



Islamic macroeconomics?

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Abstract

Purpose – The paper aims to offer a new perspective on the strictly microeconomic nature of all of Islamic economics. Writers in this field continue to work in the mainstream tradition without noticing the micro-interface of the theoretical nature of Islamic economics. This paper aims to address this issue.

Design/methodology/approach – The paper provides a comparative study of received literature in the history of economic thought and contrasts the ethical foundations of Islamic economics from the mainstream dichotomy between microeconomic and macroeconomic parts.

Findings – There is a cogent microeconomic foundation of Islamic economics for the economy-wide treatment of ethical economic issues and problems including the policy framework.

Research limitations/implications – This is a theoretical exploration. The empirical part is yet to be expanded upon.

Practical implications – The paper has practical implications for graduate students on policy formulation and economic theorizing, by making them analytically aware on the extensive relevance of microeconomics in the building block of ethical content of economic theory, policy and institutions.

Originality/value – The paper presents original thinking along lines of microeconomic foundations of macroeconomic theory from the social and ethical vantage points of Islamic economics and finance that writers in this field should not ignore. The paper is meant for serious students and academics of economic theory and ethical social policy embedded in the economic treatment.

Keywords Microeconomics, Macroeconomics, Economic theory, Islam

Paper type Research paper

This paper extends the argument posed by Choudhury (1991, 1995a, 1997, 1998) in his series of papers questioning first, the validity of Islamic economics and finance as a mainstream economic development as it has been to date, and particularly, the so-called idea of macroeconomics and the duality between microeconomics and macroeconomics in current Islamic economic studies. The basis of the argument rejecting the economic methodology demarcating microeconomics and macroeconomics, which came to be accepted in Islamic economics, is the impossibility of such duality to exist and an altogether new premise to be studied in the midst of the following three interacting, integrating and dynamic evolutionary perspectives: the moral guidance (Ilm) on the premise of unity of knowledge; The source of Islamic Law; and the cognitive world-system established by its interaction and dynamic convergence according to unity of knowledge in the framework of Islamic Law. Such interactions followed by dynamic convergence and subsequent evolutions are formed in the milieu of an embryonic discursive process. We refer to such an embryonic discursive process as the process of extensive participation between individual, society, institution and the functional order of causal relations.

This embryonic Shuratic process, derived from the Qur'anic terminology of the Shura (consultation) is not limited to the human political and institutional process alone. Beyond these the premise of the Shuratic process combines the Qur'anic verse



(42:38) with the verses (42:49-53) to make it an overarching relational process of knowledge formation causally linked to the discernment of the signs of god in the material and cognitive domains. These signs may be evident or hidden but relational with the human faculty or altogether hidden and relating in subtle ways with human existence. The Qur'an declares of the animal, insect, vegetation and the innate domains (shadows), all paying abeyance to god (Tasbih).

The Shuratic process is the unraveling of the relationship in the Tasbih by the process of interaction, integration and creative evolutionary in the human domain. The IIE is thus equivalently the Shuratic process as the medium of forming and continuing unification across all relational systems by the unique Principle of Unity of Knowledge. When this principle is related to the world-systems there comes about the particular understanding of unity of the knowledge-induced worldview in systems. The epistemology of unity of knowledge thus reflects itself on the framework of systemic unity.

We need therefore to examine the nature of Islamic economics as an interdisciplinary paradigm that explains interaction over the domains of moral guidance (Ilm), laws and the formative world-systems according to such discursive impulses and processes (Shuratic). These interactive systems as processes have remained outside mainstream economic analysis. The latter, and not the epistemological worldview of unity of knowledge, was imported into Islamic economics. This imitation rendered Islamic economics (and now Islamic Finance) incapable of being any different from mainstream economic ideas. This question of interaction, integration and creative evolution (IIE) between diverse issues of the social, economic and scientific systems in accordance with the epistemology of unity of knowledge (oneness of god = unity of divine knowledge), that is particular to the Islamic worldview, is fundamental in the understanding of the place of economic behavior and transformation within embedded human systems. Such a process transcends from the level of the individual and family to society, markets, institutions and the global order (Choudhury *et al.*, 2003).

Objective

The focus of our paper will be on this: systemic unity of knowledge, and within it, meanings of ethics and morality are derived from the epistemological premise of unity of knowledge. They establish circular causality in an essentially behavioral model that lends itself to an interactive, integrative and dynamic framework (IIE-process = Shuratic process) of preference aggregation. Such a behavioral premise is not the domain of macroeconomics. Interactive aggregation of dynamic preferences is unknown both in microeconomics and macroeconomics. Yet it forms the basis of preference formation in Islamic economic behavior through the milieu of the Shuratic (discursive) process.

Section 1 will commence with a critique of the literature on economic theory in general. The criticism here is regarding the absence of preference formation in either microeconomics or macroeconomics that could describe a process towards formulating a dynamic theory of economic policy. The section will close with a general criticism of macroeconomics that has failed to integrate in its methodology both Keynes' dream of making economics as a handmaiden of ethics and values emulating Moore's (1903) *Principia Ethica* and its Keynesian methodological failure.

Section 2 gives the formulation of the dynamic preference formation basis of Islamic socio-scientific reasoning according to the essence of unity of knowledge in systems. How is economic aggregation explained in terms of such dynamic preferences? This will be the principal focus of the building block of the theory of dynamic preferences in the framework of the epistemology of unity of knowledge *vis-à-vis* the IIE-process or equivalently the Shuratic process.

Section 3 develops an ethico-economic general equilibrium model for treating dynamic preference aggregation in the context of a particular example of money and real economy linkages by circular causation arising from the epistemological methodology of unity of knowledge.

Section 4 gives policy perspective on the use of a general ethico-economic model of the economy with dynamic preferences and aggregation pertaining to the methodology of the Shuratic process. The particular policy-theoretic case of money and real economy linkages is treated using the methodology of unity of knowledge in terms of complementarities among systems of variables.

Final section is the conclusion addressing the questions: What have we learned from this paper on the endogenous ethico-economic behavioral aspects of preference aggregation in economic theory in the light of the epistemology of unity of knowledge? What are the policy and applicative perspectives of unity of knowledge in the micro-money and real economy linkages within the 100 percent-RR?

1.

We do not intend to take an exhaustive critique of macroeconomics or economic theory in this section. Our focus is narrow. It is to criticize the nature of preference aggregation in economic theory and its absence in macroeconomics that renders both of these fields incapable of explaining the endogenous role of ethics and morality in the inherent methodologies. Yet this critique is not to dispel the serious effort that the best of the social and economic epistemologists have launched to address the topic of ethics in economic theory.

Problem of preference aggregation in economic theory

In this respect in economic theory, incorporating both microeconomics and macroeconomics, Adam Smith thought of introducing natural liberty within human behavior in market exchange (Sen, 1990). But the Smithian transition from *The Theory of Moral Sentiments* to the *Wealth of Nations* could not sustain the endogenous role of human sentiments in the presence of the invisible hands of market exchange, within which the natural liberty was to work to make man free. Consequently, the restrictions of the moral order could not interfere with market preferences (Coase, 1994).

Subsequently, the transmission of utilitarian ethics into institutionalism caused a lateral aggregation of individual preferences formed by self-interest and methodological individualism to reflect the preference of institutions and governments. Today this is the perspective upheld by public choice theory (Buchanan and Tullock, 1999). Institutions in economic theory imitate the self-interested behavior explained by the lateral aggregation of groups and individuals. The meaning of utilitarian ethics in such a preference aggregation is exogenously introduced and never changed except monotonically (Hammond, 1987).

Since time is an independent variable in neoclassical economic theory the preferences depend on time as datum, wherein ethical induction on preferences affect in predictable ways. This underlying assumption on preferences is necessary to establish the long-term steady-state nature of neoclassical equilibrium and optimization methodology. On the other hand, complex preference behavior would lead to disequilibrium states that distort price relatives to the extent that no predictability can be maintained. These disparate results are true of both perfect and oligopolistic competition.

Next, at the level of classical and neoclassical macroeconomic theories the aggregation of utilitarian preferences using utility functions becomes non-functional. Yet the marginal substitution principle between competing alternatives prevails in the aggregate production function in factor inputs that are aggregates not in the sense of firm-specific lateral aggregation. The demand functions of such aggregate factor inputs are generated either by survey of firms or by estimation using derived factor demand functions. In the latter case, aggregate wage/rental ratio and the demand for capital function are estimated *ad-hoc*.

From the above two kinds of approaches to preference aggregation we note the following nature of any ethical induction in economic theory:

Firstly, the predetermined or monotonic nature of preferences in neoclassical economic theory causes insensitivity of ethics to state variables. That is, the question as to how ethics change preferences out of neoclassical marginal substitution hypothesis into a pervasively complementary nature of resource allocation cannot be answered. Likewise, attained values of the state variables cannot change behavior relating to the ethics of complementary resource relations. Only the principle of marginal substitution prevails. Without this key postulate of marginal substitution in resource allocation it is impossible for relative prices to exist in all of economic theory.

Secondly, the aggregate nature of productive factors based on survey and estimation as mentioned above, carries along the datum of the exogenous role of ethics. No fresh demand is made to reframe the role of endogenous or systemically interactive ethics in the neoclassical economic system except by means of perpetuating at large the singular assumption of marginal substitution principle between competing alternatives. This is also the underlying assumption for the neoclassical economic states of equilibrium and stability in resource allocation.

The uniqueness of marginal substitution between alternatives in the state of optimal resource is found in all of economic theory. In Keynes and Keynesian macroeconomics the same postulate enters from the side of savings and spending, hence capital and output, and money and the real economy. Let us explain these points briefly first. They will be taken up in greater details later on in this paper.

Keynes' aggregation problem and its neoclassical economic roots

Keynes consistently thought of saving in all its forms as an economic withdrawal and thus a de-multiplier to the growth of output. Spending was an injection and thus favorable to the growth of output. Consequently, the two sectors one supported by saving and the other supported by productive spending in all its forms, form competing marginal substitutes of each other. While this is overly emphasized in Keynesian economics, what is worthy of note is the particular understanding of the

relationship between saving, capital formation and output over time. The neoclassical and classical roots of Keynes' thought relent toward the marginal substitution principle at the aggregate level of economic analysis. Note that the substitution principle is very damaging for the saving hypothesis. In neoclassical economic theory saving forms the foundation of capital accumulation. Interest income derived from saving over time is the source of wealth formation. In Keynesian thought spending and the real economy are the sources of output and hence wealth formation.

Does saving generate optimal output over time? Why do we say that saving is a perpetual withdrawal although it is argued that savings convert into investment and spending in course of time? The fact of the matter is that saving like spending occurs at each and every moment of time in the onward life of the economy. In this context we formalize as follows:

Let Y_0 denote GDP at time $t = 0, 1, 2, \dots$; s_t denote saving ratio at time $t = 0, 1, 2, \dots$; g denote growth rate of GDP at time $t = 0, 1, 2, \dots$.

Disposable income after saving at time $t = 0$ is $Y_0(1 - s)$, which increases to national income Y_1 at time $t = 1$. $Y_1 = Y_0(1 - s)(1 + g)$. Likewise, $Y_t = Y_0(1 - s)^t(1 + g)^t$.

Now consider,

$$\frac{\partial Y_t}{\partial s} = -tY_0(1 + g)^t(1 - s)^{t-1} < 0 \quad (1)$$

$$\frac{\partial Y_t}{\partial g} = tY_0(1 - s)^t(1 + g)^{t-1} > 0 \quad (2)$$

The results (1) and (2) are true irrespective of a moment of time and in the continuous sense. Besides, the argument that a higher volume of savings would grow into more resources for investment in the future contradicts the fact that at any moment of time the volume of savings is a resource withdrawal. This equivalent amount of potential resource could otherwise have been used to perpetuate economic growth, and thereby, development and social well being.

What is the ethical consequence of the marginal substitution between saving and spending? That is, also between the financial economy and the real economy? While we will address this substantive question later on, here we simply point out that Keynes saw in under full-employment equilibrium an unethical problem, which he wished to solve through the presence of government policies to borrow and finance resource mobilization (saving = investment) to bring the economy to its full-employment level and he saw this to happen at the lowest possible rate of interest (low level liquidity trap). Thus if an economy is to be sustained under full-employment level of equilibrium, the ethical issue is to mobilize financial resource continuously and fully into productive spending. O'Donnell (1989, p. 164) writes on Keynes' ethical vision relating to ethics and economics: "Keynes' goal was the development of an ethically rational society consciously tending towards higher levels of goodness; and economics, like all moral sciences, was an instrument in its attainment". Keynes' full-employment state attained through productive spending as opposed to savings as withdrawal was one such envisioned state of ethical relationship in and with economics.

The supply price of capital

The context of duality between the two sectors and thus markets, namely the financial market with saving as the dominant factor formed by interest rate, and the real economy with spending as the dominant factor mobilized by profitability, now underlie the definition of the supply price of capital in such a dual economy. Since cash-flow as output is now formed in this dual economy, the true present-valuation of cash-flows as the supply price of capital in macroeconomics ought to use the relative discount rate of $(r/i, \text{ or } i/r)$, where r denotes the rate of return in the real economic ventures; i denotes the rate of interest in savings.

Besides, because of the marginal substitution between these kinds of activities in Keynes, the same postulate can be reflected between two equivalent diagrams (not shown). In one diagram, the two axes would denote r and i , respectively. In the other diagram, r would correspond with the present value of cash flows generated by real economic activity represented along the corresponding axis. i would correspond with the present value of cash flows generated by savings represented along the corresponding axis. The present value of cash flows linked with r is discounted by the relative price (r/i) , since this relative acts as an opportunity cost for the real sector. The present value of cash flows linked with i is discounted by i/r . In both cases the discount factor denotes marginal substitution of the two competing alternatives, namely i and r , equivalently saving and spending or the financial sector versus real economic activity, respectively. Such a marginal substitution postulate is derived from the neoclassical foundation of Keynesian macroeconomics.

What is all the more unresolved is the role that endogenous human capital plays in the production function (Romer, 1986), even when diminishing returns to scale is not assumed in the aggregate production function. What results then is a trajectory of substitutes (gross or imperfect) linked with the positive effect of human capital on the productive factors. Yet on each of the production possibility surfaces so induced by human capital, the combination of the productive factors lie along a surface (trajectory) that shows marginal substitution between the competing factors. The consequence is once again one of limited and not pervasive complementarities between the variables. The reproduction of human capital in terms of its endogenous relation with factors perpetuates the marginal rate of substitution between the factors (Turnovsky, 1995).

Some quantitative implications of the $(r/i, i/r)$ marginal substitution result

Let D_0 denote dividend payment on bonds at time $t = 0$, whose coupon yield is the rate of interest i . Let g_R denote the growth rate of dividends arising from real economic activity. Let g_F denote the growth rate of dividends arising from financial activity. These two sectors exist in competitive duality with each other.

According to our argument revolving around the (r/i) and (i/r) discount rates for the sectors dominated by real economic and financial activities, respectively, the present values of cash flows are given by,

$$PV = \int_0^{\infty} D_0 e^{-(i/r - g_F)t} dt = D_0 / (g_F - i/r) > 0, \text{ with } g_F > (i/r), \text{ i.e. } i < g_F/r \quad (3)$$

for cash flows arising from the financial economy.

Expression (3) yields the following result,

$$\frac{dPV}{di} > 0; \quad \frac{dPV}{dr} < 0 \quad (4)$$

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for cash flows arising from the financial economy.

Expression (5) yields the result,

$$\frac{dPV}{di} < 0; \quad \frac{dPV}{dr} > 0 \quad (6)$$

Expressions (4) and (6) show the trade-off between i and r in respect to resource allocation in the financial and real sector duality according to the marginal rate of substitution. This is yet another way of stating that in neoclassical roots of macroeconomics the financial sector and real sector remain competing rather than complementary and with their own versions of prices and returns. Through the trade-off between i and r financial resources get withdrawn from the real sector into the financial sector and vice-versa.

Conclusion on ethico-economic perspectives in relation to Keynesian macroeconomics

Once again we find that the ethical question of resource allocation is neutralized by the marginal substitution principle of neoclassical economics, which has pervaded all of economic theory at the micro and macro levels. The marginal substitution principle negates the possibility for pervasive complementarities leaving only local and temporary complementarities, as in the case displayed by the Slutsky equation (Henderson and Quandt, 1971). Marginal rate of substitution, steady-state equilibrium with or without technological change and time-dependence of the state and policy variables and optimization are coterminous conditions satisfying the underlying assumption of scarcity and economic rationality in resource allocation. This is true at the microeconomic level with respect to the maximization of constrained utility and production function. It is also true at the macroeconomic level for aggregate production function.

The most debilitating consequence of the neoclassical marginal substitution postulate is its silence on the process of continuously forming knowledge out of interaction between the productive factors while relating endogenously with the knowledge or information variable. The same consequence makes neoclassical macroeconomics benign of endogenous policy and institutions. Exogenous preferences underlie all of these formations. Hence no novelty is generated in the resource allocation trajectory along its path of change (Shackle, 1972).

Treatment of information flow in other sources of neoclassical macroeconomics

Away from the aborted attempt to introduce Keynes' epistemology on ethics and economics within the methodological construct of neoclassicism, we also find that the same consequence has pervaded other versions of Keynes and neoclassical macroeconomic in recent times. We re-emphasize here the central feature of

neoclassicism in all its forms to be the marginal substitution postulate. It is the net result of the coterminous assumptions of economic rationality, steady state equilibrium states with or without time dependence, and the optimization objective, while the idea of a robust theory of interactive process in resource allocation remains absent (Smith, 1992).

Liquidity preference theory of James Tobin a la Keynes

As for Keynes so also for James Tobin, money as cash balance is held in terms of motives signified by a combination of transaction, precautionary and speculative demand for money. Thus money as a continuously liquid asset is converted between bonds and cash balances according to the relative price (r/i). r now denotes the return on bonds and i denotes the bank rate of interest. The two move oppositely. But because bond yields are coupon rates, they are not independent of interest rates. Thus, as a new perspective of explaining the endogenous relationship between money, income and the liquidity question in Tobin's (1958) liquidity preference theory, we note that while money is liquidated out of bonds when bond prices increase and interest rates fall as the yield on coupon, then money is increasingly mobilized into the real economy. This causes an increase in output, which drives the liquidity preference curve outward. The outward movement of the liquidity preference maps as functions of income and interest rate is due to endogenous relationship between cash balances in the form of transaction demand and the real economy. But the assumption of exogenously prescribed preferences and the marginal substitution concept between bonds and cash balances remains intact, as in terms of neoclassical marginal substitution principle. This causes the kind of insensitivity to an interactive process at the resource allocation points along the liquidity preference maps.

Yet as we note, that if cash balances or the demand for money is broadly defined in Tobin's liquidity preference map, there is a complementary relation rather than marginal substitution between the coupon rate and the interest variable in the precautionary and speculative components of money demand. In such a case the relative rate (r/i) cannot be determined along the liquidity preference surface. Rather, it is predicted along the trajectory generated by the outward shifts of the liquidity preference maps, but only to lose relevance of a process-oriented understanding of market-institution interaction relating to money, bonds and the real economy. These perspectives of macroeconomic relationship between state variables (socio-economic) and policy variables (institutional) determine the ethical questions of macroeconomic theory. They are now found to be equally true for the liquidity preference theory of money.

Rational expectations theory a la Lucas and Sargent

Macroeconomics under rational expectations hypothesis (REH) aims at relaxing the condition of identical preferences of agents that underlies econometrics by introducing an information-set that guides predication (Minford and Peel, 1983). A conditional and actual probability distribution is thereby assigned to the state variables on the basis of a conditional stock of information-set prevailing at a present time. In the variable future state model of REH, the information-set itself is reproduced differently by the currently prevailing set of state variables.

REH econometrics assumes that the conditional probability distribution of the state variables based on presently available information-set will coincide with their actual probability distribution in the future. Underlying this assumption is again the required condition of predictable price relatives (or absolute prices) and a target value of money stock and output level toward which a long-run Phillips relationship will gravitate to a desired price and output levels.

The simple REH model of Sargent and Wallace (1975) has the distinctive characteristics on preference and predictability assumptions mentioned above.

$$m = p + y, \quad (7)$$

where $m = \log(\text{money supply})$; $p = \log(\text{price level})$; $y = \log(\text{nominal output})$.

$$\dot{p} = E_{-1}p + \delta(y - y^*) \quad (8)$$

where, $E_{-1}p$ denotes the expected value of p at time $t = 0$, based on the information set, say ϕ_{-1} prevailing at time, $t = -1$. y^* is the long-run potential output.

$$m = m^* + \varepsilon \quad (9)$$

where, m^* is the monetary target. ε is the random walk parameter with a normal distribution $N(0, \sigma^2)$.

The model system (7)-(9) is thus an econometric system of adaptation between prices level and output level, which together comprise the Phillips Curve relationship of expression (8), such that according to this adaptation the money demand function (7) and supply function (9) establish a general macroeconomic equilibrium system. The system (7)-(9) is thereby a Keynesian general macroeconomic equilibrium system with the addition of the long-run Phillips' adaptive relationship on price stability at the point of full-employment equilibrium output.

See Minford and Peel (1983, pp. 17-21) for a solution of this basic REH model. The solutions to this simple REH model suggest that expectation variable $E_{-1}p$, and the potential output level and the price level are all constant at the given targeted money supply level m^* and the targeted output level y^* . These are expected as in the Keynesian general macroeconomic equilibrium solution. The solution points out the important characteristic of preferences and prediction in the REH model that is no different from the underlying but not explicit prescription of preferences in Keynesian model. This represents the constancy of the expectations variable based on the previously available information set, ϕ_{-1} . Such a result also affects the predictability of the price and output state variables.

This result on the explicit prescriptive nature of expectations is due to the underlying assumption of a limiting competitive equilibrium in both REH and Keynesian macroeconomic system as also in Tobin's liquidity preference theory. Sawyer (1982) points out this restriction as one of the problems of macroeconomics, wherein competitive equilibrium as opposed to the real economic phenomenon of oligopoly is assumed.

The concern with price predictability in the REH models is further seen in respect to the model of variable future state variables. Such an REHV model runs into multiple price trajectories caused by a non-constrained way of choosing the present price-value, which itself depends upon recursively substituted values of the price variable. The

problem of indeterminacy caused by the choice of a future price path is once again resolved by introducing stable adaptation in the expected price variable. In this case, the results of the system (7)-(9) is once again valid, upon recognizing though, that in the general solution, the disequilibrium price trajectories of deepening inflation or deflation could exist.

Ethico-economic implications in REH

In conclusion, we note the ethical question posing REH as other schools mentioned above. There is no specific way of explaining dynamic preferences changes in such models for the sake of preserving the predictability of the long run price level and output under a stable economic regime. But the reality whether such conditions are met in the future, is not determined by using the causality between state and policy variables in concert with market-institution interactive processes. The latter are instrumental in generating the information-set and their simulation within the multiple contingencies of economic change in the future.

The absence of a robust theory of dynamic preferences in macroeconomics and hence the problem of preference aggregation, except by the constancy and identity assumption, cause any treatment of ethical values to remain exogenous. We are then in an analytical dilemma. Microeconomics treats preferences as being prescribed and exogenously given to any resource allocation problem of economic rationality, scarcity, equilibrium and optimization. Macroeconomics is silent on preference formation and aggregation due to the different nature of aggregation in macroeconomics from microeconomics and absence of agent-specific choices. Thus in either of these systems the role of *process and discourse* is merely implied but non-existent. They are not endogenously determined and regenerated by systemic interaction.

The ethical insensitivity caused by the absence of endogenous preference formation and of a discursive process in decision-making at both the microeconomic and macroeconomic levels go deeper into the policy domain. Owing to the exogenous nature of preferences and the absence of a process in decision-making, the policy and institutional presence also enter economic theory with the same characteristics. We have argued earlier that institutional level preference formation in economic theory means simply a lateral aggregation of individual preference according to the postulate of methodological individualism. Consequently, such other variables as, policy, technology, population and social variables remain outside of endogenous preferences. This permanent nature of economic theory, more so observed in macroeconomics, causes its complete ineptness to address ethical issues, except exogenously.

Carrying this argument to the fiscal and monetary policy issues shows that the two remain opposed to each other by a trade-off. This has been the long-standing understanding of monetarists against the Keynesians (Bowden, 1985). Monetarists argue that fiscal policy does not stabilize the economy, as government expenditure fuels inflation along the rising portion of the aggregate supply curve. Fiscal argument of the Keynesian type sees government expenditure being in productive outlets for stimulating the social economy. Thus the argument regarding the income multiplier under fiscal expansion is well known. The trade-off between price stability and full employment occurs at the juncture of the Keynesian aggregate supply curve and the classical monetarist aggregate supply curve, both intersecting with the aggregate demand curve where long-run full employment output is.

But the indeterminacy of preferences and expectations in either of these versions of macroeconomics and as pointed out by the REHV, suggests that there would be multiple aggregate supply curves for the monetarists. If deflation were the policy target of the monetarists, then the aggregate supply curve would shift left and the aggregate demand curve downwards to establish a lower full-employment level of output consistent with an acceptable level of prices. If technological change is induced, the aggregate supply curve will shift outwards to the right. The same aggregate demand curve will yield a stable or lower price level and enable the potential output to evolve further.

Question of duality and complementarities between monetary and fiscal policies

With the technologically induced expansion of the aggregate supply curve and price stability, monetary and fiscal policy would be complementary along the path of spending. For along this elastic and extendible path of the Keynesian aggregate supply curve, the IS and LM curve remain close to each other at the low-level interest rate for the liquidity trap, which in fact Keynes (1963) would have liked to set to zero. But only when the full-employment rate is attained, the spending is halted and the tradeoffs between monetary and fiscal policies, between price stability and employment, between spending and saving, commence. Such are the interlinked ethical problems in policy formulation in macroeconomics. But above that, we have argued that the permanent omission of preference formation relating to interactive decision-making and aggregation in macroeconomics makes it permanently unable to answer the ethical question linked with behavior.

The ethical command to spend in the good things of life, as it is in the productive outlets of Keynes and Rawls' "primary" social goods pointed out by Sen (1989), is now seen to conform between monetarism and Keynesianism, had it not been for the trade-off of the full-employment level of output that feeds into the Phillips' Curve.

This is evident from the relations,

$$M_Q = kPY \text{ (Quantity Theory equation of spending)} \quad (10)$$

$$M_T^D = l_1 Y \text{ (Transaction Demand for money in Keynes)} \quad (11)$$

$$M_Q = M_T^D \text{ gives } P = l_1/k = l_1 V, \text{ irrespective of } Y \quad (12)$$

P denotes the price level; Y denotes real output; $k = 1/V$ is the inverse of the velocity V of money circulation; l_1 is a coefficient.

Expression (12) points out that the price level depends only on the velocity of money circulation, as spending matching up with the circulation of money. This is true of all levels of output. In fact, what results from this simple result is a continuous outward shift of the aggregate supply curve that perpetually postpones the attainment of a trade-off between employment and the price level, between output and the price level and between monetary and fiscal (spending) policies.

In the general case of a relationship such as,

$M_T^D = l_0 + l_1 Y$, the same implications are derived by further explaining that if spending into the real economy (fiscal policy) matches with the monetary expansion (monetary policy), then $P/V = M_Q/Y = \text{constant}$. Hence, along with P/V being

constant and V being near constant in the quantity theory of money, P is also constant. With this we obtain the resulting expression, $Y = l_v/(kP - l_1) = \text{constant}$. Thus both price and output stability is attained.

The neoclassical synthesis of post-Keynesianism in brief

The central idea underlying spending equal to resources mobilization through the function of monetary in the equation of exchange of the quantity theory is to synthesize the long-run view of neoclassicism in monetarism with the short-run views of public policy in Keynesianism. But we have pointed out the problem of this synthesis. That is, the aggregate demand and aggregate supply curves become unstable on either side of the two spectrums. Only if the technological and productive expansion of the economy involving money circulation is possible will a complementary relation between fiscal and monetary sides be attainable. But since public policy remains exogenous in post-Keynesianism and monetary policy is exogenous in monetarism, there is no endogenous preference aggregation between markets and public policy to sustain economic stabilization (price, output and employment) in the long run. In other words, long-run non-inflationary economic growth is impossible in the post-Keynesianism synthesis. Hutt (1979) points out this problem of instability in post-Keynesianism carefully: if the transaction demand increases, the aggregate supply curve is stretched out in output. If the velocity of circulation falls, then money increases, not for transaction purposes but for holding of savings.

2.

Definition of Islamic political economy

As a matter of reference in this paper we define Islamic political economy as the field of human inquiry that studies interaction, IIE among systems of variables in the framework of their pervasively complementary inter-relationships (Choudhury, 2000a). The central methodology of Islamic political economy enabling such pervasively complementary relations to occur and to be analyzed and implemented by policies and programs is premised on the unity of knowledge derived from and revolving around the oneness of god. Unity of divine knowledge is taken as the premise of the absolute, complete and perfect domain of knowledge from which all universes (world-systems) derive their knowledge flows reflecting inter- and intra-systemic unity. Systemic unity by complementary relations is an example of such unity of knowledge (Choudhury, 1999a).

Knowledge-induced preference aggregation in Islamic political economy

Our detailed critique of the present state of macroeconomic theory has revealed that the major problem of ethical irrelevance in economic theory in general and macroeconomics in particular arises due to the inability of explaining behavior in the absence of a dynamic theory of endogenous preferences. Furthermore, the absence of a dynamic preference formation theory results in the aggregation problem of macroeconomics in particular. In general, preferences are prescribed exogenously in all of economic resource allocation governed as it is by the coterminous assumptions of scarcity, rationality, steady-state equilibrium and optimization, all of which combine to deepen the postulate of marginal rate of substitution in all of economics.

In this section we will address the Islamic methodology in answering the above missing issues of macroeconomics in the context of endogenous preference formation within knowledge-induced domains of pervasive complementarities among *possibilities* rather than *alternatives*. Like all great paradigms, the birth of any one of them is deeply epistemological. So is the Islamic methodological background of economic reasoning premised on the universal praxis of oneness of god as the sole and pervasive attribute of knowledge. Many of the initial characterization of the Shuratic process in this regard were introduced in Section 1 of this paper.

Our starting point is that there is no such duality between micro and macro-economics in Islamic perspective. We argue that such a duality is a continuing mark of the divided knowledge barriers that characterize all of occidental intellectual thought (Capra, 1983). In the worldview of unity of knowledge no such insulation and discontinuity between disciplines is possible on grounds of the unique praxis, though the problems of different systems of life are diverse. Systems are nonetheless interactively integrated and creatively evolutionary on the framework of unity of knowledge, as it was explained in the introduction of this paper.

How is the dynamic aggregation of preferences, and thereby, state and policy variables realized in Islamic economic studies premised on the worldview of unity of knowledge? How is unity of knowledge explained analytically by the IIE process or equivalently the Shuratic process? How is ethics and morality made endogenously complementary with the state and policy variables at the social, economic and institutional levels?

An Islamic theory of preference formation in an ethico-economic general equilibrium system is explained using Figure 1. To focus on a political economic issue we will focus on the inter-relationships among money, price, output, spending as resource mobilization, factor utilization, technological change and the concomitant monetary and fiscal policy that all revolve around a cogent set of Islamic development financing instruments. Such instruments are profit-loss sharing (Mudarahah), equity

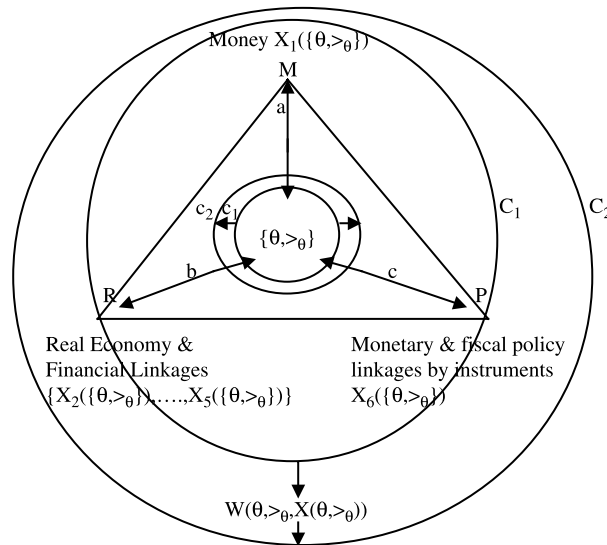


Figure 1.
Knowledge-induced preference aggregation and circular relations among selected variables of the Islamic political economy

financing (Musharakah), cost-plus mark-up (Murabaha), rental (Bay Muajjal) as the primary ones and the secondary instruments revolving around these primary ones that bring about participation and co-operation in the framework of Islamic political economy. Figure 1 will be explained after briefly explaining the methodology of the IIE process (Shuratic process).

Worldview of unity of knowledge and the IIE (Shuratic process): the Islamic Praxis
Consider the following chain relation, which is explained below (Choudhury, 1995b):

$$\begin{aligned} \Omega \rightarrow_F \{\Phi\} \rightarrow_{f^*} \{\Phi^*\} \rightarrow_{f_1} \{\theta\} \rightarrow_{f_2} \{X(\{\theta\})\} \\ \rightarrow_{\substack{1 \rightarrow f_3 \\ W(\theta, X(\theta))}} \text{New}\{\theta\} \rightarrow_{\substack{\text{continuity} \\ \text{in repeated processes}}} \cdots \Omega = H \end{aligned} \quad (13)$$

Primal stock of knowledge \rightarrow derivation of primal knowledge-flows
 \rightarrow process of deriving knowledge-flows by discursion \rightarrow post-evaluation
 \rightarrow evolution of similar processes \rightarrow continuity
 \rightarrow closure in the very large-scale universe

In the string relation (13), Ω denotes the epistemology of unity of divine knowledge. That is, Ω explains the fundamental Qur'anic axiom of divine oneness. It can thus be simply understood as the dimensionless but creative and governing origin of all knowledge. Hence we intend to treat Ω as a mathematical topology. Ω denotes the completeness of divine knowledge and thus the stock of the divine law in the Qur'an (85:21-22).

Φ denotes the ontology derived from Ω in the form of the divine law. Φ is thus the knowledge domain of the revealed Qur'an as manifested in the order of the world-systems. It is observed and explained by the completeness and absoluteness of Ω .

F denotes the spontaneous and pervasive unveiling of divine oneness in the world-systems through the divine law.

Φ^* denotes the further ontological comprehension of the divine law in Φ as realized through the Sunnah (guidance) of the Prophet Muhammad. This medium of presenting the divine law in living experience is denoted by the mapping f^* .

$\{\theta\}$ denotes a sequence of knowledge-flows derived from the epistemology of unity of knowledge by the exercise of the Shura (Islamic participatory consultation as a field of studying unifying relations, Qur'an, Chapter 42) discourse at the level of deriving the foundation of the Islamic Law as the core of the divine law.

The medium of the Shura discourse is denoted by the symbol, f_1 , in respect to stage 1 of the Shuratic process. The Shura is understood in the light of the Qur'an (Chapter 42, verses 38, 49-53) to encompass all relational orders with which the human mind grapples for understanding reality.

Expression (13) can be extended to interconnected systems that are all governed by the same praxis of unity of knowledge but address diverse issues and problems. In this, an extensively complementary and relational framework is established, the limits of which is determined only by the advance of knowledge premised on systemic unity and by the simulation possibility of progressively large-scale systems as they make themselves amenable to available computerized methods. Even in the absence of such

methods the discursive possibility of the Shura remains always at work. Thus there are two methods of simulating the complex and extensively relational and complementary generalization of expression (13) (Choudhury, 1999b, 2000b). The principal one is the institutional discourse undertaken consciously in the Shuratic process, meaning the most overarching and comprehensive meaning of participation in all domains that lends itself to human comprehension with the progressive advance of knowledge. The secondary one is the engineering one that lends itself to consciously observed and analyzed empirical facts.

While expression (13) along with its systemic extensions provide a theory of unity of knowledge, the same praxis also explains rationalism and methodological individualism as perceived in neoclassical economics and its prototypes. This generalization is treated in the domain of “de-knowledge”(falsehood) opposite (complementation) to the methodological construct and processes of knowledge (Choudhury, 2000c).

Explaining Figure 1 on preference aggregation and circular causation using the methodology of IIE process (Shuratic process)

The embryonic Shuratic origin is shown by an initial limiting value of $(\theta, > \theta)$ out of many discoursed values arising in a given Shuratic process. This limiting value of $(\theta, > \theta)$ is assigned an ordinal value and is taken as the mathematical intersection of many discoursed values. In expression (13) this initial stage of the Shuratic process is represented by $[\Omega \rightarrow_F \Phi \rightarrow_{f^*} \Phi^* \rightarrow_{f_1} \theta]$. This elemental process remains pervasively and continuously endogenous in all subsequent Shuratic processes.

The emergence of an ordinal θ -value is simultaneously associated with a consensus in the Shuratic process. Such a consensus represents behavior formation relating to the normative, and subsequently, to the positive recursive relationship. This is explained below. Hence an interactive and consensual (integrative) preference function of θ -value denoted by $>_\theta$ is determined in exactly the same way as the determination of a convergent θ -value. Thus we have the first level embryonic knowledge-induced tuple $(\theta, >_\theta)$ based on unity of knowledge for formulating, observing and governing the complementary relations among money (M), real & financial economy linkages (R) and monetary & fiscal policy linkages (P).

The variables of the MRP triangle as shown in Figure 1 and further explained below become knowledge-induced by $(\theta, >_\theta)$. This unique knowledge-induction caused by the primal and permanently embedded epistemology denoted by $[\Omega \rightarrow_F \Phi \rightarrow_{f^*} \Phi^*]$, enables complementary inter-relations to occur and be regenerated. We therefore write the commonly knowledge-induced vector in terms of preference aggregation formed simultaneously with the derivation of an interactively consensual θ -value, as $X_1, X_2, X_3, X_4, X_5, X_6[(\theta, >_\theta)] = X(\theta, >_\theta)$. The circle C_1 denotes these circular causal inter-relations within a given Shuratic process indicated by subscript 1 in C_1 .

The end of C_1 is followed by a post-evaluation of the complementary interrelations attained. This is done by means of the Well being function, $W(X_1, X_2, X_3, X_4, X_5, X_6)[(\theta, >_\theta)]$. This stage represents $X(\theta, >_\theta) \rightarrow W(X(\theta, >_\theta))$ (in expression (13)).

Evaluation of the Well being function to test for an attained level of unity of knowledge, that is attained complementarities among the variables of the vector $(X(\theta, >_\theta))$, leads to the evolutionary stage of a complete Shuratic process. This is

indicated by the new $(\theta, > \theta)$ and the simultaneous emergence of the new circular causation interrelations shown by the evolved C_2 from C_1 , with the Shuratic process now shown by the subscript 2 following upon the ending of one complete circular causation within process 1. The new $(\theta, > \theta)$ and its evolutionary effect on and from the state variables $(X(\theta, > \theta))$ is denoted by the evolution of the $(\theta, > \theta)$ -circles c_1 to c_2 in Shuratic processes 1 and 2, respectively. In expression (13) this stage is denoted by $[_, \beta, \text{new } \{\theta\} \rightarrow \text{continuity} \rightarrow \dots \Omega = H]$, continuously and pervasively within and across systems until the final event of the hereafter. Such a pervasive and continuous process-oriented interaction, integration and evolution (IIE) of the Shuratic processes marks the use of the simulation method as opposed to the optimization method in the analysis of rounds of circular relations between $(X(\theta, > \theta))$ and $W(X(\theta, > \theta))$.

Summary questions and their answers

On summarizing, how is the preference aggregation constructed? In the following way:

As interaction I proceed to a limiting number of processes, say N_1 , discoursed $\{\theta\}$ -values attain a limiting value, $\theta = \bigcap_{l=1}^{N_1} \{\theta_l\}$. Simultaneously, the limiting preference formation is denoted by $>_{\theta} = \bigcap_{l=1}^{N_1} \{>_{\theta_l}\}$.

How is this preference formation different from that in mainstream economics? By virtue of the process-oriented induction of θ -values that causes $(\theta, > \theta)$ and all the knowledge-induced variables and their relations to become process-oriented and creatively evolutionary. The axioms of economic rationality, scarcity, steady-state equilibrium and optimization are replaced by the IIE-process. Abundance as a function of knowledge-inducing complementarities and diversity replaces the axiom of resource scarcity. Evolutionary knowledge-induced equilibriums with multiple choices and their combination possibilities replace steady-state equilibrium points. Optimization is replaced by simulation as methods. Thus all the axioms of the neoclassical genre are methodologically rejected in the Islamic case. Now the primal principle of pervasive and continuous complementarities across diversity as systemic unity of knowledge completely rejects and replaces the economic postulate of marginal substitution. Only in the instantaneous non-learning case can the marginal substitution be possible. But such a condition of a non-learning point is impossible in the learning unified universe.

Furthermore, what does the tuplet $(X(\theta, > \theta))$ mean in respect to the nature of aggregate methodology in macroeconomics? There is pervasive and continuous behavioral element in the interrelations shown in Figure 1. Consequently, an aggregate concept of money is now replaced by micro-money induced by its function to spend in the good things of life.

Micro-money is defined here as the quantity of money matching up the volume of spending in specific projects in multimarkets in the light of the Islamic Law. Such a monetary aggregate is thus backed up by real market exchange in accordance with the Islamic rule governing consumption, production and distribution. Financial resources are not to be withdrawn as savings and hoarding. Instead, they are to be used for stimulating the real economy in accordance with spending in the directions of the Islamic Law. Thereby, the spending policies and programs (fiscal) become complementary with money as currency in circulation (monetary policy). Price stability results due to the growth in the quantity of micro-money in circulation

matching up with the rate of growth of total productivity. This last condition prevailing through ethicized market forces negates the possibility of inflation.

3.

An ethico-economic general equilibrium system interrelating money, finance and real economy

We now collect our afore-mentioned observations to formalize an ethico-economic general equilibrium model interlinking money, finance and the real economy so as to bring out the endogenous nature the variables along with the policy and financing instruments characterizing the different sectors according to the framework of Islamic Law.

In respect to money, finance and the real economy, the epistemology and methodology given by equation (13) suggests reference to the use of money for spending in the good things of life without a discounted valuation over time. This is the exegesis of the verses of Sura Kahf (Qur'an, 18:19), in which, money as coins and spending in the good things of life are linked together without a money valuation concept. This is a primal rule obtained by reference to the fundamental episteme of expression (13) rather than to such rationalist ideas as defining money by means of the quantity theory of money or by the transaction demand for money (Metwally, n.d.), without first explaining the endogenous relationship between money and the social economy. Money in the latter case is a primordial artifact given in the Qur'an and explained by the importance placed on it by the Prophet's saying. The beloved companion of the Prophet, Bilal, once brought some superior dates to the Prophet. When the Prophet asked as to how Bilal had acquired the dates, Bilal said that he had some inferior dates, which he exchanged in amount of two units to one unit of the superior dates. The Prophet said such an exchange of dates was undue excess (Riba) and forbade its practice. The Prophet said that Bilal should have sold the inferior dates and used the proceeds to buy amounts of the superior dates (Ismail, 1989, p. 374).

Finally, the discourse mechanism is to be invoked to study the Qur'anic rule supported by the Sunnah relating to the function of money and the real economy via spending in the good things of life. Thus Φ^* is not a rational construct. Hence the Sharees, that is discourse agents of the Shura in the study of the endogenous money-real economy relationship, must continue on to derive the worldly rules from the fundamental precepts of the Qur'an and the Sunnah, and neither from the episteme of economic rationality, scarcity, steady-state and optimization, all that characterize mainstream economic theory, nor strictly from the rulings of Islamic scholars (Fiqh).

Constructing the endogenous relationship between money and the real economy by reference to Qur'anic rules

Let an initial level of Shura discourse, say one that can be taken up between the Islamic Development Bank (IDB), Islamic Banks, National Development Banks, Enterprises and Islamic Scholars, targets a transformation by means of establishing a private sector asset-backed money, such as the Islamic Gold Dinar (Billington, 2002; Shakespeare, 2005). This initial Shuratic process would aim at establishing complementary relationship between socio-economic development, trade and enterprise using the development financing instruments and policy variables within a system of money and real economy linkages. The first-stage Shuratic process assigns

an ordinal measure of say 1 to the initial experience of the attained linkage. Thus, $\theta = 1$ and the underlying preference formation depends upon this discoursed value as ($>_{\theta=1}$). A behavioral element has thus been induced in the ensuing ($X(\theta, >_{\theta})$) variables and their simulative relations within the initial Shuratic process.

We now have the interacting variables and relations. Henceforth, we will subsume ($>_{\theta}$) with θ .

$$\theta = 1 \rightarrow_{f_2} X(\theta = 1) = \{X_1, X_2, X_3, X_4, X_5, X_6\}[\theta = 1] \quad (14)$$

where, for $\theta = 1$, $X_1(\theta = 1)$ denotes the quantity of money. $X_2(\theta = 1)$ denotes spending in the goods things of life conformable to the stage of the endogenous inter-relationships. Note here the similarity with the wisdom of productive spending for realizing the fullest impact of the multiplier as the lowest rate of interest possible in Keynes' ideas. $X_3(\theta = 1)$ denotes the attained level of trade flow realized by the given stage of the complementary relationship between $X_1(\theta = 1)$ and $X_2(\theta = 1)$. $X_4(\theta = 1)$ denotes enterprise growth related with the inter-relationships between the other variables. $X_5(\theta = 1)$ denotes factor utilization, say employment. $X_6(\theta = 1)$ denotes the set of financial instruments, such as Mudarabah, Musharakah, Murabaha, Bay Muajjal, etc. mentioned earlier that facilitate the inter-relationships between all the variables.

Because of complementarities between the variables and re-origination of the θ -values through the recursive Shuratic processes we obtain the following complementary relations in money, finance and the real economy linkages through the route of spending and the impact of policy and institutional variables and financial instruments.

$$X_1(\theta = 1) = f_1(X_2, X_3, X_4, X_5, X_6)[\theta = 1] \quad (15)$$

$$X_2(\theta = 1) = f_2(X_1, X_3, X_4, X_5, X_6)[\theta = 1] \quad (16)$$

$$X_3(\theta = 1) = f_3(X_1, X_2, X_4, X_5, X_6)[\theta = 1] \quad (17)$$

$$X_4(\theta = 1) = f_4(X_1, X_2, X_3, X_5, X_6)[\theta = 1] \quad (18)$$

$$X_5(\theta = 1) = f_5(X_1, X_2, X_3, X_4, X_6)[\theta = 1] \quad (19)$$

$$X_6(\theta = 1) = f_6(X_1, X_2, X_3, X_4, X_5)[\theta = 1] \quad (20)$$

$$W(\theta = 1) = W(X_1, X_2, X_3, X_4, X_5, X_6)[\theta = 1] \quad (21)$$

$$\theta_+ = f_7(\theta_-, W(\theta_-)) \quad (22)$$

Initially, $\theta_- = 1$

The above equations can be specified according to the meanings underlying them.

Equation (15) means that a quantity of money is generated by the Central Bank through the financial intermediaries (Islamic Banks) in response to the level of spending, which is further categorized by trade and domestic spending. The growth of

enterprises also needs investment spending. Resource mobilization in real economic activities is realized through Islamic financial instruments. The financial institutions diversify risk and guides enterprises in areas of product diversification.

Equation (16) is explained by making spending relate to the quantity of money, trade, growth of enterprises, risk- and product-diversification by the financial institutions using Islamic financial instruments.

Equations (17)-(20) are similarly interrelated. But of special importance is equation (19). In this, the employment function is related with the volume of monetary flows through financial resource mobilization and spending activities in the good things of life. The more effective is the spread of such spending with effective risk and product diversification, the greater is the resource mobilization with the support of the Islamic financial instruments.

It is important also to note in expression (20) how the financial instruments in terms of the volumes of financing flowing through them, can be related to the other variables. The higher is the risk- and product-diversification the greater is the participatory capacity of the Islamic economy. Thereby, the greater is the flow of resources through such instruments and their linkages with the spending, money, trade and development variables.

Finally, the remaining portion of expression (22) showing the evolutionary nature of the Shuratic processes causes new rounds of θ -values to be assigned. This is indicated by θ_+ based on previous θ -values and the prevailing values of the socio-economic and policy variables as functions of the newly discoursed θ -value. This assumes an ordinal value for θ_+ . The recursive relations that proceed on as sequences of the limiting θ -values evolve by every new round of the Shuratic process.

Note that in complex forms of interaction leading to assignments of θ -values the multiple θ -values are converted into their limiting forms over giving ranges of interaction leading to Shuratic consensus and then followed by creative evolution. Both intra-systemic and inter-systemic relations are involved here. These three features, namely of interaction leading to integration followed by creative evolution (IIE) in continuous cycles of knowledge formation is the permanent feature of the methodology of unity of knowledge when applied to diverse systemic inter-relationships.

Specification of the complementary relations in circular causation between variables

The pervasive complementarities across diversity with knowledge-centric evolution implied by the system of recursive relations given by equations (15)-(20) are fed into a social well being function given by expression (21). The social well being criterion evaluates the degree to which unity of knowledge has been gained at a particular stage of the sequences of Shuratic processes. Consequently, the entire objective criterion of the money-real economy inter-relationships with the support of financial institutions taking care of risk and product diversifications is given by the system equations (23)-(25).

In this system of relations we have specified each of the equations in the product form with knowledge-induced fields of elasticity coefficients and the knowledge-induced variables. Briefly, the model specification is written as,

$$\text{Simulate } \{\theta\} \quad W(\theta) = W(\theta, X(\theta)) = \prod_{s=1}^6 X_s(\theta)^{bs(\theta)} \quad (23)$$

Subject to:

$$Y_i(\theta) = \prod_j X_j(\theta)^{a_j(\theta)} \quad (24)$$

$$\theta_+ = f_7(\theta_-, W(\theta_-)) \quad (25)$$

$$i = 1, 2, \dots, 6; j = 1, 2, \dots, 6; \text{ with } i \neq j; \theta_- = 1$$

$b_s(\theta)$ are the well being elasticity coefficients of $X_s(\theta)$; $a_j(\theta)$ are Y_j elasticity coefficients of $X_j(\theta)$ variable for given θ -values.

A note needs to be made regarding the continuous inter-relationship between θ -values and the $X(\theta)$ -variables. This can be done by assigning in $W(\theta)$, θ -values in the range $0 < \theta < 10$ (say). Equation (25) can then be estimated by non-linear regression method to attain a standard result for generating recursive θ -values in the range $0 < \theta < 10$ (say). But in spite of the regression estimation the θ -values must be initially generated within Shuratic processes institutionally and in cognizance of the ethico-economic market realities.

The system of equations (23)-(25) is non-linear in the elasticity coefficients. These coefficients being functions of the perturbation of θ -variables, they form random fields.

Examine now the interpretation of the following coefficients:

$$\begin{aligned} b_6(\theta) &= d \log W(\theta) / d \log X_6(\theta) \\ &= \text{percentage change in } W(\theta) / \text{percentage change in } X_6(\theta) \end{aligned} \quad (26)$$

$$\begin{aligned} a_i(\theta) &= d \log X_i(\theta) / d \log X_6(\theta) \\ &= \text{percentage change in } X_i(\theta) / \text{percentage change in } X_6(\theta) \end{aligned} \quad (27)$$

$$\begin{aligned} a_6(\theta) &= d \log X_6(\theta) / d \log X_i(\theta) \\ &= \text{percentage change in } X_6(\theta) / \text{percentage change in } X_i(\theta) \end{aligned} \quad (28)$$

$$i = 1, 2, \dots, 5.$$

Between the expressions (26)-(28) we obtain, $a_i(\theta) > 0$, with $da_i(\theta)/d\theta > 0$. These mean that an effective use of the Islamic development financing instruments is expected to positively affect all the defined resource mobilizing variables in the system (15)-(22). Besides, enhancing θ -values with the evolution of Shuratic processes will further strengthen the positive values of $a_i(\theta)$, $i = 1, 2, \dots, 5$. The complementarities are now captured in $W(\theta)$.

The same effect is noted in expression (28) due to the positive value of percentage change in $X_6(\theta)$ and with increasing risk- and product-diversification as θ increases over the Shuratic processes. This conveys the consequential enhancing effect of compounded diversifications on the percentage change in $X_i(\theta)$. Consequently, risk- and product-diversifications are necessary conditions for effective resource mobilization through the money, finance and real economy linkage. The policy variables and financing instruments are likewise activated in realizing the positive relationships

between risk- and product-diversification and resource mobilization. The function of θ in the evolutionary Shuratic processes is essential in realizing such enhancing effects.

$a_6(\theta)$ shows reverse causality from $\{X_i(\theta)\}$ to $X_6(\theta)$. That is, as resource mobilization increases with the enhancing inter-relationship between money, finance and the real economy, more ventures arise and participation increases. Again all these effects result from Shuratic processes. Therefore, $a_6(\theta) > 0$ and $da_6(\theta)/d\theta > 0$.

$b_6(\theta) > 0$ and $db_6(\theta)/d\theta > 0$, for reasons that the total circular causation effects between $\{X_i(\theta)\}$ and $X_6(\theta)$ variables as explained above generate enhancing complementarities between them as θ -values increase over progressive Shuratic processes.

$W(\theta, X_i(\theta))$ is meant to evaluate the degree of complementarities so attained.

Besides, we can write,

$$\begin{aligned} & \text{Percentage change in } W(\theta) / \text{percentage change in } X_6(\theta) \\ &= (X_6(\theta) / W(\theta)) [dW(\theta) / d\theta] / dX_6(\theta) / d\theta > 0. \end{aligned} \quad (29)$$

Expression (29) is realized as θ -values evolve over Shuratic processes and these enhance the circular causation between risk- and product-diversifications and resource mobilization in the money, finance and real economy linkages.

4.

Policy analysis in the Islamic money, finance and real economy interrelations

The policy variables and financial instrumental variables are pervasively centered on unity of knowledge in Islamic political economy. The latter is the systemic study of the three major domains. These are namely, first the epistemology of the divine laws carried through by the medium of the Prophet's Sunnah into the discursive domain of the Shuratic processes. Secondly, there is the organization and application of the methodology of the IIE process in the world-systems induced by the unity of knowledge. Thirdly, there is pervasive continuity of the above within and across diverse issues, problems and systems until the hereafter. The critique of economic theory, particularly macroeconomics, and the development of the Islamic ethico-economic general equilibrium alternative are carried out within these three circular causation points.

All policy variables are now knowledge induced by process. Hence they are endogenous in the IIE-process. Consequently, behavior affects all the variables pervasively and continuously. Monetary policy is thus specific to the development and use of micro-money within the 100 percent reserve requirement monetary system (Choudhury, 2004). Such a monetary system is characterized by money being asset-backed by the real economy. Selected assets can thus be chosen to support the unit of exchange of money as currency in circulation. Such assets can be gold which yields the Gold Dinar. In the history of money the numeraire asset of a basket of basic needs was also used to support the unit of exchange of currency money. Both of these approaches were combined during the Prophet Muhammad's time (Allouche, 1994).

Monetary policy: a model of the asset-backed micro-money

The formation of the unit of exchange for asset-backed money must be understood in terms of the Central Bank, the Islamic Bank and Real Economy inter-relationships, in

which the IDB will be a catalytic institution of the monetary transformation (Choudhury, 1999c).

In this regard the construct in Figure 2 is provided. The Central Bank A discourses with the Islamic Bank B as financial intermediaries to determine the quantity of currency that must be created to finance the demand of the clientele C at the Islamic Bank outlet. Figure 2 shows that there is no independence of B in creating money as promissory notes. There is no prime-rate for discounting loans between A and B. Asset valuation occurs between A and B by analytical methods in compliance with the rules of Islamic Law on the valuation of real assets in terms of the stock of micro-money that must flow from A to C through B. C holds cashable vouchers issued by A at B, whereby fractional amounts of this voucher can be liquidated and excess amounts withheld at A. The voucher denominates an exact loanable amount to the holder in accordance with his credit worthiness that would be reflected in the personal ledger maintained with B.

In case of excess demand for spending the borrower is introduced to a mutual fund (Mudarib fund) in which a joint venture comes about for the project for which the excess demand for funds can be spent. In this way, only marginal additional money needs to be created as the fund gets pooled and the cost of the fund is diversified to the cost-sharing processes between the shareholders or participants (Mudaribs). B itself is a co-financing and overseeing Mudarib in this multilateral relation within the market economy relationship. Joint ventures using Mudarabah, Musharakah and trade-related instruments must pass their feasibility at the Shura of A and B.

Reserves of A now comprise all the deposits accruing from the deposits made at A by C through spending in the real economy. Every transacting agent has thus a personal reserve ledger in the computerized system, which would be interactively linked between A and B. Any unused portion of the banking voucher made available to clientele C is also deposited in the A reserves. B thus has no “excess reserve”, only service charges appearing as percentages of transactions made by C plus the commissions from A and the profit-sharing with C. All the participants in B and C receive productive returns from the Islamic spending outlets.

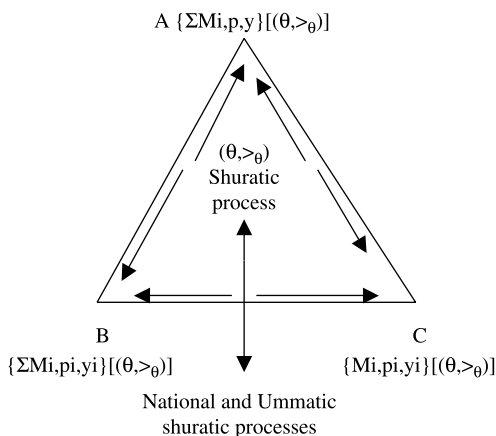


Figure 2.
Resource mobilization in
100 percent reserve
requirement monetary
system

A is the overseer of the quantity of currency to be circulated in accordance with the spending needs at C and their feasibility as advised by B to A. The income of A in all this is generated from the revenue net of cost of the sale of gold as the numeraire. Also included in income would be the revenue flows from the real economy where the government enters into joint ventures with the private sector in the production and management of gold bullions.

At a time and over a region where gold is scarce, the gold price will be high. The gold-backed currency will then be denominated high values and a number of smaller denominations will be required for smaller scale transactions. In the end it is not necessary to buy and sell gold once a stock has been stored in A. The stock circulates between A, B and C in accordance with the denominated voucher values. Excess demand and lending without collateral would call for further gold production. To provide this expected demand A would make advance production stocks ready. For this A would receive revenue net of cost of production and management fee for such additional stocks of gold. The proceeds would come from joint venture schemes in gold production projects with the private sector.

In times of obligation to pay off international debts outstanding, A would have to call for joint ventures in debt-equity swaps or hold additional currency stock to pay off such debts. But as the debt is being paid down A is also entrusted as a development organization with the overseeing of the Islamic transformation process. Such a transformation would call for adoption of a dynamic life-fulfilling regime of change and effective risk- and production-diversifications by the use of Islamic financing instruments that revolve around co-operative mechanisms. A, B and C would thus enter into an interactive phase in the total overseeing process of Islamic transformation and its reciprocal response. Such is the Shuratic process that would be progressively linked to the broader echelons of similar kinds of Shuratic processes along the evolution of the Islamic world-system. Such extensions of the Shuratic system would cause linkages between the banking, market and trade systems.

The Shuratic process between A, B and C and its extension by the Islamic transformation would give rise to a massive system of spending-linked mobilization of public and private sector resources and wealth into real sectoral activities using instruments of Islamic Law. Such a mobilization of resources would replace the withdrawal nature of savings by the activity of spending. Spending in the outlets according to the Islamic Law does not pursue interest rates but real rates of returns.

The analytics of the money-real economy linkages have shown us in this paper that the discoursed and simulated system would attain economic stability and sustainability with the enhancement of risk- and product-diversifications. A truly participatory economy evolves. Money, markets, trade and project financing now become carriers of this change. This is the function of micro-money in relation to market activities according to the rules of the Islamic Law. It is an idea that combines the 100 percent reserve requirement monetary system as an institution with the multimarkets and mobilizes financial resources in terms of micro-money and rules of the Islamic Law to connect with real economic transactions.

Note in Figure 2 how specific forms of the critical variables of the simulative system (15)-(25) concern A, B and C in slightly different ways. A is concerned with the general level of prices and output based on the micro-money relationship with multimarket prices and outputs. B is concerned with the total quantity of money, project

identification and evaluation and the management of micro-money as currency in circulation in the clientele-ledger. These aspects are necessary to launch effective development programs in co-operation with the Central Bank and the multimarket systems. C is specifically concerned with specific multimarket conditions that interact with each other. The overall interactive, integrative and evolutionary process (IIE process) inherent in the cumulative experience of the Shuratic process is realized by participatory preferences and the overall knowledge-induction. In the end, the money-market-institutional Shuratic process revolving around A, B and C is interconnected with the Shuratic process of the broader national and Ummatic order within a transforming Ummah moving towards a 100 percent reserve requirement monetary system with the gold standard.

Complementary relations between monetary and fiscal policies

Complementary relationship between monetary and fiscal policies follows by combining the equality between spending and the aggregate quantity of micro-money in the expressions (10)-(12) upon accepting the preference aggregation in the endogenous ethico-economic sense of unity of knowledge applied to the money-real economy inter-relationship. Since the rate of interest is absent in this relationship simply due to the consequence of the money-real economy linkage through pervasive and continuous resource mobilization, therefore, the rate of return perpetually reflects attained levels of total productivity. As it was argued, this condition enables expansion of the output level for a constant price level that is consistent with the growth of currency money in circulation being equal to the rate of change of productivity. Consequently, non-inflationary growth is sustained along the path of (total spending = aggregate quantity of micro-money). Since total spending determines the aggregate micro-money, there is no independent demand for money concept. Since interest rate is replaced by productive returns based on spending in outlets recommended by the Islamic Law, the concepts of the demand and supply of money are absent. Consequently, there is no concept of the IS and LM relations, and thereby of aggregate demand and aggregate supply.

Conclusion

The final section is the conclusion and we have taken a detailed excursion in this paper on the state of macroeconomics in particular and economic theory in general with respect to the relationship among dynamic preference formation, its effect on aggregation of state and policy variables and the ethico-economic general equilibrium results that such a perspective yields. We have argued that the exogenously prescribed nature of the preferences in microeconomics and its complete absence in macroeconomics have rendered the entire economic theory insensitive to ethical issues in the endogenous sense of systemic interaction. We have thus argued that the introduction of such a major missing function opens doors to paradigmatic revolution. In Islamic political economy the given parameters of the system according to the episteme of unity of knowledge disables the use of the mainstream epistemology, methodology and methods underlying macroeconomics, indeed all of the prevalent economic reasoning. We have formulated in detail one particular example, namely of money and real economy complementarities to fit into the praxis as characterized by the methodology of the IIE process or equivalently the Shuratic process.

From the analytical excursion we derive the following key policies:

- It is mandatory and urgent for a sable world to establish the 100 percent reserve requirement monetary system (100 percent-RR) and thus to transform money into asset-backed currency in circulation that would be linked to the intellectual and institutional functioning of micro-money in concert with the real economy.
- The IDB ought to undertake a bold program towards training and convincing its membership to transform into the 100 percent-RR. This can start with the Islamic Banks in concert with the Central Banks by using monetary reserves to be circulated as volumes of spending in segmented markets where Islamic financing instruments can be effectively used nationally and across globally. The initial risk of the 100 percent-RR on the Islamic Banks can be diversified by involving Islamic insurance and reinsurance schemes (Takaful and Re-Takaful) and joint production menus for product diversification (Choudhury and Hussein, 2002).
- The Central Banks, Islamic Banks and the private sectors of the membership ought to be induced by the IDB to come together for undertaking the Shuratic discourse. This practice must be continued frequently for discovering ways and means of implementing effective human resource development plans and progressively realizing the organizational infrastructure for transformation into 100 percent-RR. The Gold Dinar should be used as asset-backed micro-money. The entire process must be enacted within the shortest period of time (Choudhury, 1989).
- The immense financial wealth of capital rich countries presently locked up in financial markets and banks must be reverted to the developing of poorer countries and to undertake such large-scale development of the real economy using instruments of resource mobilization according to the Islamic Law and in the light of the ethico-economic general equilibrium model propounded in this paper. Here too the IDB, national governments along with the private sectors need to assume their leading roles.
- Concerned intellectuals, practitioners and decision makers at all levels must be placed at the helm of the 100 percent-RR Monetary System program. The prevailing public choice model of self-interest and conflict in decision-making by individual members of the OIC must be changed into the participatory Shuratic process.

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