis methodology study of the N DMUs in the banking industry with all the inputs in a sample being represented by *n*, and the outputs represented by *m*"; and "the efficiency of banks" calculated with the formula as follows:

$$e_s = \frac{\sum_{i=1}^{m} U_i Y_{is}}{\sum_{j=1}^{n} V_j X_{js}}, \qquad i = 1,...m, \quad j = 1,...,n,$$

[29]

Where
i = output
j = input

y_{is} = amount of the *i* (output) produced
s = bank

x_{js} = amount of the *j* (input) used by the bank

u_i = output weight

v_j = input weight"

Ramzanet al, (2012) in their study "Growth of Islamic Banking in Pakistan by Using AID Model" submit that Islamic banking has the potential to grow and contribute toward the growth and stability of the economy; using the AID model (Assets, Investments and Deposits) as follows:

GIB= c+b1(ROA)+ b2(IV)+ b3(DV)+ b4(SC)

[30]

where
GIB denotes Growth of Islamic Banking (GIB)
ROA denotes Return on Assets
IV   denotes Investment Volume
DV denotes Deposits Volume (DV)
SC denotes Shariah Compliance"

With regards to equation 9 through equation 30, I represent the model for bank as:

$$\overline{\text{d} + \text{b4}\,(BS)}$$

[31]

D. Islamic Banking System Under The Gold Dinar (100% Commodity Backed Money)

As stated in the preceding chapter, Ascarya enthused an international gold standard with an international single currency system backed by gold. "Monetary stability…: various models for stability-oriented monetary system (gold standard, commodity currencies, one hundred percent money, monetary rules, etc.)" Nienhaus (2010 P:75-96). Similarly, Meera & Labrani (2009 p: 237-270) in their paper "Gold Dinar: The Next Component in Islamic Economics, Banking and Finance" argued in support of the gold dinar; and they developed a mathematical model "i.e. a non-linear optimization problem to determine an efficient trading matrix that requires the minimum gold to settle the trade balances among participating countries. The solution the problem also provides each country with a target gold holding for the trading period." And the "overall benefits are monetary stability, justice, increased trade and economic prosperity with minimum international reserve, i.e. things that are very much at stake in the current highly 'overblown,' vulnerable global fiat monetary system.", they added.

Salmy (2012 P:1014-1023) in his study "Study of Implementation Gold Dinar as Currency" listed inadequate gold reserve as amongst hindrance to implementation of the gold dinar as currency. Just as this is thought to be the challenges that lead to the abandonment of the gold standard.

Meera & Labrani (2009 p: 248) submit that "in the gold payment system, gold is to be used as a medium of exchange and as a unit of account, in the place of the national or international reserve currencies, for settling international trade balances. The price of export and imports are to be quoted in weights of gold. It is important that in this structure, gold itself is used for pricing and not national currencies backed by gold, for otherwise it would not then be different from the gold standard of the past. As…asserted earlier, instruments backed by gold are vulnerable to easy abuse, which brought about the failure of the gold standard."

With respect to the above submissions, a viable system (model) can be built with the fusion of gold dinar (gold money)with other commodity money such as precious metals: silver, bronze, platinum, diamond; and commodity money such as food and agriculture: wheat, rice, etc which are economical to address the issue of "inadequate reserve of gold" leading to i.e. credit limitation and economic stagnation; notes and coins for transactions in lower denominations should be issued, while gold and other high-valued precious metals i.e. diamond, platinum for transactions in higher denominations should be issued under the gold dinar (gold money) with further backing with commodity money such as food and agriculture: wheat, rice, etc. For the purpose of achieving a sound and sustainable economic system with consideration for variables: resources, population, natural and man-made disaster in this model.

Thus, Islamic banks have to 100% back their deposits *dt* by the fusion of gold dinar (gold money) *fgt*:

$$dt = fgt$$

[32]

E. Government

1. Monetary Policy

The central bank performs its statutory functions i.e. "directly controls the quantity of money" and credit; non-interest lender of last resort.

Money

Contrary to the method of money creation/expansion under the fractional reserve banking system and, gold standard system, the aforementioned fusion of gold dinar (gold money) reserve shall be increased by the principle of "revaluation" of gold dinar (gold money) in reserve and in circulation taking into consideration of the finiteness (i.e. with regards to depletion of reserve of precious metals and other nonrenewable resources) and limitation (i.e. with regard to agricultural growth on land) of reserves of commodities, depending on the reasonable and sustainable growth and demand for money and credit in the economy.

The model as follows:

The percentage (%) of revaluation of the gold dinar (gold money) = Current reserve of gold dinar (gold money) and other commodity money in circulation ✕ Known quantity of gold (gold money) and other commodity money in circulation ✕Known quantity of gold and other commodities in the market ✕ Reserve and Recoverable reserve of gold and other commodities ✕ 100% / Reasonable and sustainable growth and demand for money and credit in the economy.

Credit

Meera & Labrani (2009 p: 251) citing Hassan & Choudhury (2002) submit that "100 percent reserve requirement negates money creation through multiple credit creation and, thereby, harmonizes the monetary sector with the real sector.". With this submission, control of credit can be achieved with a slight variation of the formula for money above. Taking into consideration of several Islamic banking/financial products i.e. sukuk (Islamic bond).

2. Prudential Policy

As indicated in Bitar's paper "BASEL III REQUIREMENTS AND THE STABILTY OF ISLAMIC AND CONVENTIONAL BANKS" that "Islamic banks regulatory framework" should use "Islamic financial principles and concepts to create their own structure of ratios rather than imitating Basel framework.". This submission highlight the challenge of developing prudential policy for Islamic banks under the Basel framework. Similarly, Chapra(p:342)in his paper "Challenges facing the Islamic financial industry" submitted that "implementation of the guidelines provided by the BCBS" is essential in developing prudential policy for Islamic banks. Nevertheless, Benes and Kumhof in their paper "The Chicago Plan Revisited" (2012 p:40) showed that prudential policy can be achieved when "banks exclusively finance investment projects. In this case prudential policy can focus on limiting volatility in the amount of approved investment projects. Because the level of investment can be affected by both the price and the quantity of credit, it is preferable to target neither of those variables through the prudential rule, but rather to target the quantity of investment directly.", though this submission is under the proposed "Chicago Plan", but it can be inferred that Islamic banking products i.e. Musharakah (joint venture) would complement with effort of Islamic banking regulator in enforcing prudential policy in Islamic banks. Also, with regards to the workings of the gold dinar (gold money) presented above.

3. Fiscal Policy

In conventional economies, revenue and expenditure is used as the fiscal policy of government to control the economy which impact tax rates, interest rates and government expenditure all aimed at control of the economy; and the two (2) major tool of fiscal policy are: taxation and government expenditure which the government imposes to generate income from the people and, government expenditures is in form of salary to government employees, defense, infrastructure, social security benefits; and government has control over taxes and government spending –the government uses fiscal policy to increase the quantity of money available to the populace by reducing tax and increasing its spending; and government uses fiscal policy to reduce the quantity of money available to the populace by hiking tax and reducing its expenditure. And government resort to borrowing money from the i.e. capital market and through the issuance of bonds to finance its capital projects when it tax revenue are insufficient and which in turn leads to public debt; this is referred to as deficit spending which the government tries to remedy through developing and imposition of alternative/additional tax regime as submitted by Hafez (2011 p: 17) in "ZAKAT the Islamic Taxation". Here, it is discernable and natural that Islamic economic system apply the above principle through Zakat (compulsory tax) and various Islamic finance product i.e. sukuk. Thus, revolutionizing its revenue generation through i.e. zakat to address its budget constraint is imperative, as tackled in the following subsection of this section.

And as Inyat (1993 p:108-109) submit that government fiscal policy can be achieved through adjustments in its expenditure in such a manner as to promote "full employment"; equitable distribution of wealth and ensuring that its production sector work adequately to balance consumption, gross domestic product (GDP) and expenditure. Complementarily, the central bank under the proposed gold dinar (gold money) system can ensure "fiscal discipline" by its aforementioned policy to control money and credit in harmony with reasonable proposal of government expenditure to promote sustainable welfare, growth and development. Inyat's model goes thus:

$$G = Go + f(Yf - Y)$$

[33]

Where Go is exogenous government expenditure and expression $(Yf - Y)$ is the difference between full employment output and the equilibrium level of output produced in the economy, such that $\frac{\partial G}{\partial Y} > 0$"

4. Government Budget Constraint

In the case of shortage of revenue generated from i.e. zakat to foot the reasonable budget of the government (bait ul-mal (Treasury)), Islam allows the government to impose an "estimated tax" (i.e in light proportion of the project to be undertaken by the government) on the "wealthy Muslims" (i.e. taxes on "surplus after the usual subsistence") -Al-Rashta (p: 37-42) in his paper "Economic Crises: Their reality and solutions from the viewpoint off Islam". As added, i.e. income tax, custom tax, are forbidden in Islam, while tax on buried treasures (rikaz), head tax (jizya), land tax (ushr, kharaj) are permitted in Islam. Hafez (2011 p: 107) elaborate "Permitted Taxes and Charges in Islam": Tariffs and Customs; Export tariffs; Duties; Toll; Fees and license. Notwithstanding, tax policies i.e. income tax on corporate bodies, preferential custom tax, corporate income tax for certain government research and development bodies in Islamic countries i.e. Kuwait – Al Matar, Fatima S. (2011, p: 99-103) "The Role of Taxation in a Post-Oil Kuwait". Today, most conventional economies implement hike in tax on the "rich". Similarly, the central bank under the proposed gold dinar (gold money) can supplement any foreseeable budget short through the aforementioned policy.

F. Conclusion

This model with its variable is assumed to have covered almost all aspect of the economy which is essential in planning and development of a just, stable and sustainable economic system for growth and wealth creation.

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