Comments on 'Poverty elimination in an Islamic perspective: an applied general equilibrium approach'

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Comments

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1. INTRODUCTION

Writers in the area of Islamic economics have often sought to demonstrate that the replacement of interest by profit-sharing in business finance plus the introduction of *zakāh* as a redistributive measure are the sure means to alleviate poverty and improve income distribution.[19] The paper under discussion essentially is in the same vein but with a difference. Unlike the earlier writings, Yasin and Tahir do not rely purely on *a priori* reasoning. Rather, they attempt at building a concrete empirical case to demonstrate how effective, rather miraculous, the two measures could be, if put into operation. In that, their effort is laudable. The authors seek to prove their point by building what they call a computable general equilibrium (CGE) model for the economy of Pakistan. They choose and adjust the data for the 1989-90 fiscal year to serve as the base for their work.

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[19] The literature review in the paper leaves out several important contributions, one for example being that of Munawar Iqbal (1985), "*Zakāh*, Moderation and Aggregate Consumption in an Islamic Economy", *JRIE*, Vol. 3, No. 1.

The authors take the factors of production as grouped into two broad categories: labour and capital. The supply side consists of commodity producing sectors at home including public services plus the external transactions, while the demand side comprises households, the government and investment sectors. The parameters for the model are mainly obtained from the available literature, but a few have also been *calibrated.* After carefully specifying the model which includes functions concerning production relations, consumer behaviour, income generation, and income distribution in a secular setting, the authors also mention their Islamic variants, bringing in *zakāh*, and the interest-free financing of business.

To unfold the Islamic ramifications of their construct, the authors start with the situation on various fronts in the Pakistan economy in 1989-1990 to serve as the benchmark, and present the results of four policy alternatives, each with a time span of ten years, for the purposes of comparison: the three plans with Islamic elements are shown as superior to the first, the secular one, in terms of results. The fourth plan is found to be the best for alleviating poverty and improving distribution. The paper's argument is based on some well spelled out assumptions, the crucial one being that the Cobb-Douglas function homogeneous of degree 1 applies both in production and consumption.

It is difficult to cover in the present review the numerous aspects of the authors' wide ranging thesis, more so its mathematical formulations. So, we have chosen to discuss here, briefly, a few matters concerning the data adjustment procedures, Islamic variables for Plans 2, 3 and 4, comparative results, and conclusions.

2. DATA ADJUSTMENTS

The authors have utilised three sources of information on a selective basis for obtaining an integrated and internally consistent data set on relevant macro-economic variables for 1989-90, the point of departure for their alternative policy plans. These include the

Household Income and Expenditure Surveys (HIES) for the years 1987-88 and 1990-91 as well as the National Accounts figures. The key figure around which all adjustments revolve is the aggregate disposable income fixed at Rs.695282 million for the year. Save for some discrepancies, the adjustments are in order. But there is one difficulty. The exercise uses in this connection the Consumer Price Index (112.7) for deflating the 1990-91 sources of income data for the economy as given in the HIES of that year to achieve the corresponding figures for 1989-1990. Now, the factor reversal test in the theory of index numbers informs us that the product of price and quantity indices must equal the value index. In symbols we have:

$$P_{01} \cdot Q_{01} = V_{01} \quad \text{where } V_{01} = \sum p_1 q_1 \, / \sum p_0 q_0$$

Suppose $\sum p_0 q_0$ is the GDP for 1989-90 and $\sum p_1 q_1$ for 1990-91. Then, to obtain the former we have to divide $\sum p_1 q_1$ not by the price index P_{01} alone but also by the quantity index Q_{01}. Otherwise, we merely get the figures for 1990-91 at constant prices with reference to the base of the deflator, i.e. 1989-90 = 100. Alternatively, there is an implicit assumption that the quantity Q of goods and services has registered no change in 1990-91 compared to 1989-90 *item by item* and the *relative* prices have also remained unaltered. We are not sure if the authors considered the implications of this fact for their results.

Interestingly, despite this cumbersome adjustment exercise, the data as one finds them in the Appendices and the text are not mutually compatible. To illustrate, compare the initial configuration of figures after adjustment[20] for the base year 1989-90 with the one that emerges from Table 3.1.

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[20] The figures in Table 3.11 have been obtained by dividing the figures in Table 3.1 by the corresponding number of households in each group. Other necessary adjustments have been made.

Table 3.11: Yearly Allocation of Income

Item	Per Household (Rs.)		Aggregate (Rs. million)	
	Initial	Table 3.1	Initial	Table 3.1
Gross income	41105	43868	698777	745721
Direct taxes paid	206	206	3495	3495
Disposable income	40899	43662	695282	742226
Consumption	36806	38174	625700	648966
Savings	4093	5488	69581	93260

Thus the disposable income, the centrepiece of the adjustment process, does not hold its own. Furthermore, it stands differently at Rs.42842 per household with an aggregate of Rs.728320 million when calculated from the figures given in Table 3.2. Additionally, these figures in the text do not reconcile well with those given in the extra information sheets provided to the discussant. These discrepancies are not small, and may put in jeopardy the results drawn from the data.

3. ISLAMIC VARIABLES

For introducing *zakāh* in Plans 2 and 4, the authors calculate its amount at 2.5 percent on gross wealth or capital assets owned by the households at the end of the accounting period with *niṣāb* or the exemption limit fixed at Rs.15000 for the base year on the basis of a gold value equivalent. This raises a few queries: how is the value of capital assets calculated, what was it for the base year, and how did it grow over the period? One finds no clue in the paper. Neither do the results mention any amount separately nor is there any variable in the distribution equations incorporating *zakāh*. One possible way to know the role of *zakāh* in the study is to estimate, and compare the expenditure (consumption) of the first group in each year for Plan 2 with that of Plan 1. This can be done by taking the beginning and end period expenditure per household in each

case, estimating the growth rates, and using them to develop the respective series. The difference in these series would give us for each year an estimate of *zakāh* support to the disposable income of the group, assuming that the other transfer payments continue to play their proportionate role.[21] For the two Plans, these rates are found to be 1.8 percent and 2.1 percent respectively. The results of the exercise are produced in Table 3.12 below.

Table 3.12: Estimation of Zakāh Support for Group 1 Expenditure (Rs.)

Year	Values for Plan 2	Values for Plan 1	*Zakāh* Component
Initial	21068	21068	—
1	21510	21447	63
2	21962	21833	129
3	22423	22226	197
4	22894	22626	268
5	23375	23034	341
6	23866	23448	418
7	24367	23870	497
8	24878	24230	648
9	25401	24737	664
10	25935	25182	753

These estimates seem to be in order. Due to *zakāh* receipts, the mean expenditure of the households crosses the poverty line, advancing at 2 percent per year, at the same time point in the above Table as in Figure 3.4 of the paper. Interestingly, the *zakāh* payments as a proportion of the household expenditure (Plan 2) grow each year by about 0.29 percent. Perhaps an explanation for the phenomenon is needed. Furthermore, the aggregate *zakāh* payments to the group approximate to Rs.443 million in the first year of Plan 2. Capitalised at 2.5 percent, the assets subject to *zakāt* should be worth about

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[21] This is because transfers/debts form an entry in disposal of income.

Rs.18000 million. The paper does not provide any information on what is included in the capital assets chargeable to *zakāh*. At some places it equates them with wealth and at others with the financial assets of the households.

A little reflection would show that the household classification scheme of the paper is not very appropriate for the study of the impact of *zakāh* on society. Notice that the classification into groups is with reference to income, not according to *niṣāb*: the average initial disposable income of the households in Group 1 at Rs.17581 is much higher than the exemption limit of capital assets at Rs.15000 for attracting the *zakāh* levy. However, since this group is taken to be entirely consisting of *zakāh* recipients, the position of the households it includes is clear on the question of *niṣāb*. But what about the remaining three groups: their high *average* incomes in no way prove that *all* their members have assets above *niṣāb*, or none of them is or would be entitled to receive *zakāh*. In other words, among the households in the three groups, one may expect quite a number of households having assets below *niṣāb*, or incomes low enough to qualify for *zakāh* support. Presumably, for the study of the *zakāh* issue, a division of the households on the basis of *niṣāb* would have given better results. Alternatively, the authors could have made the position clearer by providing details of the incoming and outgoing revenue flows over the years from what they name as the *zakāh* fund for the exercise.

Again, for the economy as a whole the authors mention a fixed rate of interest 'r*' and a profit rate 'r' both determined by the market. They also tie the two in a sort of difference relationship (equation 16). But they skip the crucial question, i.e. how the sharing of the profit ratio for the outside financier is determined under an interest-free system. In their scheme, firms and financial institutions are kept out of the picture: investment made and profit received are both treated as exogenously given components of the household account. As such, the sharing ratio determination and the related issues of adverse

selection and moral hazard become inconsequential. However, even
the value of 'r' the authors have used to arrive at their calculations
under Plan 3 is not available. But there is, perhaps, a clue to unfold
what the replacement of interest by profit-sharing has achieved in
the authors' scheme. Table 3.2 of the paper provides for the base
year two alternative sets of values for the disposable income per
household *albeit* without giving a reason. These sets are produced
below for ready reference along with some other information needed
for the following discussion.

Table 3.13: Disposable Income per Household (Rs.)

	Group 1	Group 2	Group 3	Group 4	Weighted Mean
Base Year Values A	17581	38356	69895	182591	42842
Base Year Values B	17821	40127	73619	171452	43884
End Period Values:					
Plan 1: Status quo	20811	45520	134219	624411	83211
Plan 3: Profit-sharing	21310	48607	149979	579405	82003
Million of Households	7.0363	6.3852	2.6061	0.9724	

Set A of base year disposable incomes includes net interest receipts
by the households and has obviously been used to arrive at the Plan
1 end period results. Set B of base year values seems to be an adjusted
version of set A, i.e. shorn of interest. For, the profit-sharing scheme
becomes operative from the very beginning of the year. The aggregate
income for set A is Rs.728320 million. For set B, it works out at
Rs.746025 million. Why are the two aggregates different? It clearly
is the deletion of interest payments from the gross household income
to the extent of Rs.17705 million which has raised the aggregate
disposable incomes in set B. Implicit in that is a net flow of interest
payments from the household sector to outsiders, government and/
or financial institutions. That apart, the amount of interest payment

per household in the base year was about Rs.1042 (= 43884 - 42842). The difference of the end period weighted means for Plans 1 and 3 at Rs.1208 is just Rs.166 more than the interest equivalent used to adjust the base year figures. This certainly is not a very elating improvement.

That the results of Plan 3 would not cause much elation was indeed ensured by the constraints of the choice of general equilibrium instrument for analysis imposed on the authors' model. Because such analysis requires that the equilibrium of the household, and equilibrium in the markets for final goods are consistent with equilibrium for the firm, and equilibrium in the factor markets, it had to rest on the assumption of perfect competition as a feasibility condition. In fact, the authors do cast their analysis in a framework of competitive conditions, and constant return to scales with transactors in the markets having no pricing power. Interest rate r^*, and r, the long run rate of profit, which must now only be normal, could hardly differ. For this reason, classical writers did not bother much about the distinction between interest and profit. The model under review provides empirical evidence on the point. It implicitly demonstrates that the division of a firm's value product between labour and capital as apportioned by the marginal products of factors is *just* as well on the contribution criterion. It is time for economists to realise that no other idea has done more harm to the cause of distributive justice than the attempt at isolating on this basis the contribution of an individual factor in a firm's value product under *real* world situations.[22] Also, one must not forget that no effort at ensuring equity in personal income distribution would ever succeed without ensuring at the same time equity in functional income distribution. The constructors of the present model seem oblivious to this important fact.

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[22] For a fuller argument on the point see Zubair Hasan's Review of M.N. Siddiqi's book *Teaching Economics in Islamic Perspective*, Section 5, *Islamic Economic Studies*, Vol. 6, No.1 (1998).

4. THE RESULTS

Here we shall not go over the larger gains that the authors claim accrue in terms of growth, prosperity and welfare improvement under the alternative Islamic plans compared with the secular one, save one cursory observation. They did not find profit-sharing alone (Plan 3) of much consequence. So, the large improvement in results under Plan 4 is mainly because of introducing *zakāh* in the model as an additional factor. The authors rightly point out that "*zakāh* not only redistributes resources but also stimulates investment through the multiplier effect of enhanced consumption." Now, religious reverence for *zakāh* apart, in cold logic why must its effects be different on growth and welfare from other egalitarian transfers in modern economies? In fact, the volume of such transfers is much larger in the Western world if only because the rich can afford to be more benevolent. Mainstream economics just does not include them in their theoretical models or empirical exercises to analyse their impact on progress and prosperity. Presumably, too much reliance is being placed on *zakāh* as a panacea for economic ills by Islamic scholars; more so in a country where people are up in revolt against filing the simple tax survey forms.

However, let us turn to the performance of the Islamic models of the authors with reference to the main objectives of the paper: reduction in the inequalities of incomes, and the amelioration of poverty. The evaluation of the authors' results on these counts must be prefaced with a reference to an important aspect of their work. Their model takes the household, not the individual, as the unit for analysis. The average size of the unit consists of 6.5 individuals. Over the ten year time span of the plans the number of the household units is kept unchanged at 17 million. At the same time, the population of the country is deemed to increase by 2.5 percent each year. This means that not only would the number of households increase to around 22 million by the end of the decade, their composition and

structure within and between the four groups may also change. Alternatively, if the number of the households is kept constant, as the authors envisage, the average size of the household unit must rise to over 8.3 persons. The changes in the household size or number could be of far reaching consequence for the state of poverty and income/asset distribution in society. The results of an analysis, which ignores this reality, can hardly be taken at their face value.

However, let us consider the claims of the authors within their own framework The impact of the Islamic measures on poverty is examined through their beneficial effects on income and utility levels of the lower groups, especially the first. Let us compare the positions of the first and fourth groups under Plans 1 and 4. The data used below are taken from Table 3.2 of the paper.

Table 3.14: Comparison of Disposable Incomes of Groups Under Different Plans (Rs.)

	Group 1 I	Group 4 II	Absolute Difference III
End of Plan 1	20811	624411	603600
End of Plan 4	28570	675148	646578
% increase	37.28	8.13	7.12

By the end of the period, the income of the average household increased under the (best) Islamic plan more than under the secular arrangement for both the poor and the rich. Also, the increase has been larger proportionately for the former. Still, *relative* poverty has increased – the rich becoming richer, the poor becoming poorer as column 3 of the table reveals. The authors do recognise this fact with reference to the base year but not when comparisons are made with Plan 1 figures. Even the rise in the consumption expenditure of Group 1 households and their ability to cross the poverty line is not because of any worthwhile increase in their productive power. It has depended essentially on increasing *zakāh* support. The authors do seem to

concede the point when they say: "The transfers enable them (the poor) to raise their living standards."

Next, consider the estimation of the effects of alternative plans on the utility levels of the households. For this purpose the authors combine three variables: the *true* cost of living index in the base year P_0, the indirect utility, i.e. measured in nominal money V_h and the equivalent variation EV. The difference of the end and beginning period utility V_h, is multiplied by the index P_0 to obtain the EV. Based on the EV values so calculated, it is claimed that there is a welfare gain in the Islamic Plans 2 and 4 compared to the status quo Plan 1. Intuitively, the claim appears to be true but sufficient information is not available for its verification. Utility is a subjective phenomenon, and all attempts at its quantification have an element of arbitrariness. The objective element in the calculations is P_0. But even here despite clarity at the theoretical level about a true cost of living index, arriving at one in practice is rarely possible. Here we do not have the data to construct a cost of living index, true or otherwise. P_0 has no independent existence: it is derived from the indirect utility function V_h. Putting the two in a formula for estimating EV is, therefore, somewhat dubious. It is appropriate to note that a *true* cost of living index must be independent of the reference utility level. It is unique only in the homothetic case where it has a double limit, i.e. $P^P_{01} \leq P_{01} \leq P^L_{01}$[23] Admittedly, it is not possible to meet the requirement of homotheticity, i.e. the consumer spends the same proportion of his total income on each commodity irrespective of its level. But this very fact does warn that empirical results based on quantifying utility can only be taken with a pinch of salt. Thus, the paper does not seem to cut much ice on the poverty alleviation front.

The position is no different in the case of income distribution. Table 3.14 has already thrown some light on the issue. To prove that under Islamic dispensation income distribution would improve, the

[23] See Nagar and Das (1988), *Basic Statistics*, Delhi: Oxford University Press, pp.304-305.

authors construct comparative Lorenz curves and calculate Gini coefficients for the base year and the alternative plans. As *zakāh* transfers purchasing power from the rich to the poor, some improvement in the distribution of incomes is obviously expected. The contribution of the paper is to be examined in the way the authors chose to demonstrate the fact.

The Table below provides the cumulative population shares which in the scheme of the paper remain fixed for the projection decade and the corresponding income shares calculated from the data for the base year, Plan 1, and Plan 4.

Table 3.15: Cumulative Population and Income Shares

Population Shares	Income Shares and Coordinate Points					
	Base	Points	Plan 1	Points	Plan 4	Points
.000000	.000000		.000000		.000000	
.413900	.169850	1	.105041	4	.129863	7
.789500	.506116	2	.313537	5	.334501	8
.942800	.756218	3	.564452	6	.575567	9
1.000000	1.000000		1.000000		1.000000	

The points for the three Lorenz curves are given in the following Figure. Here, we find that points 1, 2, and 3 are clearly above the rest showing that distribution of income deteriorated during the Plans under consideration.

Points 7, 8, and 9 for Plan 4 do lie respectively above points 4, 5, and 6 for Plan 1 showing better results for the former, i.e. the Islamic alternative, but the differences are too small: 0.024822, 0.020964, and 0.011115. They decrease as we move up from the lower towards the higher income groups showing that enhanced transfer payments to the poor because of *zakāh* enforcement make them better off. However, these facts put serious question marks on the shape of and the distance shown between the two Lorenz curves in the paper.

Figure 3.5: Chords of Lorenz Curves
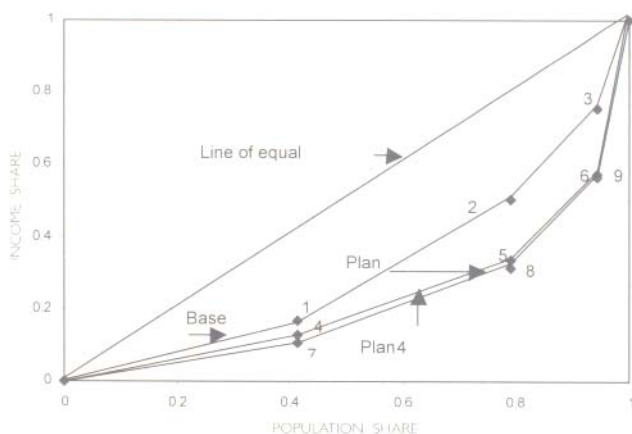
The use and calculation of the Gini coefficient is also somewhat fuzzy. An important ingredient of the measurement is the area lying between the line of equal distribution and a given Lorenz curve. The calculation of this area uses the chords joining consecutive points on which the curve rests. The area between the chords and the curve is lost for the calculation of the coefficient. The constraint detracts from the accuracy of the measure. But the larger the number of values used to construct the curve, the greater the number of chords with smaller size, so less will be the area lost, and more accurate will be the Gini coefficient obtained. To have just four income groups for a population of 17 million households is perhaps too high a degree of approximation for arriving at reasonably reliable results.

In addition, the calculation of the coefficient is vitiated with a serious lapse in applying the formula, which is reproduced below for ready reference:

$$G = 1 - \sum_{i=1} p_i \, (z_i + z_{i-1}), \, z_o = 0$$

Here, the term in brackets is the sum of consecutive z_i values, not their accumulation as one finds in the paper. To clarify the point we present below the two positions in the case of estimation for the base year. Values from the paper are shown in brackets.

Groups	1	2	3	4
z_i(cumulative)	0.169850	0.506116	0.756218	1.000000
$z_i + z_{i-1}$	0.169850	0.675966	1.262334	1.756218
	(0.169850)	(0.675966)	(1.432184)	(2.432184)

The corrected values of the coefficients are given below together with their values in the paper shown in brackets

	Base Year	Plan 1	Plan 2	Plan 3	Plan 4
Gini Coefficients	0.381834	0.565223	0.552398	0.560346	0.542118
	(0.317131)	(0.535179)	(0.506685)	(0.519424)	(0.495628)

The differences between the two sets of values is not large as only four values are involved in the construction of the coefficient, and the first two values remain the same in both cases. Even so, the gap between the coefficients in the case of Plan 1 and Plan 4 has now narrowed down to an almost inconsequential level. Thus, on the distribution front too the paper has hardly achieved what it aimed at. The authors are simply apologetic in blaming the non-achievement because of the insufficiency of the time span, ten years, for the model to show the Islamisation effects in full. The fault lies elsewhere.

5. CONCLUDING REMARKS

The authors set out to prove some propositions in Islamic economics which scholars have intermittently attempted to do, i.e. the enforcement of *zakāh* and the replacement of interest-based

components of financing with profit-sharing in free market economies helps alleviate poverty, and mitigates the present inequalities in the distribution of income and wealth which are admittedly too agonising. The method used by the authors is novel, but novelty need not always be rewarding. General equilibrium analysis has to rest, of necessity, on the assumption of perfect competition.[24] This has put restraints on the authors' model to bring out the real significance of the Islamic measures, especially the consequences of interest-free financing. The superiority of Islamic measures can better be demonstrated in a framework of real world situations.[25] This is what Islamic economists have not yet been able to do conclusively, despite some brilliant efforts.

Zakāh payments enhance the magnitude of egalitarian income/wealth transfers and must have to that extent a relieving impact on the state of poverty, and distributive inequity in an economy. It is too obvious to be proved. The real strength of *zakāh* lies in the fact that its payment being a religious obligation, collection is likely to be larger and ensured as compared with usual charities or donations. The replacement of interest by profit-sharing could not show much promise in the authors' model for the reason we have already given. On the practical front the introduction of profit-sharing as an alternative has indeed made some promising headway, even with the mainstream financial institutions.

The weaknesses we have indicated above apart, the work under discussion retains all the institutions of the secular system intact

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[24] Notice that the model, despite having perfect competition moorings, only aggravates the initial income disparities, as the economy grows under any Plan choice – secular or Islamic. The implications of this phenomenon are worth investigating.

[25] For illustration see Zubair Hasan: "Profit Maximization – Secular Versus Islamic" in Sayyid Tahir et al. (ed.) (1992), *Readings in Microeconomics in Islamic Perspective*, Kuala Lumpur, Malaysia: Longman, pp. 248-251.

except that it deletes interest, and introduces *zakāh* into the picture. The authors also do not insist on any changes in the socio-economic state of the country. We believe that a change in the political power structures whereby they are more inclined to the promotion of Islamic norms of behaviour and the enforcement of religious injunctions is the first imperative for the success of any process towards Islamising the economies of Muslim countries, including Pakistan. The role of non-governmental organisations and socio-religious movements is also crucial in the matter. But interestingly, almost everything remains static in the authors' *dynamic* model, except the computer.