

A Macro Model of Distribution in An Islamic Economy

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Introduction

Each society produces a specific quantum of goods and services in order to distribute it among its members for final use. However, due to a number of reasons, the efficiency with which this can be done has varied from society to society and over time within a society. So far, an optimal system of distribution has not been devised. In this context, two considerations - equity and justice - merit special attention. Equity is required so that grave inequalities in the distribution of income and wealth do not arise and no significant number of human beings are left out in the cold, unable to get the benefit of the economic endeavors of the society. Justice is necessary, so that each group and component is well-rewarded and no economic entity is deprived of its due share in the national product.

These are serious issues and involve intricate problems of definition and value judgment. The distribution of national product thus assumes a prime position among the economic issues of a nation. Probably, this was the reason which led Ricardo to declare that discovery of laws which regulate distributive shares is the 'Principal Problem in Political Economy'. Unfortunately, 'this principal problem' has been one of the neglected areas of economic analysis.

Ricardo divided the national output into three components - rent, wages and profit. Rent was determined by the differential fertility of land, wages by subsistence and profit as residual. The marginalist economists viewed the problem of distribution as pricing of factors of production. Wage was the price of labor, interest of capital, rent of land and profit was again viewed as residual. The marginalist approach is based upon the marginal productivity Theory. Wage is equal to the marginal productivity of labor and so on with each input. Both approaches regard market solutions as optimal. The macro aspect of the theory of distribution remained neglected for a long time until Kaldor formulated a Keynesian Theory of Distribution.

The present paper investigates the distribution of income in an Islamic economy. By an Islamic economy, we refer to the theoretical construct of an economy where the laws of Islamic *Shari'ah* are enforced, and the objective and behavioral functions of different economic organisms are decided in consonance with the guidelines provided in the Qur'an and *Sunnah*. Although, it is a fact that in no country of the Muslim world at present the value system of Islamic *Shari'ah* is enforced in its totality, some important headway has recently been made in this direction in certain Muslim countries. This lends credence to the effort being made in this paper.

This paper is divided into four sections. Section-I briefly discusses the institutional framework of an Islamic economy. The objective function of reduction of economic inequalities is analyzed in Section-II. Section-III presents a macro model of distribution of income. The last section gives the main conclusions.

I. Institutional Framework

The relevant value system and institutional framework of an Islamic economy can be described by the following propositions:

- i) The basic value by which an Islamic economy is distinguished from other type of economies is the fear of God. All economic agents - producers, consumers, workers and employers are motivated in their decisions and actions, not only by their self - interest but also by the fact that they will be accountable before God in the life hereafter for their actions in this life. The motivation of self interest is called economic rationality. The fear of accountability before God in the life hereafter may be called *Islamic rationality*.
- ii) The economy is largely managed by private enterprise. Private ownership of means of production is allowed⁽¹⁾, significant public sector may however also co-exist in selected activities.
- iii) Generally speaking, market forces are free to operate within the general supervision of *Al-Hisba*. This organization specifies the rule of the game and may also impose wage and price control if and when necessary.
- iv) Many economic activities are organized on the basis of cooperation in conformity with the Divine injunction to help each other 'in righteousness and piety' but not to help 'in sin and rancor' (V:3)⁽²⁾
- v) The institution of interest stands completely abolished by law.
- vi) *Zakah* is imposed on all Muslim who have wealth beyond a minimum prescribed in *Fiqh*. The amount of *zakah* is collected by the Islamic state and is distributed among the poor as per rules prescribed in the Qura'n.
- vii) Business activity and production activity are organized on the basis of *mudarabah*.

(1) For arguments in favor of private property on the basis of evidence from the Qur'an and *Sunnah*, see Mawdudi, pp.9-15, and Siddiqi 1978, pp.129-155.

(2) All references in parentheses are to the Qur'an, the number of chapter followed by the number of verse.

- viii) The commodity composition of production and consumption of an Islamic economy are different from any other economy. Firstly, *Al-Hisba* sees to it that commodities where consumption is prohibited in Islam are neither produced nor imported. Secondly, consumers exercise restraint and moderation in consumption keeping themselves in line with the Quranic injunctions (XXV:67, XVII:27).
- ix) The government assumes a regulatory role and conducts economic policy in such a way as to maximize a social welfare function formulated in the light of *Shari'ah*. It intervenes into market processes if and only when private endeavors cannot achieve the desirable social goals.

The Objective Function

Let us consider now the various issues involved in the problem of distribution of income in the context of the economy whose general characteristics have been specified above. It may be argued that there are some forces in the system which shall lead to an uneven distribution of income and wealth. But at the same time, it must also be conceded that there are some other forces which shall generate greater tendency towards equality. One source of economic inequality is the private ownership of means of production. Although an individual's right to own property in an Islamic economy is not considered an absolute and unbridgable right and some restrictions may be imposed on it; it is also true that a significant portion of the society's resources shall be owned and managed by private individuals. This may cause serious imbalances in the distribution of income. On the other hand, the institution of *zakah*, abolition of interest, spirit of cooperation and of willingly sharing of wealth with the needy and poor are all aimed at reducing economic inequalities.

It is necessary to see the role of distribution of income in an over-all Islamic perspective. In fact, some inequality is an integral part of the Divine Design. God has not created all people exactly alike. They are different from each other in color, form, height, weight, appearance etc. Not only that, they also differ in mental and physical capabilities, attitudes, approaches, behavior, aspirations etc. This is what makes this world an interesting place. Inequality is built in the universe. If God wanted, He would have created all men exactly alike. But the fact is that He has not done so. Thus, we have no option but to conclude that these differences and inequalities have some special part to play in a grand Divine Plan. Differences in fortune and in sustenance (*rizq*) have to be there just as there are differences in physique and in mental qualities. In fact, it has been repeatedly said in the Qur'an that God has granted more sustenance to some in comparison to others (see XVI:71, XVII:30, XXVIII:82 and XXXIV:36).

God has given more sustenance to whom He pleases; but at the same time, He has placed certain responsibilities on them. These responsibilities and duties have been clearly mentioned in the Qur'an (XXX:37-38, XVII:21 and XVII: 26-27). Wealthy people are required to use their wealth in a manner which shall please God. He has enjoined upon them that they should take care of the needy and the indigent. Those who have been blessed with wealth do not have absolute and unquestionable rights upon their property. They do not have a right to destroy it nor to squander it. The wealthy are in fact trustees (LVII:7). They must spend in charity. If they do so, there is a greater

reward for them in the life hereafter. For those who do not spend in the way of God, a most grievous penalty is announced. (IX:34 and III:180).

Thus, the existence of unequals, of rich and poor, of haves and have-nots, is part of a grand Divine Design. This life is a test case. The poor are tested in their poverty and the rich are tested in their abundance ("He may try you in what He has given you" VI:165). Both are accountable before God in the life hereafter where reward or punishment will be meted out.

In sum, inequality is not only necessary but may even be considered desirable for a variety of reasons. It is in line with justice as everybody is allotted what he earns (see IV:32). It does not frustrate aspirations, does not kill initiative and encourages people to work hard.

Thus, it is established that the Islamic ideology does not call for an artificial perfect equality among people. Some inequality is always allowed to exist. However, Islam does provide a number of tools through which redistribution of income and wealth can be accomplished and many gross inequalities may be removed. The Islamic laws of inheritance are aimed at redistributing wealth. Islam pleads for compassion to the poor and needy. It makes it a duty on the wealthy that they share their wealth with the poor (see LI:19). The institutions of *zakah*, *sadaqah*, and spending for the sake of God (*infaq*), all are redistributive in nature and are aimed at ameliorating the misery of the poor and needy. As far as the distribution of *fay* incomes are concerned, the following guide lines have been provided:

What God has bestowed On His Apostle (and taken away) from the people of townships - belongs to God - to His Apostle and to kindred and orphans; the needy and the wayfarer; In order that it may not (merely) make a circuit between the wealthy among you(LIX:7)⁽³⁾

However, there is another school of *fiqh* experts and Islamic scholars who hold the view that economic inequality of any kind is not permitted in an Islamic economy. They draw inspiration from Abu Dharr AlGhifari - a companion of the Prophet (peace be upon him) who held the view that it is not permissible to hold wealth beyond one's needs. In fact, he was so strong in his conviction that Caliph Uthman b. Affan had to banish him from the city of Medina (*Fariq*, p.179). It is reported by Abu-Yusuf that when Caliph Abu Bakr received some income from the spoils of war, he used to distribute "amongst all the people, minors and adults, freemen and slaves, males and females, in equal shares... some Muslims objected to this equal division which took no account of some people who should have had preference for virtue, precedence and priority. To these objectors Abu Bakr replied that virtues are rewarded by God, but that in matters of subsistence equality is better than preference" (Abu Yusuf, p.68).

(3) It has been suggested that this verse can be taken as a general guideline for formulation of economic policy in an Islamic economy and for making prevention of concentration of economic power a prominent objective of economic policy (Siddiqi 1978, p.442). It remains to be examined how far, in the light of the teachings of the *Shariah*, this may take the form of heavy taxation of income of the wealthy, since there is some justification of taxes other than *zakah* (Ahmad, pp.28-29).

However this policy of equal division was reversed by the Second Caliph, Umar b. Al-Khattab arguing that, "I do not agree with the view of Abu Bakr because I can not treat those who once fought against the Prophet in the same way as those who always fought with him". Thus he opted for graded salaries and pensions in his *Diwan-al-Ata*. It is further reported by Abu Yusuf that the Second Caliph, in the last year of his life, wanted to do away with this practice. "When Umar saw the inflow of booty he said: If I live another year I wish to grant all men, from the first to the last, an equal pension" (Abu Yusuf, p.179). It is not clear from this account whether the Second Caliph had realized the demerits of unequal distribution and thus revised his earlier position or he just wanted to 'upgrade' the pensions of those who were getting little simply because there was more money with the treasury and now it could afford equal distribution at a higher level.

Another point in this connection is whether the rule of equal distribution shall be applicable to only resources owned by the state (such as subsidy, pensions and transfer payments etc.) or even to factor income.

Nonetheless, Ibn Hazm even allows the State the use of force to achieve the desirable goals. He writes:

It is ordained upon wealthy of each city to take care of the poor and needy. If the amount of zakah and fay is not sufficient for this, then Sultan (or ruler) may compel them to provide necessary food, clothing according to season and necessary shelter to the needy and poor. (Ibn Hazm, p.156)

The foregoing discussion bears out that there could be varying approaches to the problem of economic inequality within the Islamic framework depending upon what view point or what interpretation of the Divine injunctions one adopts. In a practical effort at reducing inequalities these view points may be come particularly important. If, in an Islamic country the earlier view is adopted, there would be a greater tolerance of inequalities. In another Islamic country where the latter view is adopted drastic steps may be taken to deal with inequalities. Nevertheless, both of them would remain 'Islamic' economies if they accept and adhere to the broad institutional framework discussed in Section-I.

The tradition of the Second Caliph reported by Abu Yusuf (quoted above) may also be used in building the argument that inequalities in any society are a function of the level of prosperity achieved by it. If a society is prosperous, it could be more generous to the poor. In a society which is itself poor, efficiency has probably a higher priority so that it could prosper and reduce inequalities only in due course.

The foregoing discussion also bears out that (i) some degree of economic in equality is necessary in an Islamic economy as it is a part of Divine Design to test the steadfastness of all human beings, in their riches as well as in their poverty; (ii) that within this broad frame, inequalities may be reduced, the poor may be provided with some minimum necessities, and that compulsory *zakah* payments and private expenditure for the sake of God may go a long way in reducing economic inequalities in Islamic economies; and that (iii) the precise degree of economic inequality allowed and tolerated by *Shari'ah* has been left undetermined.

III. The Model

The model of income distribution which is being presented here has been formulated in the Cambridge tradition, as it assumes different propensities to save out of different incomes. Keynesian tools of analysis are employed in this paper in the belief that tools used by the neoclassical growth theorists are not appropriate to the study of an Islamic economy. The neoclassicals place too much emphasis on marginal productivity theory and regard market solution to distribution of income as optimal. The present model is an attempt to show the usefulness of the Cambridge technique of analysis in the sense that it can accommodate quite easily the essential attributes of an Islamic economy *viz.* abolition of interest and introduction of *zakah*. Thus, standard theory may be either modified or adapted to Islamic conditions with a little effort.

The model uses only some of the institutional features of an Islamic economy outlined above. It is not uncustomary in theoretical exercises to start with as few assumptions as possible. Keeping in line with Occum's razor, we assume the following outline of an Islamic economy.

- i) The economy is managed by private enterprise.
- ii) The institution of interest is completely abolished.
- iii) *Zakah* is imposed upon all zakatable assets.
- iv) There is no governmental activity other than imposition and disbursement of *zakah*.

There are several advantages in adopting this simple framework of an Islamic economy. Firstly, it increases the level of generality. As it has been mentioned elsewhere in this paper, there could be a number of Islamic economies, differing with each other in details but all conforming to the essential attributes of an Islamic economy. Thus, confining ourselves to essential attributes, we could increase the level of generality. Secondly, working with a few essential attributes of an Islamic economy makes comparison easier with a situation where these attributes are not present. We begin with a simple relationship.

$$Y = W + P \quad (1)$$

where, Y = Aggregate income
W = Total wages
P = Total profits

Aggregate income is composed of two major components - total wages and total profits⁽⁴⁾. It could be viewed as the sum of labor income (wages) and non- wage income which arises out of ownership of property (profits and rental incomes). For the sake of convenience it has been denoted only as profits.

$$W = W_n + W_z \quad (2)$$

(4) An argument may be advanced that division of income into wages and profits does not take into account the dominance of agricultural sector in the present day Muslim countries. Firstly, if the agricultural sector is run on commercial lines, as is assumed for all activities in this paper, it hardly affects the model. However, the traditional agriculture does pose certain problems. Before one could incorporate a factor share for landlords as rent, Islamic justification will have to be given for the legitimacy and permissibility of tenancy. This involves intricate problems of interpretation and exegies of *fiqh* in which we may not go in this paper. Secondly, we must distinguish between economies of Muslim countries and Islamic economies. The Islamic economy is a 'theoretical construct' whose attributes have been specified above. It may or may not share all the attributes of Muslim economies as they exist at present.

Wage can further be decomposed into two categories: wages going to the workers who are not recipients of *zakah* (W_n) and wages going to the workers who are *zakah* recipients (W_z). Thus equation (2) is an identity.

The whole society is seen as being composed of three functional groups - capital owners, *zakah* recipient workers, and workers who are not recipients of *zakah*. The non-workers who may be *zakah* recipients and whose only source of income may be *zakah* proceeds may also be included among the *zakah* recipient workers. Thus, it is assumed that *zakah* recipient workers and non-workers do not own any zakatable assets or capital resources. These assumptions could be summarized in the form of the following identities.

$$A = A_C + A_n \quad (3)$$

$$K = K_C + K_n \quad (4)$$

where, A = Total zakatable assets in the economy.

A_C = Zakatable assets owned by the capital owners.

A_n = Zakatable assets owned by the non-recipient workers.

K = Total capital resources in the economy.

K_C = Capital resources owned by the people other than non-recipient workers.

K_n = Capital resources owned by non-recipient workers.

At this stage, it may be mentioned that capital resources are distinguished from assets. In fact, capital resources K is a subset of all assets A . Assets may include gold in the form of ornaments, gold and silver in bullion form, animals, financial assets such as company shares etc. all of which are zakatable but they may not be part of the productive capital of the economy.

Total savings of the economy come from two sources - savings contributed by the capital owners and savings contributed by non-recipient workers.

$$S = S_C + S_n \quad (5)$$

where S = Total savings

S_C = Savings by the capital owners

S_n = Savings by the non-recipient workers.

It is assumed that *zakah* recipient workers as well as non-workers do not save. Investment is made only by the capital owners and non recipient workers. The workers might invest their savings either through financial intermediaries such as banks operating on a profit-sharing principle or directly by getting a partnership in the firms on *shirkah* or *mudarabah* principle. Both the capital owners and non-recipient workers get some profit on the capital in vested by them. Thus, profits are also decomposed into two major parts -one going to the capital owners and the other going to the non-recipient workers. Thus we have the following identity:

$$P = P_C + P_n \quad (6)$$

where, P = Total profits

P_C = Profit going to the capital owners; and

P_n = Profit going to the non-recipient workers

Zakah collected in the society is a function of zakatable assets.

$$Z = \sigma A \quad (7)$$

where Z = Total *zakah* proceeds
 σ = Rate of *zakah*
 A = Total zakatable assets.

Since total zakatable assets are distributed between capital owners and non-recipient workers, the total *zakah* proceeds will be a sum of different amounts of *zakah* coming out of each of these groups.

$$Z = Z_C + Z_n \quad (6)$$

where, Z = Total *zakah* proceeds
 Z_C = *Zakah* proceeds contributed by the capital owners;
 Z_n = *Zakah* contributed by the non-recipient workers.

The equations (1) to (8) are identities which specify the basic structure of the system. Now, let us define some behavioral parameters.

$$\frac{A_C}{P_C} = \alpha \quad (9)$$

$$\frac{A_C}{W_n + P_n} = \gamma \quad (10)$$

The equations (9) and (10) define asset-income ratios for the capital owners and non-recipient workers respectively.

Since *Zakah* is imposed on assets but paid out of income, the amount of *zakah* paid by each group can be known using its asset-income ratio. The *zakah* paid by the capital owners shall be

$$Z_C = \sigma \alpha P_C$$

and the *zakah* paid by the non-recipient workers shall be

$$Z_n = \sigma \gamma (W_n + P_n)$$

Assuming that saving of each group is the function of its net income after it has paid out the *zakah* and is proportional to its income, separate saving functions for each group may be written as

$$S_C = S_C (P_C - \sigma \alpha P_C) \quad (11)$$

$$\text{and, } S_n = S_n [W_n + P_n - \sigma \gamma (W_n + P_n)] \quad (12)$$

Now, the aggregate saving function can be written as:

$$S = S_n (P_C - \sigma \alpha P_C) + S_n [W_n + P_n - \sigma \gamma (W_n + P_n)] \quad (13)$$

with the usual restrictions $0 < S_C < 1$ and $S_n < S_C$

Let us now suppose that the amount of investment necessary to cope with population growth and technical progress is actually carried out and this amount is I. The system shall then be in the long run dynamic equilibrium, provided that the following equilibrium condition is fulfilled.

$$S = I \quad (14)$$

which suggests that the aggregate anticipated savings should be equal to aggregate anticipated investments. Some people have suggested that the equilibrium condition of an Islamic economy should be taken as $I=S$ which means that if savings changed for some reason, full employment investment would also change accordingly. This would happen only if savers and investors are the same people. Most of the Islamic economists have argued that this would indeed be the case in an Islamic economy (Tahir, p.10, and al-Jarhi, p.23).

This argument is based upon the contention that *zakah* discourages hoarding and stimulates investment. Consequently, "savings will have to be invested in common stock (ordinary shares) or deposited in the 'profit sharing' accounts of the interest free banks (i.e. advanced to entrepreneurs through banks on a profit sharing basis) (Siddiqi, 1983, p.18). But Siddiqi concedes the possibility that "This will still leave some room for holding cash in expectation of a rise in the expected rate of profit or in anticipation of better opportunities for investment" (Siddiqi, 1983, p.18). Thus, there is a possibility of discrepancy between saving and investment. The presence of financial intermediaries such as banks also implies that all savers shall not be investors in an Islamic economy. Hence, the full employment amount of investment may be taken as given and saving may adjust to it, if and when required.⁽⁵⁾

Substituting the aggregate saving function in the equilibrium condition given in equation (14) we get.

$$S_C (P_C - \sigma \alpha P_C) + S_n [W_n + P_n - \sigma \gamma (W_n + P_n)] = I \quad (15)$$

Since $W_n + P_n = Y - P_C + W_Z$ equation (15) can be written

$$\text{as: } S_C (P_C - \sigma \alpha P_C) + S_n [Y - P_C + W_Z - \sigma \gamma (Y - P_C + W_Z)] = I \quad (16)$$

which can be solved for P_C as:

$$P_C = \frac{I}{S_C(1-\sigma\alpha) - S_n(1-\sigma\gamma)} - \frac{S_n \cdot Y(1-\sigma\gamma)}{S_C(1-\sigma\alpha) - S_n(1-\sigma\gamma)} + \frac{S_n \cdot W_Z(1-\sigma\gamma)}{S_C(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \quad (17)$$

(5) Some other papers written in the area of Islamic economics have used the equilibrium condition $S=I$ See for example Kahf, p.122.

The equation (17) gives the expression for profits accruing to the capital owners only. This shall be positive if the following feasibility conditions are met.

(i) $\alpha < \frac{1}{\sigma}$ and $\gamma < \frac{1}{\sigma}$ (ii) $S_n < S_c$ The first condition requires that asset income ratios of

both the groups should be less than the inverse of *zakah* rate. Since the rate of is fixed and given exogenously at 2½% the value of asset income ratio for each group should not exceed 40. Therefore, if the first feasibility condition is satisfied we shall have $0 < \sigma \alpha < 1$ and $0 < \sigma \gamma < 1$; hence, $0 < 1 - \sigma \alpha < 1$ and $0 < 1 - \sigma \gamma < 1$. Taking account of the second feasibility condition $S_n < S_c$ can be said that,

$$S_n (1 - \sigma \gamma) < S_c (1 - \sigma \alpha)$$

which means, $S_c (1 - \sigma \alpha) - S_n (1 - \sigma \gamma) > 0$

The share of P_c in Y can be obtained if both sides of equation (17) are divided by Y .

$$\begin{aligned} \frac{P_c}{Y} &= \frac{1}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{I}{Y} \\ &\quad - \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\ &\quad + \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{Y} \end{aligned} \quad (18)$$

Dividing equation (17) by K we get the expression for $\frac{P_c}{K}$ which is as follows:

$$\begin{aligned} \frac{P_c}{K} &= \frac{1}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\ &\quad - \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\ &\quad + \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{K} \end{aligned} \quad (19)$$

The equation (18) gives the share of capital owner's profit in income. Similarly equation (19) gives the average rate of profit for capital owners per unit of total capital. They should not be mistaken for profits share in income and over all rate of profit in the economy. In the long run equilibrium these magnitudes would be given by the following equations.

$$\frac{P}{Y} = \frac{P_c}{Y} + \frac{P_n}{Y} \quad (20)$$

$$\frac{P}{K} = \frac{P_c}{K} + \frac{P_n}{K} \quad (21)$$

Equation (20) states that profit share in income is a sum of capital owner's profit share in income and non-recipient workers profit share in income. Similarly equation (21) suggests that over all rate of profit on the stock of capital is a sum of rate of profit for capital owners per unit of total capital and the rate of profit for non-recipient workers per unit of capital. Taking the equation (21) first we have to look for an expression for $\frac{P_n}{K}$ which is the rate of profit for non-recipient workers per unit of

capital. Keep in mind that workers shall invest what ever capital resources they have under *mudarabah* agreement where only the proportion in which profits are shared between the contracting parties is known. It is reasonable to assume that K_n will be distributed among a number of ventures and projects. Let us suppose that number of these projects is m . Then there will be m profit sharing ratios. Let us also suppose that profit sharing ratio in project i is a_i where $a_i \neq a_j$ while j is another project. If the level of profit in the project is X_i then total profit accruing to the non-recipient workers is $\sum_{i=1}^m a_i x_i$. Then average rate of profit on K_n can be calculated as:

$$\delta = \frac{\sum_{i=1}^m a_i x_i}{K_n}$$

$$\text{Thus } \delta K_n = \sum_{i=1}^m a_i x_i = P_n \text{ and } \frac{P_n}{K} = \frac{\delta K_n}{K}$$

which suggests that rate of profit for non-recipients per unit of total capital would be proportional to their share in total capital. But under the conditions of long run equilibrium non recipients' share in total capital would be the same as their share in total savings. Thus we have:

$$\frac{K_n}{K} = \frac{S_n}{S} = \frac{S_n [W_n + P_n - \sigma\gamma (W_n + P_n)]}{I}$$

Which can be Simplified as:

$$\begin{aligned} \frac{K_n}{K} &= \frac{S_n}{S} = \frac{S_n [Y - P_c - W_z - \sigma\gamma (Y - P_c - W_z)]}{I} \\ &= \frac{S_n Y - S_n \sigma\gamma Y - S_n P_c + S_n \sigma\gamma P_c - S_n W_z + S_n \sigma\gamma W_z}{I} \\ &= \frac{S_n (1 - \sigma\gamma) Y}{I} - \frac{S_n (1 - \sigma\gamma) P_c}{I} - \frac{S_n (1 - \sigma\gamma) W_z}{I} \end{aligned} \quad (22)$$

Let us consider the second term of expression in equation (22). The expression for P_c is already known from equation (17). Dividing it by I we get:

$$\begin{aligned} \frac{P_c}{I} &= \frac{1}{S_c (1 - \sigma\alpha) - S_n (1 - \sigma\gamma)} \\ &= \frac{S_n (1 - \sigma\gamma)}{S_c (1 - \sigma\alpha) - S_n (1 - \sigma\gamma)} \cdot \frac{Y}{I} \\ &+ \frac{S_n (1 - \sigma\gamma)}{S_c (1 - \sigma\alpha) - S_n (1 - \sigma\gamma)} \cdot \frac{W_z}{I} \end{aligned}$$

Therefore,

$$S_n(1-\sigma\gamma)\frac{P_c}{I} = S_n(1-\sigma\gamma)\left[\frac{1}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} - \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{Y}{I} + \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{W_z}{I}\right]$$

or,

$$S_n(1-\sigma\gamma)P_c = \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} - \frac{[S_n(1-\sigma\gamma)]^2}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{Y}{I} + \frac{[S_n(1-\sigma\gamma)]^2}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{W_z}{I} \quad (23)$$

Substituting equation (23) into equation (22) we get:

$$\frac{K_n}{K} = \frac{S_n(1-\sigma\gamma)Y}{I} - \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} - \frac{[S_n(1-\sigma\gamma)]^2}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{Y}{I} + \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{W_z}{I}$$

which can be simplified as:

$$\frac{K_n}{K} = \frac{S_c(1-\sigma\alpha)S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{Y}{I} - \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} - \frac{S_c(1-\sigma\alpha)S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha)-S_n(1-\sigma\gamma)} \cdot \frac{W_z}{I} \quad (24)$$

Since $\frac{P_n}{K}$ is defined as $\frac{\delta K_n}{K}$ substituting equation (19) and (24) into equation (21) we get:

$$\begin{aligned}
\frac{P}{K} &= \frac{I}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{I}{K} \\
&- \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\
&\cdot \frac{Y}{K} + \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{K} + \delta \\
&\left[\frac{S_n(1-\sigma\alpha) S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{Y}{I} \right. \\
&- \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\
&\left. - \frac{S_c(1-\sigma\alpha) S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{I} \right] \quad (25)
\end{aligned}$$

The first three terms of the above equation represent rate of profit per unit of capital stock for capital owners and the last three terms represent the same magnitude for non-recipient workers.

By corollary we can write the share of profit in aggregate income as follows:

$$\begin{aligned}
\frac{P}{Y} &= \frac{I}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{I}{Y} \\
&- \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\
&+ \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{Y} + \delta \\
&\left[\frac{S_c(1-\sigma\alpha) S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{K}{I} \right. \\
&- \frac{S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \\
&\left. - \frac{K}{Y} - \frac{S_c(1-\sigma\alpha) S_n(1-\sigma\gamma)}{S_c(1-\sigma\alpha) - S_n(1-\sigma\gamma)} \cdot \frac{W_z}{Y} \right] \quad (26)
\end{aligned}$$

Equation (26) determines the share of profit in aggregate income. The first three terms of this equation represent the share of profit going to the capital owners and the last three terms represent the share of profit going to the non-recipient workers.

Let us now compare the equilibrium values of $\frac{P}{K}$ in Islamic and non-Islamic settings. The rate of profit for an Islamic economy has been given by equation (25). In contrast to this economy, σ , α , γ and W_z will disappear in a non-Islamic setting. Thus the rate of profit for a capitalist economy may be written as:

$$\frac{P}{Y} = \frac{1}{S_c - S_w} \frac{I}{K} - \frac{S_w}{S_c - S_w} \frac{Y}{K} + r \cdot \left(\frac{S_w S_c}{S_c - S_w} \frac{Y}{I} - \frac{S_w}{S_c - S_w} \right) \quad (27)$$

where S_w and r represent workers' propensity to save and interest rate, all other symbols carrying their usual meanings.

It can be determined through comparison of equations (25) and (27) that an Islamic economy presents a more complex form of economic organisation as it includes several new behavioural parameters which are totally absent in the non-Islamic setting. The Islamic economy shows greater interdependence as $\frac{W_z}{K}$ is a determinant of rate of profit. The sign of the co-efficient of $\frac{W_z}{K}$ is positive, which suggests that an increase in

W_z (the income of *zakah* recipients and non-workers) also increases the rate of profit on the stock of capital. In the first instance, it may seem odd, but it is plausible. An increase in the income of *zakah* recipients is likely to raise the level of aggregate demand. This may happen through an increase in demand for consumer goods as the marginal propensity to consume of *zakah* recipients is assumed to be unity as well as through operation of accelerator. Consequently, the climate for further investment improves. Since full employment is assumed, both I and K would rise. Thus, rate of profit is expected to rise because of an increase in I/K as well as in $\frac{W_z}{K}$. However, the productivity of capital will decline at the same time and may have some depressing effect on the rate of profit.

Similarly, the share of profits in income for a non - Islamic economy may be written as:

$$\frac{P}{Y} = \frac{1}{S_c - S_w} \frac{I}{Y} - \frac{S_w}{S_c - S_w} + r \cdot \left(\frac{S_w S_c}{S_c - S_w} \cdot \frac{K}{I} - \frac{S_w}{S_c - S_w} \frac{K}{Y} \right) \quad (28)$$

The share of profit in income for the Islamic economy has been given by the equation (26). Whatever has been said above about the rate of profit may also apply for $\frac{P}{Y}$ as well. One may be interested in finding out whether $\frac{P}{Y}$ or $\frac{P}{K}$ will be higher or lower in an Islamic economy compared with a non-Islamic economy. Unfortunately, it can not be determined *a priori*. Much will depend how behavioural parameters of an Islamic economy, S_c , S_n , α and γ behave and what are their relative magnitudes.

Another interesting aspect of long run theory of distribution is its connection with the theory of growth. To see it clearly, let us go back to equation (26) and solve it for $\frac{I}{Y}$ which yields:

$$\begin{aligned}
\frac{I}{Y} &= S_c(1 - \sigma\alpha) - S_n(1 - \sigma\gamma) \frac{P}{Y} + S_n(1 - \sigma\gamma) \\
&+ S_n(1 - \sigma\gamma) \frac{W_z}{Y} + S_c(1 - \sigma\alpha) S_n(1 - \sigma\gamma) \frac{K}{I} \\
&- S_n(1 - \sigma\gamma) \frac{K}{Y} - S_c(1 - \sigma\alpha) S_n(1 - \sigma\gamma) \frac{W_z}{Y} \quad (29)
\end{aligned}$$

If we make a further restrictive assumption that workers do not save, then equation (29) can be written as

$$\frac{I}{Y} = S_c(1 - \sigma\alpha) \frac{P}{Y} \quad (30)$$

Here $\frac{I}{Y}$ is the same as s in Harrod's model of growth. This can be shown as follows: Harrod's definition of warranted growth rate is:

$$\frac{S}{V} = g_w \quad ; \text{ where, } g_w = \text{warranted growth rate.}$$

$$S = \frac{S}{Y} = \frac{\Delta S}{\Delta Y} = \text{saving ratio}$$

$$V = \frac{S/Y}{SK/\Delta Y} = \frac{I/Y}{\Delta K/\Delta Y}$$

In definition of I , it has been mentioned that I is the level of autonomous investment taking place to cope with population growth and technological changes. Hence, warranted and natural growth rates are not independent of each other. In a capitalist economy, this equality is possible only if the profit margin is flexible. In the Islamic economy, another dimension of flexibility is added through α and γ . It is possible that $\frac{P}{Y}$ may not change itself but α and γ may undergo such changes that $\frac{I}{Y}$ is influenced. Thus, we come to the conclusion that steady state solution is possible in an Islamic economy because warranted growth rate may adjust to natural rate through changes in $\frac{P}{Y}$, α and γ .

It may again be reiterated that growth rates of Islamic and non-Islamic economies can not be compared *a priori* as they will depend upon respective parameters of each economy.

IV. Conclusion

In this paper a macro model of distribution has been worked out in the Kaldor Pasinetti tradition. The Kaldor Pasinetti frame has been adopted because it does not lead to neoclassical intricacies of production function and marginal productivity theory and is more amenable to analysis of social groups. The model decomposes not only profits but also wages into two distinct categories. Thus, we have worked with four components of aggregate income while Kaldor worked with two and Pasinetti with three components of income.

The institution of *zakah* was incorporated in the Kaldor-Pasinetti framework showing that an Islamic economy possesses a strong redistributive instrument in the scheme of distribution. However, it can not be determined *a priori* whether ratio of profit to income or rate of profit on capital stock is higher or lower in an Islamic economy compared with a non-Islamic economy. It has been demonstrated that not only the saving propensities of different groups of people but also the rate of *zakah* and asset income ratios of capital owners and non-recipient workers influence the distribution of income in an Islamic economy. The model brings out the greater interdependence Islamic economy enjoys in comparison to non-Islamic economies. This is so because the rate of profit and share of profit in income also depend crucially upon the share of wages going to *zakah* recipient workers.

The paper also examines the implications of distribution model for theory of growth. It has been shown that it is possible for the Islamic economy to achieve steady state growth. The prohibition of interest or the introduction of *zakah* do not in any way inhibit the attainment of steady state. The flexibility of P/Y and of asset income ratios ensure that warranted growth rate will adjust to natural growth rate. Nevertheless, growth rates can not be compared *a priori* between Islamic and non-Islamic economies.

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