Macro Consumption Function in an Islamic Framework

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Introduction
Consumer behaviour, i.e., how the consumers allocate their income between different heads and how they decide how much to consume now and how much to save for future is a key topic in modern economic theory. The study of consumer behaviour bears implications for macro economic policies. Many modern economic theories conclude that savings are essential for economic growth. The more people save in a country, the more rapidly it will grow. With this background, modern economists conclude that the level of savings in an Islamic economy will be lower if people have to pay zakāh on their savings. While presenting this argument, these modern economists consider zakāh as a tax on savings that switches allocation of resources from savings (i.e., future consumption) to present consumption. Also, if we take part of the savings of the rich and give it to the poor, who will obviously consume it all, aggregate savings level in the economy, ceteris paribus, will naturally decline. The conclusion, therefore, follows that Islamization of an economy as it will result in lesser savings will adversely affect its growth.

Are savings really essential for economic growth? Only those will answer yes to this question who believe that capital accumulation is the engine of growth. Some economists, particularly Islamic economists (Khurshid Ahmed 1981) may not believe so. We will, however, keep this question aside. Within the popular view that savings are essential for economic growth, we will raise only the following question: “Is it really true that savings in an Islamic economy will be lower than if the same economy was operating on a non-Islamic basis?

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Our answer to this is no. We have developed two arguments to support this answer. One argument describes the Islamic premises within which a Muslim will determine his consumption. It is argued that these premises are such that the aggregate consumption level will be lower than if the Muslim were consuming under un-Islamic premises. The second argument is built upon the basis of a macro economic model that includes the dynamic effect of zakāh in an Islamic economy. Through this model, it is shown that even if there is any chance of a short run decline in the aggregate savings level due to the Islamization of the economy (i.e., imposition of such injunctions as zakāh), this adverse effect will soon be wiped out and the long term savings and growth path will be higher than if it were a non-Islamic economy. This results from the income distribution effects of zakāh which causes the poor to ultimately enter into the group of savers as their economic conditions improve.

Section I builds up the first argument i.e., of the Islamic premises within which consumption of Muslims will be determined. Sections II and III give a macro model for an Islamic economy. Section IV derives mathematical comparison of savings propensities between Islamic and non-Islamic economies. The numerical results of simulation under various parameteric assumptions and policy conclusions therefrom have been left for a later exercise.

Islamic Premises within which a Muslim's Consumer Behaviour is Determined

Before I explain the Islamic premises within which consumer behaviour is determined, I will briefly describe the premises within which modern economists believe that a consumer decides his consumption pattern.

Modern economic theory studies consumer behaviour under the following premises.

i) It is assumed that a consumer will decide what to consume and how much to consume only to gain the material benefits and satisfaction.

ii) It is generally assumed that all his consumption is geared to satisfy his own needs. He is not bothered to satisfy any one else's needs.

iii) It is assumed that a consumer behaves rationally. This, among other things, means:

a) the consumer will neither be a miser nor an unnecessarily spendthrift.

b) he will not hoard his wealth.

Within these premises, modern economists then explain what and how much a consumer will consume and how much he will save to invest for future earnings/consumption. These premises are described as axioms i.e. they are assumed to be given in human nature. In other words, no logic is given to explain why a consumer would operate under these premises.
It can easily be imagined that these consumption premises can be valid only if a consumer has been brought up in a particular cultural environment and has been taught a particular philosophy of life. This may not be true for all societies in the world. In fact, very few societies in the world may have such a cultural environment or such a philosophy of life. Take, for example, the assumption of rationality. The type of rationality that is required by modern economic theory is something that may not exist in many societies due to their particular ethical, social and cultural norms and customs. For example, who can stop an individual from spending for other than worldly gains? (even in Western materialistic societies, people like to spend for non-material gains). Or, who can stop an individual from spending for not his own but other’s material welfare also (the social and cultural structure of societies like India and Pakistan and many other developing countries necessitates such spending by the individuals which are meant to satisfy not their own needs but others’ need as well?). Or who can stop an individual from becoming unnecessarily spend-thrift (a problem of many western societies) or from hoarding his wealth (a problem of many underdeveloped societies)?

Islam, having its own distinct ethical, sociological and cultural framework provides completely different premises for analysis of consumer behaviour. The analysis of consumer behaviour under these premises will obviously be different from the theories that secular economists propound.

A Muslim consumer in an Islamic economy is supposed to make two types of spending*.

a) To meet his (or his family’s) material needs (let us denote this type of spending by $E_1$)

b) To meet the need of others (for the sake of Allah) (let us denote this by $E_2$)

The total spending $E$, therefore, can be written as

$$E = E_1 + E_2$$

It is left to human discretion to allocate income between these two types of spending. Human behaviour, however, is guided behaviour for a Muslim - a person who is advised to be God-conscious or God-fearing. Thus allocation between $E_1$ and $E_2$ will be determined by

i) some of the parameters that determine the consumption pattern of a rational consumer (as outlined by economics), and

ii) degree of God-fearingness or God-consciousness ($Taqwā$).

The role of God-fearingness in the spending of Muslims is clear from various verses of the Qur'an.

* "Spending" is used to include not only what is called "Consumption" in economics but also the investment expenditures, transfers, lending and savings in the form of hoardings or otherwise.
Muslims are required to be God-conscious (God-fearing)

_ O Ye who believe; Fear Allah as He should be feared. _ 3:102

The more a person is God-fearing i.e. God-conscious the better Muslim he is

_Verily the most honoured of you in the sight of Allah is (he who is)
the most righteous of you._ 49:13

Who are the God-conscious? One of the definitions is those

_Who believe in the unseen, are steadfast in prayer and spend out
of what we have provided for them._ 2:3

Thus, to spend in the way of Allah is one of the requirements for a good Muslim.

The Qur’an does not exactly specify how much a person should spend in the way of Allah. At two places, the Qur’an answered the question (posed by the companions of Prophet) what should they (Muslims) spend. (2:215, 2:219).

At one place the answer was simply “Say Al-‘Afw” (2:219) That is one should spend what is left over after meeting one’s needs. At another place the same question was answered as

_They ask thee what they should spend (in Charity). Say: Whatever ye spend that is good, is for parents and kindred and orphans and those in want and for wayfarers. And whatever Ye do that is good - Allah knoweth it well._ 2:215

[(It is reported that this refers to the following question from the companions of Prophet (peace be upon him).

What should we spend from our wealth and where should we spend it).]

Again the emphasis in the answer has been laid on _where_ money should be spent; for parents, relatives, needy and wayfarers. The answer to how much should be spent has again been left unspecified by saying

_And whatever Ye do that is good - Allah knoweth it well._ 2:215

i.e. there is no upper limit. “Whatever you can afford you should spend” is the guidance.*

Without specifying how much of one’s income should be spent for others in the way of Allah, great emphasis has been placed on such spendings. The more one spends for others (for the sake of Allah) the better for him in this world and the hereafter. This emphasis is apparent from many verses from the Qur’an.

_And spend of your substance in the cause of Allah and make not your own hands contribute to your destruction; But do good. For Allah loveth those who do good._ 2:195

* It is agreed among companions of the Prophet, the generation succeeding the companions and Fiqaha, that one should spend from what is left after meeting ones needs and not that one should spend all that is spare.
The reference of some other verses emphasising the same are (2:177); (4:92); (9:34); (2:254); (2:262); (2:245); (8:60).

This spending in the way of Allah is entirely different from the first type of spending (E₁) which is for worldly needs. From the second type of spending, no worldly advantage is intended to be obtained. It has to be for the sake of Allah with no worldly motives at all as is apparent from several verses. For example

_O Ye who believe; cancel not your charity by reminders of your generosity or by injury - like those who spend their substance to be seen of men, but believe neither in Allah nor in the last day. They are in parable like a hard barren rock on which is a little soil; on it falls heavy rain, which leaves it (just) a bare stone. They will be able to do nothing with what they have earned. And Allah guideth not those who reject faith._ 2:264

The same sense is repeated in verse (4:38).

Thus the second type of spending (E₂) is entirely different from the first type of spending (E₁).

Though no exact amount or any upper limit has been specified in the Qur’an or Sunnah for the E₂ (or for E₁) we do find that there is a lower limit for the amount of E₂ to be spent by those who are eligible. This lower limit is the amount of zakāh which is mandatory. But this is only a minimum. To acquire a higher degree of Islamic credit, a Muslim has to make as much E₂-type spending as possible (See the Qur’an 2:3 quoted above).

The stress on E₂ should not be taken to assume that E₁ is less important. We find specific guidance in the Qur’an and Sunnah emphasizing the importance of E₁ (e.g., the Qur’an 7:32).

All good things of this world have been created for man. Muslims are not asked to abstain from them. The Prophet (Peace be upon him) says that when Allah bestows good things of the world upon one of His servants He likes to see them reflected in his appearance (of course without any intention of personal pride). The Prophet (Peace be upon him) is also reported to have objected to the act of abstention from the lawful enjoyment of material things. He is also reported as saying: “You don’t really possess of your wealth but only what you eat and use up, what you dress and wear up or what you spend on charity and preserve (for the life hereafter)”. At another place, in the Qur’an, we find

_Eat of their fruits in their season, but render the dues that are proper on the day that the harvest is gathered. But waste not by excess: for Allah loveth not the wasters._ 6:141

_Of the cattle are some for burden and some for meat: Eat what Allah hath provided for you, and follow not the footsteps of Satan: For he is to you an avowed enemy._ 6:142

Here, Allah gives two commands: One is to spend for one’s own needs and the other is to spend for others in the way of Allah. The command “waste not” refers to rationality in both types of consumption. Some other verses stressing E₂-type spending are (7:31) and (2:168).
Another aspect of a Muslim consumer behaviour is that he has to be rational in all his spending. This point of rationality is something that is unique to the Islamic economic system. The theory of consumer behaviour of secular economics assumes a rational consumer who takes rational decisions. But how would rationality practically be achieved in an economy? Secular economics by-passes this question and that is why its theories lose practical relevance for most of the societies. Secular economists treat rationality as an axiom relating to human behaviour, whereas the type of rationality that is assumed by them is something that would require “proper” education. Developing or applying economic theories without imparting this ‘proper’ education will simply be an exercise in futility.

The axiom of rationality required for Islamic economic theories of consumer behaviour is not simply an assumption which may or may not be true. It is something that a Muslim has to learn and acquire. Islam teaches rationality with the same emphasis with which it teaches how to spend and where to spend. The verse (6:141) quoted above indicates the emphasis on rationality in spending. The same point is made in the verse

Make not thy hand tied (like niggard’s) to thy neck, nor stretch it forth to its utmost reach; So that you become blame-worthy and destitute.

17:29

This lesson of rationality in spending is not only for worldly spending \( (E_1) \) but is also for the spending in the way of Allah \( (E_2) \) as is clear from the following verses

And render to the kindred their due rights, as (also) to those in want, and to the wayfarer: But squander not (your wealth) in the manner of spend-thrift.

17:26

Those who, when they spend, are not extravagant and not niggardly, but hold a just (balance) between those (extremes).

25:67

In all the commands that allow \( E_1 \), the only limit that has been imposed is that “do not consume prohibited goods and consume only permitted goods”. This reduces, *ceteris paribus*, the consumption basket of a Muslim consumer compared to a secular consumer (the possibility of a larger basket as a Muslim though exists but is not likely to be true in general).

So far, nothing has been said about saving for future consumption or investment to improve the quality of life in future. This is actually a part of \( E_1 \) type of spendings. It is a legitimate spending in Islam. There is evidence available from the Qur’an and Sunnah that justifies savings/investment.

To those weak of understanding make not over your property, which Allah hath made a means of support for you.

4:5

In the explanation of this verse, commentators state that wealth is the capital of life and its preservation by rational spending is obligatory on Muslims. The Prophet (peace be upon him) is reported to have said that
poverty is likely to lead to disbelief. This implies that Muslims should try to improve their economic condition. This, in turn, justifies investment and hence savings.

A saying of the Prophet (peace be upon him) that to leave one’s inheritors better off is desirable compared to leaving them poor also signifies the importance of savings.

Unlike the secular economic system that does not penalize hoardings (savings that are not invested) Islamic economic system puts a specific penalty in the form of zakāh on hoarding that will ultimately eat up all savings if they are not productively used to yield at least a 2½ percent return per annum. Thus a Muslim has the following options with respect to this savings:

a) Hoard it and pay at least 2½ percent of it every year in the way of Allah.

b) Lend it as Qard-i-Hasan (loan without interest) and earn reward in the world hereafter.

c) Invest it to earn at least 2½ percent return per year.

A rational consumer, obviously, has no alternative but not to hoard all his savings. If he decides to be irrational he will ultimately lose all what he hoarded. Thus, savings have to be channelized towards investment. (This property of Islamic economic system also reduces the chances of planned investment lagging behind or ahead of savings, to create deflationary or inflationary pressures, in the Keynesian framework. (See also Kahf, 1980). A Muslim will try to make investment with the following motives:

a) to acquire permissible comforts of this world

b) to be able to have more to spend in the way of Allah and more reward in the hereafter.

To recapitulate, the main elements of a Muslim consumer behaviour are:

1. A Muslim consumer’s total spending can be classified into the following major categories:

a) Spending to achieve satisfaction in this world (E₁). This includes:
   i) Present (immediate) consumption (let us denote it by C₁)
   ii) Savings/investment for consumption in future (let us denote it by S₁).

b) Spending for others with a view to earn reward in the hereafter (E₂). This includes:
   i) what is immediately consumed by the recipients (let this be C₂).
   ii) what is invested for social purposes or community benefits or what is saved by the recipients for their own investment (S₂).

2. The consumption basket of a Muslim is likely to be smaller than that of a secular consumer as it includes only permissible things and excludes prohibited things.

3. The allocation between E₁ and E₂ and between C₁ and S₁ within E₁ or
between \( C_2 \) and \( S_2 \) within \( E_2 \) has been left to rational consumer behaviour which should be dominated by God-fearingness.

4. The degree of God-fearingness is an essential parameter in determining consumer behaviour of a Muslim.

5. The only limit that has been specified is the minimum limit of \( E_2 \) for those who are obliged to make these types of spendings.

6. A Muslim is allowed to save, a major part of which will have to be invested in order to earn at least a return that would prevent his savings from being depleted by zakāh.

With the description of these premises, it is not very difficult to see that an Islamic economy will have a lower consumption propensity than if it were a secular economy. The most important basis for this argument is:

a) that Islamic consumer is likely to face a smaller basket of consumption to pick up from than if he were a secular consumer.

b) from within this basket he has to pick without crossing the limits of prodigality.

This is an immediate perspective. In a longer term perspective, we can visualize that the spending that is done for the others will help the "others" to improve their economic condition. Islam does not encourage people to keep receiving zakāh. They have to improve themselves to come into the zakāh-payers category or at least in the not-zakāh-receiver category.

Able-bodied poor people are allowed to receive zakāh only as a stopgap arrangement to find an opportunity for them to improve their economic condition. In a dynamic economy, these people who are presently poor and cannot save anything are likely to be able to save as zakāh helps them to improve their economic status. Thus even if in the short run, there is any reason to believe that savings propensity and hence economic growth in the economy are likely to be lower, there is no reason to believe that it will be so in the long run. This argument is further developed in the framework of a macro model discussed in the next section.

II. Deriving Consumption Function for an Islamic Economy

A. Micro Consumption Function

Consumer derives utility from both types of spending \( E_1 \) and \( E_2 \). We may write the utility function as

\[
U = F(E_1, E_2)
\]

With the income constraint \( Y = E_1 + E_2 \)

This utility function has the following properties.

\[
F_1 = \frac{\partial U}{\partial E_1} > 0 \quad \text{i.e. marginal utility of } E_1 \text{ is positive.}
\]
\[ F_{11} = \frac{\partial F_1}{\partial E_1} < 0 \quad \text{i.e. marginal utility of } E_1 \text{ goes on declining as its volume is increased.} \]
\[ F_2 = \frac{\partial U}{\partial E_2} = a > 0 \quad \text{and is a constant.} \]

This implies that the marginal utility of \( E_2 \) is a positive constant for an individual with a specific level of God-consciousness. A declining marginal utility of \( E_2 \) is out of question because the want for reward in the hereafter is insatiable and unlimited. Increasing marginal utility of \( E_2 \) is also not possible as the reward of \( E_2 \) in hereafter is unknown. A person’s evaluation of the reward will thus remain constant for each additional unit of \( E_2 \) spending\(^\dagger\). With this type of utility function, a consumer will go on consuming \( E_1 \) as long as its marginal utility is above ‘a’. The more a person is God-fearing the more will be the ‘a’ value and more of the total spending will go to \( E_2 \). Thus:

\[ E_2 = F(a, Y); \quad \frac{\partial E_2}{\partial a} > 0; \quad \frac{\partial E_2}{\partial Y} > 0 \]

\[ a = F(T); \quad \frac{\partial a}{\partial T} > 0 \]

where \( T \) (the level of God-fearingness) is parameterically given.

\( E_2 \) type consumption generates from that class of population that can afford it. In Islamic terminology, \( E_2 \) will be spent only by the Owner of \( Nisāb \) consumer. Let us define Owner of \( Nisāb \) as a person whose income exceeds a certain level say \( Y^* \)

Thus:

\[ E_2 = F(a, Y) > 0 \quad \text{when } Y > Y^* \]
\[ = 0 \quad \text{otherwise} \]

\(^\dagger\) It was argued by a commentator that the assumption \( \frac{\partial U}{\partial E_2} = \text{constant} \) would not allow the indifference curve to be convex and would rather make it concave leading to a corner solution which is not a desirable Islamic solution. Without going into the implication of constant marginal utility of \( E_2 \) on convexity, I express my gratitude to Dr. Anas Zarqa for pointing out that the assumption of constant marginal utility of \( E_2 \) is not necessarily required. Instead it can be safe to assume a declining marginal utility of \( E_2 \). His argument, in brief, is as follows:

\( E_2 \) has a utility just as \( E_1 \) has. Even a secular consumer likes to spend \( E_2 \) to feel some satisfaction that he is not selfish and is nice to others. For a secular consumer this utility of \( E_2 \), however, will be too small leading to a too small level of \( E_2 \). For an Islamic consumer \( E_2 \) will be larger because he feels more satisfaction in \( E_2 \) due to his different objectives of life and belief in the reward of hereafter. \( E_2 \) will have a declining marginal utility as \( E_1 \) has. This is because a Muslim has been asked to be moderate in his spending even on \( E_2 \) as has already been discussed above. It can be safely argued that \( E_2 \) in nature is same as \( E_1 \) thus having diminishing marginal utility.

The analysis in this paper, however, continues on the assumption of constant marginal utility of \( E_2 \). The assumption of declining marginal utility of \( E_2 \) being supposed to have no effect on the conclusions.
For a Owner of Nisāb, E₂ is not “consumption” as defined in secular economics. In secular economic terminology E₂ is a transfer from the Owner of Nisāb to the poor class of the population. E₂ may go entirely into the consumption of poor class or part of it may go to building up of their capital (physical or human). Let us use subscripts U and L to denote the values for Owner of Nisāb (i.e., rich) and not Owner of Nisāb (i.e., poor) consumer respectively. We can write the following equation for the two types of consumers in the society.

\[ E_L = Y_L + E_2 \quad \text{when} \quad Y < Y^* \]

This means, consumption of the lower income consumer is equal to his total income plus the transfers from the upper income groups. (It has been assumed that all transfers are consumed by the lower income consumer. The possibility of the transfers being used to build up capital of the lower income consumer can be taken up later).

\[
\begin{align*}
E_2 &= F(a, Y) \\
E_1 &= Y_u - E_2 \\
a &= F(T)
\end{align*}
\]

When \( Y > Y^* \)

\( E_1 \) includes spending to build up durable consumer goods or to build up productive capital. This may also include hoardings in the form of jewelry, gold, silver, diamonds etc. For the sake of simplicity let us classify the components of \( E_1 \) into the following.

a) All such spendings that are termed as consumption in secular economic terminology (\( C_u \))

\[ E_1 = C_u + S \quad \text{Where} \quad C_u = \text{Consumption of the upper income group.} \]

and \( S = \text{Savings of upper income group.} \)

How would the total amount of \( E_1 \), already determined by the parameter, \( T \), be allocated between \( C_u \) and \( S^* \)? As already discussed, the allocation has been left to normal consumer behaviour except that Muslims have been categorically advised not to be extravagant.

This constraint on a Muslim will keep the level of “\( C_u \)” lower than the level of “\( C_u \)” of a secular consumer. How much lower the level will be, will depend on how God-conscious a person is\(^\dagger\). Thus we may define \( C_u \) in case of a Muslim as

\[ \frac{1}{1 - \beta} \quad C_u = C^*_u \quad \text{Where} \quad C_u = \text{level of consumption of a secular consumer.} \]

\[ \text{Where} \quad \beta = G(T) \quad \text{i.e.} \quad \beta \text{ is a function of the level of God-fearingness with} \quad \frac{d\beta}{dT} > 0 \]

\(^\dagger\) The constraints requiring the Muslims to be moderate may imply a higher level of \( C_u \) if the secular behaviour in the society is that of a niggard. This is, however, very unlikely particularly keeping in view the consumption pattern of existing societies in Muslim countries.
C_u* for a normal secular consumer is generally determined by the level of income i.e. C_u* = F(Y_u) where Y_u = Income. Thus

\[ C_u = (1 - \beta) \ F \ (Y_u) \]

For a Muslim Consumer, it is not Y_u that is allocated between consumption and savings. It is E_1 left with the Muslim consumer (after spending E_2) to be allocated between consumption and savings. Hence,

\[ C_u = (1 - \beta) \ F \ (E_1) \]

The above discussion is summarized below:

Let us assume that there is no borrowing so that spending (including savings) is equal to income in case of upper income consumer and equal to income + transfers, in case of lower income consumer.

Thus, the following equations describe the elements of consumption pattern in an Islamic economy.

\[
\begin{align*}
C_L & = Y_L + E_2 \\
E_2 & = F \ (a, \ Y_u) \quad a = F(T) \\
Y_u & = E_1 + E_2 \\
E_1 & = C_u + S \\
C_u & = (1 - \beta) \ F \ (E_1) \quad \beta = G(T)
\end{align*}
\]

B. Aggregation for a Macro Framework

i. Lower Income Group Consumption Function: Consumption of a lower income consumer depends on

(a) His own income.

(b) Income of all the persons in the upper income group living in his neighbourhood.

(c) Level of God-fearingness of the individuals (particularly of the upper income group) in the community.

If we want to aggregate, the aggregation of the consumption of lower income group will simply be the additions of the individual consumptions in the group. Aggregation is assumed to be a simple (unweighted) addition of the variables for all the individuals.

ii. Upper Income Group Consumption Function: Consumption of consumer in the upper income group depends on

(a) his income

(b) level of God-fearingness

Ignoring the effect of income distribution and of variation in (God-consciousness) on consumption, the form of aggregate consumption function will require simple addition of the consumptions and income of the individuals in the group. The level of God-fearingness is assumed to be the same at an average level for all individuals.

C. Dynamics of the Consumption Pattern

Dynamism in the consumption pattern of an Islamic economy rises as the people of lower income group move into the upper income group
over time (or vice versa). The possibility of movement from lower to upper group arises because of the improvement in the economic condition of lower group. This will require:

a) a desire to increase income, and
b) an opportunity to attain to this desire.

The desire to increase income is strong for a Muslim consumer because he would like to spend in the way of Allah and earn a reward in the hereafter. Also, it is a Muslim’s religious obligation to improve his economic condition so that he becomes a zakāh payer rather than a zakāh receiver.

The opportunity to increase his income arises from the consumption relief that he gets from the transfer from the upper income group. This transfer taking care of his and his family’s consumption gives him the opportunity to look for a better job or to build up his capital for the expansion of his work opportunities.

The growth in income at some point in time will shift the consumer from zakāh receiver to zakāh payer. In aggregate terms this means that the growth in income of the lower income group will shift some proportion of the population to the upper group. We can make this shift a function of per capita consumption in the lower income group. Thus, we can write:

\[
\frac{N_L}{N} = F \left\{ \frac{C_L}{N_L} \right\}_{-1} ; \quad F < O
\]

where \( \frac{N_L}{N} \) = Proportion of population in the lower income group

and \( \frac{C_L}{N_L} \) = Per Capita consumption in the lower income group

i.e. the proportion of the population of the lower income group will decline as the per capita consumption in the group increases.

D. Aggregate Consumption Function of an Islamic Economy

With the above, we can now describe a consumption function in the economy as below:

\[
C_u = (1 - \beta) \cdot F (E_u)
\]

\[
E_1 = Y_u - E_2
\]

\[
E_2 = F (a, Y_u)
\]

\[
C_L = Y_L + E_2
\]

\[
\frac{N_L}{N} = F \left( \frac{C_L}{N_L} \right) - 1
\]

\[
S = E_1 - C_u = Y_u - C_u - E_2
\]

\[
C = C_L + C_u
\]

\[
Y = Y_u + Y_L
\]
III. Macro Economic Model to Trace the Savings, Growth and Income Distribution Effects of the Consumption Function Described Above

A very simple macro model with the above consumption function is described below:

1. \( C_u = (1 - \beta) \{ a_0 + a_1 \; E_1 \} \)
2. \( E_1 = Y_u - E_2 \)
3. \( E_2 = d_0 - d_1 \; S_{-1} \)
4. \( C_L = Y_L + E_2 \)
5. \( C = C_L + C_u \)
6. \( S = E_1 - C_u = Y - E_2 - C_u \)
7. \( Y_L = \{(Y_L)_{-1}\} \times (1 + g_L) + \gamma \; E_2 \)
8. \( \Delta Y_u = I/K \)
9. \( Y_u = \{(Y_u)_{-1}\} + \Delta Y_u \)
10. \( Y = Y_L + Y_u \)
11. \( I = S \)
12. \( M = \frac{N_L}{N} = (M_{-1}) + \gamma_1 \frac{\{C_L\}}{\{N_L\}} + \gamma_2 \frac{\{C_u\}}{\{N_u\}} \)

Where \( \gamma_1 < 0 \) if \( \frac{\{C_L\}}{\{N_L\}} > \frac{\{C_L\}}{\{N_L\}_{-1}} \)

\( = 0 \) otherwise

and \( \gamma_2 > 0 \) if \( \frac{\{C_u\}}{\{N_u\}} < \frac{\{C_u\}}{\{N_u\}_{-1}} \)

\( = 0 \) otherwise

13. \( N = (N)_{-1} \; (1 + gn) \)
14. \( N_L = M \; N \)
15. \( N_u = (1 - M) \; N \)

These equations are explained below:

1. \( C_u = (1 - \beta) \; (a_0 + a_1 \; E_1) \)

This equation determines the consumption level of the class that does not receive zakāh. We have already shown that the consumption function of this class can be written as

\[ C_u = (1 - \beta) \; F(E_1) \]

We know that \( F(E_1) \) is the consumption function that will prevail in a secular economy. A conventional form of this is

\[ C = a_0 + a_1 \; Y \]

Where \( C = \) Consumption

\( Y = \) Disposable Income
We have $E_1$ instead of $Y$. $E_1$, in fact, is the disposable income of a Muslim consumer that he can spend to satisfy his material needs. Thus we can write

$$C_u = (1 - \beta) (a_0 + a_1 E_1)$$

2. $E_1 = Y_u - E_2$

This is an identity which says that the amount at the disposal of the upper income group consumer for his spending is the difference of his income ($Y_u$) and what he decides to spend in the way of Allah ($E_2$)

3. $E_2 = Z + Z_1 (Y_u)$

or $E_2 = d_0 + d_1 S_1$ $d_1 = 0.025$

This question determines the amount to be spent in the way of Allah. We have already shown that the function for $E_2$ can be written as $E_2 = F(a, Y_u)$: This specifically can be written as $E_2 = Z_1 (Y_u)$ where $Z_1$ is a parameter that will depend on God-consciousness. We know there is a minimum of spending (i.e., zakāh) that is obligatory upon the upper income group (though it may spend more out of its income). The level of God-consciousness will determine how much more will be spent out of its income $Y_u$. A more appropriate form, therefore, will be $E_2 = Z + Z_1 (Y_u)$ where both $Z$ & $Z_1$ are the parameters. For the purpose of simulation, some simple manipulations are done as below:

The amount of zakāh $Z = 0.025 \ (A_{-1} + S)$

Where $A_{-1} = \text{Assets in the last year}$

$S = \text{Savings}$

Also $Y_u = (Y_u)_{-1} + \Delta Y_u = (Y_u)_{-1} + \frac{1}{K} S$

Thus $E_2 = 0.025A_{-1} + 0.025S + Z_1 \ (Y_u)_{-1} + \frac{1}{K} S$

$$= \{0.025A_{-1} + Z_1 (Y_u)_{-1}\} + \{0.025 + \frac{Z_1}{K}\} S$$

Since all values in the first part are pre-determined, we can denote this as $d_0$. Also the values $(0.025 + \frac{Z_1}{K})$ are all parameterically given. Therefore, we denote them as $d_1$.

Thus $E_2 = d_0 + d_1 S$

It will not be unreasonable to assume that the zakāh and other $E_2$ type spending are calculated by individuals on the basis of the past year’s figures of assets, savings, income etc. Therefore, we can finally write the equation for $E_2$ as

$$E_2 = d_0 + d_1 S_{-1}$$

All these manipulations have been done to enable the simulations to be simple and easy. These manipulations will not be necessary and only
the equation \( E_2 = Z + Z_1 Y_u \) can be used if a complex simulation programme can be afforded or if only mathematical analysis is done as is shown in part IV.

In the equation \( E_2 = d_0 + d_1 S_{-1} \) it can be easily seen that \( d_1 \) cannot be less than zero. It will be equal to 0.025. If \( Z_1 = 0 \) and \( d_1 \) will be greater than 0.025 the higher will be the value of \( Z_1 \) i.e., the higher is the level of God-consciousness.

4. \( C_L = Y_L + E_2 \)

This determines the consumption level of those who are in the lower income group. Their consumption level has been assumed to be their own income \( (Y_L) \) plus transfers from the upper income group \( (E_2) \). It is assumed that all \( E_2 \) is consumed. An alternative variant of this equation could be to include only a part of \( E_2 \) as going to \( C_L \) and the rest of \( E_2 \) going to savings (building up capital stock of those who are in the lower income group). To avoid complexities in the analysis, this variant is not being considered presently but its effect can be considered later on.

5. \( C = C_L + C_u \)

This is an identity indicating that consumption in the economy is the sum of two classes of population in the economy.

6. \( S = E_1 - C_u = Y_u - E_2 - C_u \)

This identity indicates that savings will be done by the upper income group and that savings will simply be its income minus what it consumes or spends in the way of Allah.

7. \( Y_L = \{(Y_L)_{-1} (1 + gL)\} + \gamma E_2 \)

This equation determines income for the population that is in the lower income group. The first part of their income i.e. \( (Y_L)_{-1} (1 + gL) \) has been assumed to be increasing at some exogenous growth rate \( (gL) \). This population obviously does not have capital stock. But this population knows that to be always in the receiving class of zakāh and charities is not encouraged in Islam and that he has to improve his economic condition. Also, he wants to earn reward by spending in the way of Allah as the upper income group are doing. So he will make efforts to increase his income.

Note that \( Y_L \) has been kept independent of \( Y_u \). In fact, in an Islamic economy, \( Y_u \) may positively affect \( Y_L \) at least for those who are employed by the upper income group. In an Islamic economy, the wage pattern will be different from that in capitalist society. The “Fair Wage” theory or an employer’s paternalistic considerations will be more relevant in an Islamic economy. This dependence in \( Y_L \) and \( Y_u \) is presently ignored to keep the analysis simple.

Apart from this exogenous growth some increase in the income of this class will be contributed by the transfers from the upper income group. The transfers, even if they do not contribute to the savings of lower
income group, will contribute to their efficiency. The use of zakāh on health and education will improve their human capital and hence will contribute to their income. The second part \( \gamma E_2 \) represents this contribution.

8. \( \Delta Y_u = 1/K \)

9. \( Y_u = \{(Y_u)_{-1}\} + \Delta Y_u \)

These two equations determine income for the upper income group. The change in the income of this population is determined by the investment that they make and the incremental capital output ratio – \( K \) (a parameter) of the economy. This assumes a fixed coefficient production function for simplicity. Any other form of the function can also be used.

The change in \( Y_u \) is thus \( \Delta Y_u = 1/K \). The current year’s \( Y_u \), therefore, is simply the sum of the past year’s \( Y_u \) and current year’s change in \( Y_u \).

10. \( Y = Y_u + Y_L \)

This identity determines national income as a sum of the incomes of the two groups of population.

11. \( I = S \)

The assumption of absence of borrowing (external or internal) leads to this identity between savings and investments in the economy.

12. \( M = \frac{N_L}{N} = (M)_{-1} + \gamma_1 \frac{C_L}{N_L} + \gamma_2 \frac{C_u}{N_u} \)

This equation determines the percentage of population that will be the lower income (zakāh receiving) group.

In a dynamic economy where the income of both classes is increasing, where there is a mechanism for transfer of incomes and where there are motivations and opportunities to move to higher groups, the percentage of population in the two groups cannot remain constant. The percentage will be a function of population in the lower group and will decline as the consumption in this class increases for some part of this population will move in a position to pay zakāh and, not remain in zakāh receiving group. \( \gamma_1 \) (a parameter) will determine how much decline in \( M \) will be brought about by a certain increase in the per capita consumption of this class. If \( \frac{C_L}{N_L} \) does not increase or rather declines then \( \gamma_1 \) will be zero and \( M \) will remain same as in the past year.

Also it is possible that due to decline in the income of the upper income group some part of this population may enter into the zakāh receiving group. \( \gamma_2 \) (a parameter) will determine how much increase in \( M \) will be brought about by a certain decline in the per capita consumption of this class. If \( \frac{C_u}{N_u} \) does not decline or increases then
M will remain same as of last year (i.e. \( \gamma_2 \) will be zero).

\[
M = (M_{-1}) + \gamma_1 \frac{C_L}{N_L} + \gamma_2 \frac{C_u}{N_u}
\]

Where \( \gamma_1 < 0 \) If \( \frac{C_L}{N_L} > \frac{C_L}{N_{L-1}} \)

= 0 otherwise

and \( \gamma_2 > 0 \) If \( \frac{C_u}{N_u} < \frac{C_u}{N_{u-1}} \)

= 0 otherwise

13. \( N = N_{-1} \ (1 + gn) \)

Population in the economy is assumed to grow at a constant rate (gn) per annum.

14. \( N_L = M \cdot N \).

15. \( N_u = (1 - M) \ N \)

These two equations determine the population in the two classes.

IV. Implications of Islamic Consumption Function

1. Savings – Short Term

The savings function in an Islamic economy will be of the type

\[
S = F_0 + F_1 \ WY
\]

where \( F_1 = \frac{1 - z_i}{1.025 - 0.025a_i \cdot (1 - \beta)} \ \{1 - (1 - \beta) \ a_i\} \)

The implication for savings under different situations is discussed below.

Case I: Zakāh treated as tax so that only zakāh is paid and there is no God-consciousness

This means no other spending is made in the way of Allah and no restraints on self consumption are exerted and a Muslim behaves as a secular consumer.

This means:

\[
\beta = 0 \quad \text{and} \quad Z_1 = 0
\]

\[
F_1 = \frac{1}{1.025 - 0.025 \ a_i} (1 - a_i)
\]

For a secular consumer in a secular economy, the savings function is:

\[
S = a_0 + (1 - a_i) \ WY
\]

Since the denominator in \( F_1 \) is greater than unity because \( a_i \) is less than unity, hence
Thus the propensity to save is reduced with zakāh in this case.

The difference, however, will be very low at high levels of propensities to consume and will be marginally higher at lower propensities to consume. In an economy that has a marginal propensity to consume equal to 0.80 (a reasonable figure for a developing country) the introduction of zakāh as a tax will reduce marginal propensity to save by 0.5 percent i.e. instead of 0.20 it would be 0.199 (see Table below).

**TABLE I**

Effects of Introduction of zakāh as a Tax on Short-Run Savings at Different Levels of Marginal Propensity to Consume

<table>
<thead>
<tr>
<th>Marginal Propensity to consume before introduction of zakāh (a₁)</th>
<th>Value of F₁ (Marginal Propensity to save after zakāh)</th>
<th>Value of (1 – a₁) Marginal Propensity to save without zakāh</th>
<th>F₁ as % of (1 – a₁)</th>
<th>Percentage Decline in Marginal Propensity to save as a result of zakāh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.0</td>
</tr>
<tr>
<td>0.90</td>
<td>0.1998</td>
<td>0.10</td>
<td>99.8</td>
<td>0.2</td>
</tr>
<tr>
<td>0.80</td>
<td>0.1990</td>
<td>0.20</td>
<td>99.5</td>
<td>0.5</td>
</tr>
<tr>
<td>0.70</td>
<td>0.2977</td>
<td>0.30</td>
<td>99.2</td>
<td>0.8</td>
</tr>
<tr>
<td>0.60</td>
<td>0.3960</td>
<td>0.40</td>
<td>99.0</td>
<td>1.0</td>
</tr>
<tr>
<td>0.50</td>
<td>0.4938</td>
<td>0.50</td>
<td>98.8</td>
<td>1.2</td>
</tr>
<tr>
<td>0.40</td>
<td>0.591</td>
<td>0.60</td>
<td>98.5</td>
<td>1.5</td>
</tr>
<tr>
<td>0.30</td>
<td>0.688</td>
<td>0.70</td>
<td>98.3</td>
<td>1.7</td>
</tr>
<tr>
<td>0.20</td>
<td>0.784</td>
<td>0.80</td>
<td>98.0</td>
<td>2.0</td>
</tr>
<tr>
<td>0.10</td>
<td>0.8802</td>
<td>0.90</td>
<td>97.8</td>
<td>2.2</td>
</tr>
<tr>
<td>0.00</td>
<td>0.9756</td>
<td>0.00</td>
<td>97.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The maximum effect will be a 2.5 percent decline when the marginal propensity to consume is zero.

This simply means that whatever they save from their additional income will be reduced by the amount of zakāh at the rate of 2.5 percent. If they were saving all of their additional income, then this saving will be reduced by 2.5 percent and if they were saving only 20 percent then this will be reduced by 0.5% of 20 percent by zakāh.

Case II. Muslims understand the importance of spending in the way of Allah but their own consumption patterns are the same as of secular consumers

This means β = 0 but Z₁ is positive*. In this case

* Note that Z₁ is spending in the way of Allah beyond zakāh. This is the proportion of annual income that is spent by a God-fearing person in the way of Allah in addition to spending 2½ percent zakāh from his wealth.
\[ F_1 = \frac{(1 - Z_1)}{1.025 - 0.025 \ a_1} \{1 - a_1\} \]

\(F_1\) in this case is less than that in case I. That is savings in the short run are further reduced. The reduction will be more, the higher is the value of \(Z_1\).

Case III. *Muslims are not inclined to spend in the way of Allah more than the minimum required. They, however, rationalize their own consumption pattern as taught by the Qur'an and Sunnah.*

This means \(Z_1\) is zero but \(\beta\) is positive. In this case Marginal Propensity to save, \(\text{MPS} = F_1W\)

where \[ F_1 = \frac{1 - (1 - \beta) \ a_1}{1.025 - 0.025 \ a_1 \ (1 - \beta)} \]

Let us compare this with the secular marginal propensity to save

\[ \text{MPS} = (1 - a_1) \ W \]

\(W\) is common in both so we compare \(F_1\) and \((1 - a_1)\)

The numerator of \(F_1\) is greater than \((1 - a_1)\). The numerator of \(F_1\) is, however, reduced by the denominator being larger than unity. Whether \[ \frac{1 - (1 - \beta) \ a_1}{1.025 - 0.025 \ a_1 \ (1 - \beta)} \]

is greater than \((1 - a_1)\) will depend on the values of \(\beta\) and \(a_1\).

The restraint on self consumption reduced the overall consumption by a certain factor. But reduced consumption means more zakāḥ. The net effect is shown in the following table. The table shows MPS* (i.e., MPS of an economy that has some positive values of \(\beta\)). The values of MPS* have been shown for different values of \(\beta\) at two alternative levels of MPS (which is the propensity to save in the absence of Islamic injunctions). The two alternative values have been assumed to be 0.20 and 0.10 which is a range generally observed for the present Muslim countries.

**TABLE II**

<table>
<thead>
<tr>
<th>(\beta)</th>
<th>When MPS = 0.20 (\text{i.e. when } a_1 = 0.80)</th>
<th>When MPS = 0.10 (\text{i.e. when } a_1 = 0.90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>0.209</td>
<td>0.100</td>
</tr>
<tr>
<td>0.02</td>
<td>0.217</td>
<td>0.118</td>
</tr>
<tr>
<td>0.05</td>
<td>0.241</td>
<td>0.150</td>
</tr>
<tr>
<td>0.10</td>
<td>0.282</td>
<td>0.191</td>
</tr>
<tr>
<td>0.20</td>
<td>0.363</td>
<td>0.282</td>
</tr>
<tr>
<td>0.30</td>
<td>0.445</td>
<td>0.373</td>
</tr>
<tr>
<td>0.40</td>
<td>0.527</td>
<td>0.465</td>
</tr>
<tr>
<td>0.50</td>
<td>0.609</td>
<td>0.558</td>
</tr>
</tbody>
</table>
The MPS* will be higher than MPS for higher values of $\beta$.

Cases II and III are also unlikely in an Islamic economy. Both $\beta$ and $Z_1$ depend on the level of God-fearingness. It is very unlikely that one of them is zero and the other positive.

In comparing case III with case II, we find that one parameter of an Islamic economy ($Z_1$) will have a negative effect on saving propensity whereas the other parameter ($\beta$) will have a positive effect. Their combined effect is considered in case IV.

Case IV.  *Muslims not only spend in the way of Allah but also rationally their own consumption as taught by the Qur'an and Sunnah - A likely reflection of an Islamic economy*

In this case: Marginal Propensity to save is $\text{MPS}^* = F_1 W$

$$F_1 = \frac{(1 - Z_1)}{1.025 - 0.025 a_1 (1 - \beta)} \{1 - (1 - \beta) a_1\}$$

Let us compare this with secular marginal propensity to save, $\text{MPS} = (1 - a_1) W$

$\text{MPS}^*$ (i.e., marginal propensity to save of an Islamic economy) will be greater than MPS if

$$\frac{(1 - Z_1)}{1.025 - 0.025 a_1 (1 - \beta)} \{1 - (1 - \beta) a_1\} > (1 - a_1)$$

$\text{MPS}^*$ has two components

i)  $1 - (1 - \beta) a_1$

ii)  $\frac{1 - Z_1}{1.025 - 0.025 a_1 (1 - \beta)}$

It is obvious that the first component is greater than $(1 - a_1)$ as $0 < P < 1$. But the second part is clearly less than unity because $Z_1 > 0$ and $\{1.025 - 0.025 a_1 (1 - \beta)\} > 1$ as $a_1$, $\beta > 0$ and $< 1$.

The outcome, whether $\text{MPS}^*$ will be greater than MPS, will therefore, depend on the empirical values of $Z_1$ and $\beta$ (which in turn will depend on the level of God-fearingness in the society).

Let us assume $Z_1 = 0.025$. It should be remembered that this is a proportion of his annual income that a God-fearing man will spend in the way of Allah, in addition to 2½ percent zakāh that he is obliged to pay on his wealth. Also let us assume MPS in the economy before Islamization to be 0.20 (i.e., $a_1 = 0.80$). Now, assuming different hypothetical values for $\beta$ that may be observed after Islamization, the impact on the marginal propensity to save is shown in the following table:
TABLE III
Values of MPS* for Different Values of β When Z = 0.025

<table>
<thead>
<tr>
<th>β</th>
<th>MPS*</th>
<th>MPS* - MPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000</td>
<td>0.194</td>
<td>- 0.006</td>
</tr>
<tr>
<td>0.005</td>
<td>0.198</td>
<td>- 0.002</td>
</tr>
<tr>
<td>0.008</td>
<td>0.200</td>
<td>0.000</td>
</tr>
<tr>
<td>0.01</td>
<td>0.202</td>
<td>0.002</td>
</tr>
<tr>
<td>0.02</td>
<td>0.209</td>
<td>0.009</td>
</tr>
<tr>
<td>0.05</td>
<td>0.233</td>
<td>0.033</td>
</tr>
</tbody>
</table>

It can be seen that when β = 0 (which is same as case II discussed earlier), there will be an immediate negative effect on the marginal propensity to save. But a very small value of β would make the marginal propensity to save higher even in the short run. This means that if people are willing to slightly change their lifestyle to reduce what Islam calls Ḳāf (prodigality), zakāh cannot have a negative effect on the (macro) marginal propensity to save in the economy. As is evident from the table, even as low a β as 0.008 would not allow any negative effect on the propensity to save. A β value equal to 0.008 would mean that if a person was having propensity to consume 0.80 when operating in an un-Islamic environment, the Islamic environment and Islamic values would cause him to reduce this to at least 0.794 which is not unreasonable assumption. The injunction to avoid prodigality can have a much stronger effect on consumption particularly in the modern environment of developing countries where consumption patterns are substantially dominated by conspicuous consumption. The higher the value of β, the more the positive effect on the propensity to save.

If $Z_1$ value is greater than 0.025 (i.e., people like to spend more in the way of Allah), a higher value of β will be required to avoid the negative effect on the propensity to save. Since both $Z_1$ and β depend on the level of God-fearingness, β is expected to move with $Z_1$, hence reducing the negative impact on the propensity to save.

Thus, in an Islamic society, the marginal propensity to save is likely to increase even in the short run.

Long Run Savings
This part can be written only after simulations for future can be made by assigning different values to the parameter to see the growth path of savings. Since transfers from upper income groups contribute to the income growth of the lower class, savings will ultimately be higher in all the four scenarios compared to the scenario of a secular economy.

Growth and Income Distribution Effects
This part also can be written only after simulations are done.
Theoretically, it is easy to visualize within the framework of the above model that growth and income distribution implications of Islamic consumption pattern will be favourable i.e., growth will be higher and income distribution will be more egalitarian.

V. Conclusions and Policy Recommendations

Comparison of savings, growth and income distribution effects by simulating the model under different scenarios can highlight various implications and trade-offs. The following general conclusions can be drawn on the basis of the above analysis even without running the simulations.

For developing Muslim countries striving for resource mobilization for development, Islamization provides a new hope for the economy. The motivation to consume less and save more to improve one’s own economic conditions as well as economic conditions of the lesser privileged in the community comes from one’s conscience i.e., from one’s religion. It cannot be denied that all policies of development and resource mobilization of developing countries fail because they lack motivation on the part of the individuals and because their policies are hardly in harmony with the social and religious norms of the individuals. Muslim countries, thus, have nothing to fear from the process of Islamization on macro-economic front.

The process of Islamization that would bring favourable results as indicated in the earlier sections assumes that Muslims practice Islamic values. The process of Islamization, therefore, should aim at inculcating Islamic values in the life of Muslims. Improving Islamic economic injunctions through legislation, though, may still be beneficial in the long run. It can be shown from the simulation model that if we impose zakāh through legislation without inculcating Islamic values (particularly economic values), there is a likelihood of immediate adverse effect on savings. The speed of achieving favourable effect on growth and income distribution in the long-run will be extremely slow compared to the situation where people understand and practice Islamic economic values. Priorities in the Islamization of economy should be on bringing about Islamic values in the society through mass education using mass media as well as educational institutions.

Comparison of cases I to IV discussed earlier suggest that if the government wants to implement the zakāh system by legislation it should simultaneously launch an educational and moral suasion programme to reduce Īṣrāf (prodigality) in consumption. Reforms in import policies and the tax structure can help in achieving this objective. In short, the starting point for any government should be the one suggested by case III i.e. impose zakāh at the rate of 2.5 percent along with policies to reduce Īṣrāf in consumption both in the public and private sectors.
APPENDIX

\[ C_u = (1 - \beta) a_0 + (1 - \beta) a_1 E_1 \]
\[ = (1 - \beta) a_0 + (1 - \beta) a_1 (Y_u - E_2) \]
\[ C_u + E_2 = (1 - \beta) a_0 + (1 - \beta) a_1 Y_u - (1 - \beta) a_1 E_2 \]
\[ = (1 - \beta) a_0 + (1 - \beta) a_1 Y_u + \{1 - (1 - \beta) a_1\} E_2 \]
\[ = (1 - \beta) a_0 + (1 - \beta) a_1 Y_u + \{1 - (1 - \beta) a_1\} (Z + Z_1 Y_u) \]
\[ = (1 - \beta) a_0 + (1 - \beta) a_1 Y_u + Z + Z_1 Y_u - (1 - \beta) a_1 Z \]
\[ - (1 - \beta) a_1 \} Z_1 Y_u \]

Let \( (1 - \beta) = A; \) \( (1 - \beta)(1 - Z_1) = B \)

\[ C_u + E_2 = \{A a_0 + (B a_1 + Z_1) Y_u + (1 - A a_1) Z \]
\[ = A a_0 + (B a_1 + Z_1) Y_u + 0.025 (1 - A a_1) A_{-1} \]
\[ + 0.025 (1 - A a_1) S \]

Since \( Z = 0.025 (A_{-1} + S) \)

\[ S = Y_u - C_u - E_2 = - A a_0 + \{1 - (B a_1 + Z_1)\} Y_u - 0.025 (1 - A a_1) A_{-1} \]
\[ - 0.025 (1 - A a_1) S \]
\[ \{1 + 0.025 (1 - a_1 A)\} S = - \{A a_0 + 0.025 (1 - A a_1) A_{-1}\} \]
\[ + \{1 - (B a_1 + Z_1)\} Y_u \]

Let \( 1.025 - 0.025 a_1 A = E \) and \( - \{A a_0 + 0.025 (1 - A a_1) A_{-1}\} = F \)

\[ E S = F + \{1 - (B a_1 + Z_1)\} Y_u \]
\[ \text{or} \quad S = \frac{F}{E} + \frac{\{1 - (B a_1 + Z_1)\} Y_u}{E} \]

Let \( \frac{F}{E} = F_0; \) \( F_1 = \{1 - (B a_1 + Z_1)\} /E \)

and \( \frac{Y_u}{Y} = W \text{i.e. share of upper income group in the national income} \)

\[ S = F_0 + F_1 WY \]

This is savings function for an Islamic economy.

Savings Function for a secular economy in similar conditions will be:

\[ S^* = Y_u - C_u = Y_u - a_0 - a_1 Y_u \]
\[ = - a_0 + (1 - a_1) Y_u \]
\[ = - a_0 + (1 - a_1) W Y \]
REFERENCES


Islamic Jurisprudence and Environmental Planning

Othman Abd ar-Rahman Llewellyn*

Introduction
Throughout the history of Islamic civilization, Muslim jurists have derived from the Qur'an and the practice of the Prophet Muhammad, on whom be blessings and peace, laws applicable to all aspects of the Islamic society, including environmental planning. By environmental planning is meant all planning pertaining to the use of land and water, plants and animals: including range, wildlife, and watershed management, soil and crop management, forestry, regional planning, and landscape architecture.

This paper is written in the belief that Muslim jurists shall again formulate laws pertaining to these, as well as other aspects of planning and administration. In the meantime, however, since the Muslim planning process has been in abeyance and the Islamic land use has been replaced by European models, present day Muslim planners may not generally be aware of the Islamic laws and values pertaining to their field. The paper is therefore addressed primarily to Muslims involved in planning and administration. The purpose is to outline some important aspects of Islamic legal methodology in the context of their field, and to suggest an Islamic approach to the use of land, water, vegetation, and animals.

It must be emphasized that Islamic law is value-centered. Unlike Positivist Law, which denies ethical or ideological content to legislation and which remains an overriding influence in Western legal systems - expressed in statements such as “you can not legislate morality” - Islamic law is unequivocally value-centered. Ethics and laws are not strictly differentiated in Islam, and all rulings of the Shari‘ah concerning social transaction aim at realizing certain divinely ordained value goals. For an Islamic civilization, then, the purpose of all planning must be to realize the ultimate objectives of Islamic law (maqāsid al-Shari‘ah).

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Traditionally, in Islamic society, clear religious directives and shared religious values comprised a framework for the use of the land and its resources. There was little need for formal planning. State intervention was rare and generally related to specific institutions such as reserves for livestock and wildlife, land grants, and the construction and maintenance of major roads, waterworks and waterways. However, under conditions of rapid expansion, new technology, and the intrusion of alien influences, the traditional framework has been weakened and largely replaced by more centralized planning. The results have generally not been favourable. There is need now to reestablish the traditional framework, and to produce genuinely Islamic planners for areas where planning is required.

Because the role of planning in administration has vastly expanded in recent times, the subject is not fully developed in Islamic legal literature; it is incumbent on present and future jurists to extend legal thought (fiqah) to cover new problems. Adherence to the details of the fiqah worked out by jurists of the past can sometimes lead to formalistic and impractical solutions which are in fact unworthy of those jurists. With different, more effective technologies, the nature of problems differs from those addressed by the earlier jurists. For example, fixing at a radius of twenty five or forty cubics or the length of the well’s rope (as did some schools), the inviolate zone (harim) around a well, which protects the well and the aquifer and provides animals a place to rest, is appropriate for small dug wells, but in the case of contemporary pumped wells, such a measurement bears no relation to the purpose of harim (Husaini, pp. 79-80). But if the ‘traditionalist’ scholars have been too rigid, the methods of the ‘modernists’ or ‘reformists’ have been worse. Selecting the most appropriate legal rulings from different schools of law (the processes of takhayyur and tafṣīq) is not an adequate remedy; for this is a patchwork approach with no coherent methodology. Furthermore, it comes from an interest only in the ruling desired, without concern for the strength of the evidence upon which it is based. The use of legal fictions (hiyal) to evade rulings inappropriate to present needs is unacceptable, for this amounts to an attempt to transfer the value of one act to another, without regard to the purposes of the acts as intended by Divine Lawgiver. And if jurists seek means to bend the Shari‘ah to make it fit the latest ideas and practices of the West, as these ‘reformists’ tend to do, they risk losing their credibility with Muslims.

The most positive and practical approach to extending legal thought to cover new problems is to concentrate on the ultimate purposes or objectives of the Shari‘ah, the science of which was developed by al-

Shatibi, Ibn Qayyim al-Jawziyyah, and others. It is particularly crucial that these objectives never be violated in a time of change when laws are being revised. Uncompromising firmness in fundamental values maintains integrity in the details of application, whereas rigidity in detail may sometimes obscure and negate the fundamental values. To return to the example of a modern pumped well’s ḥarīm, since its purpose is to protect the well and the aquifer and to prove a resting and watering area for livestock, its extent may be best determined in accordance with local hydrological conditions and the needs of livestock and humans (Husaini, pp. 79-80). The science of maqāsid al-Shari‘ah is the basis of an integrative or systemic approach to Islamic values, and involves distinguishing between universal goals and principles on the one hand, and instrumental goals and specific applications on the other, so as to define the hierarchy of values in Islamic law.

1. **Maqāsid Al-Shari‘ah: The Objectives of The Shari‘ah**

Jurists have defined the fundamental purpose of the Shari‘ah as the welfare (mašlaḥah) of Allah’s creatures.

Ibrahim ibn Musa al-Shātibi discussed the Qur’anic basis for the principle of mašlaḥah, and the inductive reasoning by which it is discovered.

2. See ‘Abd-Allah, pp. v-vi, 364 (footnotes); Masud, pp. 164-165, 317-322. Other prominent jurists who examined the ultimate objectives of the Shari‘ah include Izz al-Din ibn ‘Abd al-Salām (d.660h/1263c), Shihāb al-Dīn Ahmad ibn Idrīs al-Qarāfī (d. 684h/1285c), and Taqī al-Dīn Aḥmad ibn ‘Abd al-Halīm ibn Taymiyyah (d.728h/1328c). See Maḥmūsannī, *Fālasafat* . . . , p. 105m ‘Abd Allah, pp. vi, 52 (footnotes).

3. Al-Shātibi, d.790h/1388c, vol. 2, pp. 6-53; Masud, pp. 225-236, 288; Husaini, pp. 8, 82-83; ‘Abd Allah, pp. vi, footnote. All rulings of the Shari‘ah and public goods are hierarchically ordered as absolute necessities (darūriyāt), including religion and morality, life, reason, posterity and property; needs (ḥajjiyyāt); and refinements which beautify life and perfect ethics and honour (taḥsinīyāt).


5. Al-Shātibi, *Al-Muwāfaqāt*, vol. 2, pp. 6-8; on the effective causes (‘ilal) of specific rulings, see also Ibn Qayyim al-Jawziyyah, vol. 1, p. 197 ff.
The Qur’anic verses 4:165; 21:107; 11:7; 67:2; 2:195; 4:36; 16:90; 18:7; 28:77; 29:69 and 39:10 clearly indicate that the Islamic ethic draws no limit either to the number and kinds of creatures that the Muslim is required to benefit by his good works, or to the extent of the good that he or she is required to do them. This is further emphasized in ahādīth or reports of the actions, sayings and approvals of the Prophet Muḥammad, on whom be blessings and peace, such as the following:

*Created beings are the dependents of Allah, so the creature dearest to Allah is he who does most good to Allah’s dependents.*

*The merciful are shown mercy by the Allah-Merciful. Show mercy to those on earth, and He in Heaven will show mercy to you.*

*Allah, be He blessed and exalted, has prescribed goodness toward everything.*

The ultimate purpose of the Shari‘ah is thus the universal common good, the welfare of the entire creation (*maṣāliḥ al-khalqi kāffatan*). This means that all of the measurable effects of an action both immediate and ultimate, on all beings must be weighed by the planner, designer or administrator, to maximize benefit and minimize harm to the totality. For every atom’s weight of good and every atom’s weight of harm that has resulted from his actions will be weighed on the Day of Judgement. (Qur’an, 99:7-8; 45:15; 53:31) Not a single creature, present or future, may be excluded from consideration in deciding a course of action, and the maximum possible net benefit to the totality must be striven for.

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10. Husaini, pp. 116, 144-145; Azzam, pp. 121-122. That the wider interests (of the community and the creation) always take precedence over the more limited interests (of individuals and groups) is one of the most important principles of Islamic law. See ‘Abd Allah pp. 277-278. ref. to al-Shāṭibi, *al-Īṣām*, vol. 2, pp. 292-293.
The Objectives of the Shari‘ah and Environmental Planning

An Islamic philosophy of the use of land and water, plants and animals, may be described in light of the objectives of Islamic law. All creatures are sustained by one Rabb or Lord and Sustainer, and He has created them in measure and proportion and has ordered and balanced them so as to sustain them by means of each other. Nothing is created without value and purpose. The purpose of each creature is to serve the Sustainer of all by filling its ordained role, thereby contributing to the cosmic design and purpose, to the welfare of the totality. All beings are thus united in aim, and benefitting the whole is a value that pervades the universe.  

For human beings this role is expanded to the special responsibility of trusteeship (amānah and khilāfah) over the earth. Iḥsān, the most comprehensive term expressing nobility, denotes the perfection of moral rightness, practical benefit, and esthetic artistry, and is due from humans toward everything, for the essence of worship is to do the greatest good to the entire creation.

These values regarding the creation and its purposes are revealed in the following Qur'anic verses, among others:

Allah is that which splits the seed and the date stone, brings the living from the dead and the dead from the living: That is your God - how can you be turned away? 6:95

We did not create the heaven and earth and all between them without purpose. Such is the view of those who disbelieve, and woe to the disbelievers from the fire! Shall we treat those who believe and do good works as those who work corruption in the earth? Shall we treat those who are careful of their duty as the evildoers? 38:27-28

And do good; for Allah loves those who do good. 2:195

He who created death and life to try you, which of you do work the most good. 67:2

Iḥsān is translated into explicit administrative goals and legally enforceable principles through the duties of Iṣlāḥ: rightness, beneficciary, suitability, betterment of conditions, cultivation of earth, and establishment of peace, prosperity, and civilization. If the primary objective of Islamic law is to realize iḥsān and maximize the welfare of the creation, the purposes of environmental planning may be defined as ʔlāh, revival of dead lands (iḥya al-mawāt), and tahsīn al-ʔrd: enrichment, enhancement, and beautification of the earth. The Prophet


Muḥammad, on whom be blessings and peace, declared that thus fructifying the earth is a profoundly ethical act.

Whoever revives dead land, for him is reward in it; and whatever any creature seeking food eats of it shall be reckoned as charity from him.\(^{13}\)

There is no Muslim who plants a tree or sows a field, and a human, bird, or animal eats from it, but it shall be reckoned as charity from him.\(^{14}\)

2. *Usul al-fiqh*: Sources and Methods of Islamic Jurisprudence

These ultimate objectives of the *Shari‘ah* are translated into legal principles by the source-methods of Islamic legal thought (*usūl al-fiqh*). The principles of agricultural land use are concerned primarily with the rights of Allah’s creatures (*huqūq al-ibād*), which include the rights of the self, the rights of humans toward each other, and the rights of animals toward humans.\(^{15}\) They are found mainly in the branch of Islamic law known as *mu‘amalāt* or interactions and transactions, under topics such as revival of dead lands (*iḥya‘ al-mawāt*) the use of water for irrigation and livestock (*shīr*, land grants (*iqāta‘*), leases (*iḥrā‘*), maintenance (*nafāqah*), laws of hunting and slaughter (*ṣayd* and *dhaba‘i‘*), property (*milk* and *māl*), economic transactions (*bu‘y*), endowments (*awqāf*); and alms and taxes (*zakāh*, *ṣadaqah*, *ʿushr* and *kharāj*), which are discussed in both *mu‘amalāt* and ritual devotions (*ʿibādāt*). Principles related to land use are also found in the branch of law dealing with public policy and administration (*siyāsah*), and in the branch covering crimes and penal law (*jīnayāt* and *ʿuqūbāt*), under usurpation (*ghaṣb*) and damages (*talāf*).

Rather than review specific rulings by subject, I will review the *usūl* or source-methods of Islamic legal thought by which universal principles are derived from the provisions of the *Shari‘ah* so that they may be applied to specific problems,\(^{16}\) and will cite examples of some important legal precepts. Each school (*madhab*) of Islamic law has its own rules for deriving rulings from these sources, and not all of the sources which I mention are accepted by every school. Such differences, however, are beyond the scope of this paper.\(^{17}\)

13. *Mishkāt al-Maṣābīḥ*, vol. 1, p. 600, no. 1916; *Kitāb al-Kharaj*, p. 82, no. 259; *Taxation in Islam*, vol. 1, p. 64; Also see *Kitāb al-Awmal*, pp. 285-286, no. 800.


16. Qadri, p. 234; Masud, p. 204, reference to al-Shāṭibī.

17. The source-methods discussed in this paper are common to the Hanbalī and Maliki schools of law, though they do not apply them identically. The other schools of
Texts of the Qur’an and Sunnah Relating to Land Use

The two primary sources in all schools of Islamic law are the conclusive legal texts (nusūṣ) of the Qur’an and the Prophetic sunnah or normative practice. Both have rules of interpretation to safeguard the purposes of the Shari’ah. (see ‘Abd Allah, pp. 146-195).

Qur’anic Texts: Principles of land use contained in verses of the Qur’an include Allah’s exclusive ownership of all things in the universe; (20:6; 57:7-10) His ordaining sustenance in the earth for all humans and other creatures; (41:10; also 11:6; 51:22; see Husaini, pp. 144-145, and Qadri, p. 310) the serviceability of all things for beneficial human use;18 the sanction of farming, raising livestock and of hunting for legitimate reasons;19 the injunction to enjoy all good and beautiful things provided for sustenance, and the prohibition of excessive or wasteful consumption (5:90-91; 6:141; 7:13-32; 26:150-152), of destruction of crops and livestock, and of corruption in the earth.20 Principles of slaughter and sacrifice are established in the Qur’an. (22:27-37) Qur’anic economic principles govern social spending and redistribution of wealth.21 They establish the right to private property for both men and women, and protect private property from wrongful appropriation. (2:188; 4:32-33. See Qadri, pp. 320, 344) Allah commands that a share of the harvest must be reserved for the needy, and stipulates that this share must be good, and not defective.22 The right of human beings and animals alike to the resources of the earth are established in the Qur’an. (79:30; 80:24-32) Allah also declares water to be the essential resource of which He has made all living things23 and establishes the legal right of humans and animals to quench their thirst. (56:65; 79:30-33; 80:24-32; see Maktari, p. 22) Finally, Allah commands

Islamic law accept some, but not all, of these sources. For a summary of the source-methods of the four Sunni schools of law, see ‘Abd Allah, pp. 121-128; for a summary of Ihadi law, see Ennami, Amr K., pp. 81-117; for a summary of the Shi’i schools, see Fyzez, A. A. A., pp. 113-131; and Tabataba’i, ‘Allamah Sayyid Muhammad Husayn, Shi’ite Islam, tr. & ed., S. Hossein Nasr, State University of New York Press, Albany, 1975.

that people do good; this commandment is unlimited; it includes
goodness toward all created beings. (2:195; 4:36; 16:90; 18:7; 28:77;
29:69; 39:10; 29:69; 76:8; 90:12-17; 99:7-8).

Aḥādith: The above Qur’anic principles are all of a general and
universal nature. The aḥādith are the primary source of the sunnah, and
provide both universal principles and specific applications of which the
underlying values known in Islamic jurisprudence as ḥikam, may be
either explicit or implied. It is important to distinguish the applications
from the universal principles. Interpretation of aḥādith demands
knowledge of the significance (ma‘na) of a saying or action of the
Prophet, blessings and peace be upon him, the capacity in which he said
or did it (i.e., as a universal lawmaker, or an advisor to a particular
individual, or an administrator handling a specific situation), the
context and circumstances, the facts and definitive principles which
pertain to it, whether it is normative and the degree of obligation, and
the regularity or irregularity of the hadith. (‘Abd Allah, pp. 155-195,
467-469, ref. to al-Qarāfi) Only thus can one know the values and
purposes realized in the obligations and prohibitions.

One of the most important universal principles found in aḥādith is the
maxim, “There shall be no injury and no mutual infliction of injury”24
which protects a person from injury and prohibits him from causing
injury to his neighbour, to society or to the creation as a whole. The right
to enjoy private property and protection of private property from
usurpation are secured in the aḥādith,25 as is public ownership of scarce
and indispensable resources, including water, pasture, and fire.26 Muḥammad,
upon whom be blessings and peace, established these resources as well as forests, wild-life and minerals as free goods under
the trusteeship of the Muslim community. (Husaini, p. 192; Abu Sulayman Abdul Hamid A. pp. 15-20) He abolished the institution of
private reserves (ahmiyah) by which the Arab aristocracy had appropriated the best grazing lands for their personal use, but he
established public reserves for both conservation and production for the
protection of woody vegetation and wild-life, and for the horses of the
Muslim army.27 He established inviolate zones (sing. ḥarim) along
roads and around wells to prevent accidents, to provide resting and

3169; Muwaffaq al-Dīn ibn Qudamah, vol. 5, pp. 528-529; ‘Uthman ibn Fudi, tr.
watching space for livestock, and to protect aquifers from impairment. In establishing *harim* zones around Makkah, Madinah and Ta‘if within which no native trees could be cut and no wild-life could be disturbed, an extremely important precedent for conservation was laid down. The endowment of wells, land, etc. for beneficial purposes has its precedent in his asking Companions to buy the well of Rumah for the Muslims which was done by Uthman ibn ‘Affan and in his urging ‘Umar ibn al-Khattab to give his land in Khaybar as a trust for charity. A co-owner’s right of option on his partner’s share and of pre-emption (*shuf‘ah*) if it is sold to some one else is affirmed in the *ahadith*, in accordance with Islamic values of social solidarity and cooperation.

With regard to *zakāh* on agricultural produce, the Prophet Moḥammad, may blessings and peace be upon him, encouraged land reclamation by setting a lower rate for irrigated lands - one twentieth of the harvest - than the tenth required of lands watered by the rain. He also forbade harvesting in such a manner as to exclude the needy from attending and receiving their share, as harvesting secretly by night. (Yaḥyā ibn Ādam, pp. 130-131, nos. 422-424; tr. Ben Shemesh, vol. 1, p. 93).

The Prophet, upon him be blessings and peace, established the rule that one acquires unowned land through one’s own efforts, and to the extent of one’s own labour, in its revival. He encouraged land reclamation by declaring that whoever revives dead lands acquires title to what he has revived. He established the legal right of humans and animals to enjoy free access to drinking water, the basis of all life, and forbade monopolization of water by declaring it as common property and forbidding its sale except in containers. He recognized senior

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31. *Mishkāt al-Maṣābīh*, vol. 2, pp. 124-126; nos. 2961-2971; Yaḥyā ibn Ādam, pp. 80, 98, nos. 253, 305; tr. Ben Shemesh, vol. 1, pp. 63, 71. Some *ahadīth* affirm the neighbour’s right of option as well, while others deny it.
rights of usufruct but not absolute ownership of water. The ahādīth establish the rule that on a stream with insufficient water for all potential users, the upstream user irrigates before lower, but is restricted to the amount needed by his crops and is forbidden to withhold excess water from the lower users.35 His limitation on the owner’s liability for accidents at wells further encourages generosity and free access to water. (Caponera, p. 12, ref. to al-Bukhārī, al-Ṣawwāf, pp. 7-8).

When the Prophet, upon whom be blessings and peace, admonished a man who was washing for prayer not to waste the water, “even at a flowing river”, he made it clear that īṣrāf or wastage of resources is forbidden, whether in cases of scarcity or abundance. (Mishkāt al-Maṣābīh, vol. 1, p. 133, no. 427). He prohibited urination in water sources36 and in the holes of animals (Mishkāt al-Maṣābīh, vol. 1, p. 115, no. 345). The value underlying these prohibitions may apply to the pollution of critical resources and habitats in general. Likewise, he prohibited the cutting of any tree in the desert which provides valuable shade or sustenance to humans or animals,37 and this prohibition may apply to the destruction of valuable habitat in general. Such rulings are not isolated prohibitions; they must be understood as specific applications of wider values, and carefully examined for their underlying purposes.

The rights of both domestic and wild animals to humane treatment are explained in detail in the ahādīth. Human beings are under legal obligation to provide proper maintenance (nafaqah) for any animals under their care,38 and are morally obliged to provide for any other needy animal they encounter for “there is a reward on every living thing”.39 Moreover, people are warned of punishment in hell fire for causing an animal to starve to death.40

While the Islamic laws of hunting permit the taking of life for food or other necessities, the Prophet Muḥammad, upon whom be blessings and peace, prohibited the taking of any living thing as a target (i.e.

38. Muḥammad al-Khīḍr Ḥusayn, pp. 86-87; English supplement, p. 24; al-Zarqa, unpublished notes.
40. Mishkāt al-Maṣābīh, vol. 1, p. 597, no. 1903; also in Muḥammad al-Khīḍr Husayn, p. 87; English supplement, p. 64; and in as-Sayyid Sābiq, vol. 3, pp. 564-565.
taking any life for sport), and cursed whoever does so.\footnote{Mishkāt al-Maṣābīḥ, vol. 2, p. 424, nos. 4075, 4076; Muhammad al-Khidr Husayn, p. 86, English supplement, pp. 23-24; Majma’ al-Zawā’id, vol. 4, pp. 31-32.} He forbade causing of any creature’s death without sufficient cause. For example, he ordered a man who had taken unfeathered birds from a nest to return them to their mother which was trying to protect them.\footnote{Mishkāt al-Maṣābīḥ, vol. 1, p. 729, no. 3377; Muhammad al-Khidr Husayn, p. 89, English supplement, p. 29.} Likewise, he commanded a man who needlessly lit a fire on an anthill to put it out,\footnote{Muhammad al-Khidr Husayn, p. 89, English supplement, p. 29.} and warned of the pleading, on the day of resurrection, of a creature killed in sport and of whose death no good use was made. (Majma’ al-Zawā’id, vol. 4, p. 30). Other than slaughtering for food or other valid needs, or killing an animal dying slow death, he forbade the killing of anything unless it is harmful. (Majma’ al-Zawā’id, vol. 4, p. 42). Causing any needless pain or injury to animals is forbidden in ahādīth which prohibit mutilation, (Mishkāt al-Maṣābīḥ, vol. 2, p. 119, no. 2941; Majma’ al-Zawā’id, vol. 4, p. 32) setting fights between animals, (Mishkāt al-Maṣābīḥ, vol. 2, p. 429, no. 4103) and striking or branding an animal on the face. (Mishkāt al-Maṣābīḥ, vol. 2, p. 424, nos. 4077, 4078).

Laws of slaughtering prescribed by the Prophet, upon whom be blessings and peace, include prohibition of prolonging the slaughter\footnote{Mishkāt al-Maṣābīḥ, vol. 2, p. 426, no. 4090.} and prohibition of inhumane pre-Islamic methods. (Mishkāt al-Maṣābīḥ, vol. 2, p. 426, no. 4090). Anything killed or slaughtered must be killed as painlessly as possible.\footnote{Allah, be He blessed and exalted, has prescribed goodness toward everything: so when you kill, kill with goodness and when you slaughter, slaughter with goodness. Let one of you sharpen his knife and thus give ease to the animal he is slaughtering. Islamic law thus requires that in using animals, the best and least injurious methods be employed.}

43. Muhammad al-Khidr Husayn, p. 89, English supplement, p. 29.
45. See Muhammad al-Khidr Husayn, p. 85, English supplement, p. 23; Maududi, pp. 132-133.
Additional Sources of the Sunnah: *Fatāwa* of the Companions, Ἁθάρ, the ‘Amal of Al-Madinah and Ijmā’.

Sources for understanding the Prophetic sunnah other than the aḥādīth may include the legal opinions (*fatāwa*) of the companions of the Prophet, upon whom be blessings and peace, reports of their deeds and sayings (āthār), the established practice (‘amal) of al-Madinah, the early Islamic capital where most of the Companions lived, and rulings on which there was universal or near universal consensus (ijmā’) by the early generations. Of these, ijmā’ is authoritative in every school of Islamic law, while the others have varying degrees of authority in the different schools, all of them being employed by the Hanbali and Maliki schools. Interpretation of these sources, as of the aḥādīth, requires knowledge of the context and significance of each case and the principles which pertain to it.

This group of sources has provided important principles of land use. The Khalifah ‘Ali ibn Ṭālib, Allah be pleased with him, eloquently expressed the Islamic encouragement of revival of dead lands, telling a man who had dug canals and reclaimed neglected land:

*Partake of it with joy, as long as you are a benefactor, not a corruptor, a cultivator, not a destroyer.*

The Khalifah ‘Umar ibn al-Khaṭṭab, Allah be pleased with him, affirmed the right of one man to dig an irrigation canal through another’s land after ascertaining that the latter would not be injured thereby. In doing so he further established prevention of injury to others as a principle of land use, and established the invalidity of a landowner’s preventing a benefit to others if the benefit does not cause injury to the landowner himself. He established the right to quench one’s thirst or the thirst of one’s livestock at a well whether public or private, and to assert that right by force if necessary. Under extreme circumstances such as famine or the threat of starvation, he ruled that the right of private ownership is modified, when confronted by the need of the community, the latter takes precedence. If a person dies of thirst or starvation, he ruled that those who refused him water or food are responsible for paying his bloodmoney.

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49. Yahyā ibn Adam, p. 63, no. 196, on the authority of Sa’id al-Dabbi; tr. Ben Shemesh, vol. 1, p. 53.
52. Yahyā ibn Adam, p. 111, no. 352; tr. Ben Shemesh, vol. 1, p. 76; Husaini, p. 74; Caponera, p. 13; Yamani, p. 28.
The Khalifah Uthmān ibn ‘Affān, Allah be pleased with him, extensively exercised the right of the state to assign state lands to cultivators in order to have them reclaimed. The Khalifah ‘Umar ibn al-Khaṭṭāb, Allah be pleased with him, ruled that revival, not mere enclosure of land, constitutes acquisition; in so doing he established the right of the state to take back lands granted for revival if they are misused or not revived, so as to grant them to other cultivators. He established additional public reserves for the animals of the needy and the army.

The Khalifah Abū Bakr al-Ṣiddiq, Allah be pleased with him, enforced rules of war based on statements of the Prophet Muḥammad, upon whom be blessings and peace, prohibiting devastation of the enemy’s crops, orchards, and livestock, and allowing the army to take only what was necessary for food. Such a prohibition under the extreme circumstances of war demonstrates the high value placed on cultivation, and the strong disapproval of its destruction.

The principle that if an animal’s owner does not provide it with adequate maintenance (nafaqah), the state must force him to do so or sell the animal, is based on rulings of Companions. The declaration of the Khalifah ‘Umar ibn al-Khaṭṭāb that “If a kid dies on the bank of the Euphrates, I fear that Allah will ask ‘Umar about it”, (‘Uthmān ibn Fudi, p. 140 text; p. 160 English Translation) attests to the state’s responsibility for the welfare of animals; and a declaration by Abū Hurayrah that even the wild bustard might starve as a result of the ruler’s tyranny may similarly imply the ruler’s responsibility for the welfare of wild-life. (Mishkāt al-Maṣābīh, vol. 2, p. 641, no. 5136).

Ijtihād

Ijtihād is a jurists’ exertion of his reason to formulate the principles of the revealed law and apply them to new problems or new situations. It is on one hand a source of Islamic law when one draws upon the opinions of previous jurists; on the other, it is the methodology of reasoning to

make independent judgements. In following the independent judgements, it is absolutely essential to understand the objectives of the Shari'ah so that they may be realized and preserved, and not negated. Methods of ijtihad include reasoning by juristic analogy (qiyas), judging according to the hierarchy of Islamic values by preferring the stronger or universal values over the weaker or instrumental values (istihsans), and where there is no precedent, making judgements on the basis of public welfare (al-masali al-mursalah).

Jurists such as al-Subki, al-Suyuti, and Ibn Nujaym formulated universal maxims of Islamic law by comparative study of similar rulings, as 'Umar ibn al-Khattab's instructions to the judge Abû Mūsa al-Ash'arî enjoined. Among the maxims which clarify the objectives of the Shari'ah in land use planning are the following, from the Majallah, which was written in the late Ottoman period and remains the most important and influential attempt to codify Islamic law:

Injury may not be met by injury. (Article 19)
Injury is to be repaired. (Article 20)
An injury cannot be removed by the commission of a similar injury. (Article 25)
A private injury is tolerated to ward off a public injury. (Article 26)
Severe damage is removed by lighter damage. (Article 27)
In the presence of two wrongful acts, the one whose injury is greater is avoided by commission of the lesser. (Article 28)
The lesser of two evils is preferred. (Article 29)
The repelling of evil takes precedence over the acquisition of benefits. (Article 30)
Injury is to be removed as far as possible. (Article 31)
When prohibition and exigece conflict, preference is given to prohibition. (Article 46)
Management of citizens' affairs is dependent upon public welfare. (Article 58)

Liability is an obligation accompanying gain; that is to say, a person who enjoys the benefits of a thing must submit to the disadvantages attaching thereto. (Article 87)
The burden is in proportion to the benefit and the benefit to the burden. (Article 88)

59. Qadri, pp. 213-214; Ramadan, p. 25. ref. to Ibn Qayyim al-Jawziyah; Mahmassani, Falsafat..., pp. 149-152.
60. The maxims quoted are maxims nos. 19-20, 25-31, 46, 58, 87-88, 92-93, and 96-97 of the Majallah. See The Mejelle, tr. C.R. Tyser, D.G. Demetriades, Ismail Haqqi Effendi, pp. 1-15. These maxims are quoted and discussed in Mahmassani, Falsafat..., pp. 155-159, 203-207; and in Husain, pp. 76-79. Also see Qadri, pp. 319-320, 341-343, and 350-351 for elaboration on some of them.
Liability lies on the direct author of an act, even though acting unintentionally.  (Article 92)
No liability lies on a person who is the (indirect) cause of an act unless he acted intentionally.  (Article 93)
The dealing by one person with the property of another, without his leave, is not lawful.  (Article 96)
No person may take the property of another without legal cause.  (Article 97)

Among the most important principles of land use which safeguard the objectives of Islamic law is the concept of the abuse of rights. Malik ibn Anas and Abū Ḥanifah formulated the principles that the exercise of a right is permitted only for the achievement of the purpose for which the right was created, that the exercise of a right is illegal where it results in excessive harm, and that the exercise of a right is illegal if used to bring injury to others rather than for benefit. 61 Malik restrained landowners from any use of their property resulting in injury to others without corresponding benefit to themselves. In cases concerning neighbourly relationship, placement of windows, division of tenancy in common property and ownership of uncultivated land, he imposed restrictions where necessary in order to prevent excessive injury. 62 Abū Yusuf restricted both the individuals’ and the authorities’ right in cultivating virgin land where its exercise would result in excessive injury. 63 Hanbali jurists reasoned likewise that since Allah is the real owner of all property, human rights of usufruct must not be abused. 64 According to later jurists, a person is considered to have abused his right if he intended to cause injury to others, if its exercise did not result in benefit to the possessor but resulted in injury to others, if the exercise of the right resulted in general injury to the community, or if, as a result of the exercise of the right, an excessive injury was caused to others. 65

Specific precepts regarding land use which jurists have developed by *ijtiḥād* include the ruling that on a small stream with insufficient water, the senior irrigation rights of upstream users are subject to prior appropriation. Security is thereby provided for the investment of energy, time and money in revival of dead lands, by the emphatic protection of the previously established irrigation rights. 66 The ruling that the amount of irrigation retained by the senior user should vary according to the requirements of the specific soils, crops, seasons of

65. Yamani, pp. 25-26, ref. to Ibn ‘Abidin; also see Qadri, pp. 310-313, 341-343.
66. Norvelle, pp. 49-51, 56, 68, 79 & 81 with ref. to al-Bahā’i and Ibn Qudāmah, and pp. 90-93; Caponera, pp. 18, 19, 21-22.
irrigation, condition of the land, and the volume of water available. is likewise derived through *ijtihād*. (Maktari, pp. 29-30, 34, ref. to al-Mawardi and Ibn Ḥajar al-Haythami). Share of irrigation water in a jointly owned canal, if disputed, is allocated according to the labour and expenditure invested in excavation and maintenance by the users, or if these investments are unknown, according to need as determined by the sizes of their cultivated plots. (Maktari, pp. 15, 28; Norvelle, pp. 53-54, 59, 78; Caponera, p. 18) Other rules developed by jurists include the precept that it is forbidden to adversely affect a neighbour’s well by lowering the water table or by pollution of the aquifer, (Norvelle, pp. 66-67, 81-82) the precept that an abandoned well if needed by the public becomes public property, (Norvelle, p. 65; Maktari, pp. 15, 38) and the precept that public waters are to be maintained by the state.\(^\text{67}\)

3. Implications of Islamic law for Environmental Planning

i. The Universal Common Good

The fundamental criterion for all planning decisions in Islam is the service of Allah by realizing the greatest possible good to His creatures as a whole. The *Shari‘ah* is the only legal system in existence which explicitly aims at the universal common good of the entire creation, both immediate and ultimate. This reflects a conviction that the best interests of species, nations, regions, classes, and individuals are ultimately in harmony and not in conflict.

ii. *Mašālih* and *Mafāsid*

In contemporary secular planning, costs and benefits are largely measured and weighed in the language of financial profit and loss. Planning according to the objectives of Islamic law, however, must maximize total benefits or *mašāliḥ*, and minimize total costs, or *mafāsid*. Here the concepts of *mašāliḥ* and *mafāsid* are not precisely equivalent to western ideas of benefits and costs. Actions must be evaluated in terms of their consequences with regard to all of the absolute necessities (*darūriyāt*: religion and morality, life, reason, posterity, and property), and all social needs (*ḥajiyāt*), and requirements for the perfection of ethics and honour (*taḥšiniyāt*), as these complement and preserve the absolute necessities. In this context, it is clear that Islamic law requires that the lives, sanity, and maintenance of all created beings must be taken into account, and that the posterity of all species be carefully preserved.

However, a more complete and accurate means of assessing effects on all creatures, than the language of finance, has yet to be developed and made easy to apply in planning. Planning according to the objectives of

\(^{67}\) Abū Yūsuf, pp. 97-100, 110; tr. Ben Shemesh, vol. 3, pp. 106, 127-129; al-Ṣawwāf, pp. 6-7; Caponera, p. 23.
Islamic law therefore requires that in allocating and managing scarce resources such as water and arable land, the land uses, crops, management techniques and so forth should not be selected merely on the basis of the highest financial return. They must of course be financially viable, but they must also be socially and ethically beneficial - nutritious food crops or useful fibers should be favoured over tobacco, for example. Furthermore, public need takes precedence over private interests. The maxim of Islamic law that "the repelling of evil takes precedence over the acquisition of benefits" subordinates purely utilitarian economic and political benefits to the criteria of ethics and social justice (Husaini, p. 80).

iii. The Use of Natural Resources

The Qur’anic prohibition of corruption in the earth wastage or excess and destruction mandates the use of techniques which maximize the conservation and beneficial use of resources. In lands without renewable aquifers, for example, rain water, harvesting and runoff farming should, where feasible, be preferred over the extraction of non-renewable groundwater; for the preservation of aquifers is regarded very seriously in Islamic law. These Qur’anic prohibitions like-wise require policies which favour intensive use and recycling of products over the extravagant extraction and consumption of resources. The most efficient and selective, and least destructive techniques of pest control are required, as well as careful timing of their use, so as to achieve protection of crops with minimum waste of life.

Islamic laws of livestock maintenance, slaughtering, and hunting require that humane methods be used in livestock and wild-life management. Some of the techniques accepted in secular countries are unacceptable by Islamic standards. Hunting is permitted for food, but hunting for sport and trophies is forbidden. This demands a philosophy of wild-life management oriented toward the food hunter and the wild-life, rather than the sportsman.

All human beings, and not only humans, but livestock and wild-life as well, enjoy rights to their share of the resources of the earth. The abuse of any resources is forbidden, and the best possible use of all resources, both living and lifeless, must be made.68

iv. The Role of Government

Islamic planning is, however, ineffective without government to implement and enforce it. As Ibn Taymiyah declared, government is one of the most important requirements of Islam, for the fundamental obligation to command the right and forbid the wrong cannot be

discharged without power and authority. Of course, the government must be one which implements the *mu'āmalāt* of Islamic law rather than a European code or British common law, if the objectives of the *Shari'ah* are to be realized.

v. Public Property

In the Qur'an, Allah has ordained sustenance for all humans and other creatures, and the state has an obligation to see to the sustenance and welfare of all. The state is the trustee of all public property. It is the custodian of transportation systems and public waters, and is responsible for their maintenance. It is the custodian of all public lands, including state lands, commons, endowments, and unowned lands. Most objects of nature, such as game, fish, and woods, are not property in their natural state, and become property only when actually secured. Unowned lands are secured by cultivation. Indispensable resources such as water, pasture, fire, air, sunlight, and commons, public road, and public gardens, are for the common use of all, subject to the condition that their use does not cause injury to the community. Today when human impact is so greatly magnified, the use of the extensive common lands in the Muslim world and of all free things must be closely regulated so that their use does not result in injury to the community and creation as a whole.

The state is the ultimate guardian of endowments and institutions for the benefit of the public. Charitable endowments must be managed and supervised for the greatest benefit to the needy and the community as a whole. The target beneficiaries of state funds are the needy, and the state has an important economic role in directing social spending and the redistribution of wealth.

The role of the government in an Islamic state should include assigning suitable lands for revival, and setting aside suitable lands as reserves for public purposes, such as emergency grazing, watershed improvement, and preservation of wild-life habitat and forests. The state must undertake public works for the benefit of humans and other creatures. The example of the great planner, Zubaydah bint Ja'far, is particularly worthy of emulation in this regard. It was she who had wells and cisterns constructed at intervals of a day's journey along the road.

from Baghdad to Makkah, who built the aqueducts of Beirut and whose waterworks and aqueducts have continued to supply Makkah for over eleven and a half centuries (al-Ṣawwāf, pp. 8-9).

vi. Private Property

According to Islamic law, Allah is the ultimate owner of all things, and human beings must manage them in accordance with the will of their Sustainer for the greatest good to all His creatures. Human beings enjoy the rights of usufruct in the property with which they are entrusted. The right of men and women to private property is established to safeguard the individual’s full freedom for creative, beneficial use of property, and it cannot be revoked by anyone in authority except for a clear public need and for prompt and just compensation, or in a clear case of misuse or mistreatment. Islamic law clearly does not permit the degree of collectivization or regulation by the state found in contemporary socialistic regimes.

The exercise of private property rights is, however, circumscribed by the greater needs of the community, and the individual is emphatically forbidden to use his property in ways resulting in net harm to society or the creation as a whole, according to the Islamic principles of social solidarity (takāful) and the abuse of rights. The rights of ownership are thus limited by the similar rights of others and by the public interest, and ownership ceases if the welfare of the community demands or if the need of another individual reaches extreme necessity. Nor does the owner have an absolute right of disposal over his property. The Shari’ah particularly limits his right of disposal with regard to living things; he is forbidden to mistreat his animals or kill them except for proper purposes and by proper methods. Other important limitations on private property rights concern easements, protection of women’s privacy with regard to the design of buildings and placement of windows, and prevention of land reclamation where its results would be injurious. Islamic law in principle places more restrictions on the use of property than does laissez-faire capitalism.

vii. Standards and Intervention

The Islamic state can and must set standards and provide incentives and compensation for economic losses, favouring the most beneficial land uses and the best and most humane management techniques so as to realize the betterment of civilization and encourage goodness. Nuisances and cruelty are emphatically prohibited, and the state is empowered to take and sell animals which are mistreated or property which is misused to cause excessive injury.\(^80\) It has been suggested that according to the principle that “the repelling of evil takes precedence over the acquisition of benefits”, an industry causing excessive injury by pollution could be closed inspite of the economic loss (Husaini, p. 80).

The role of the office of inspection (hisbah) is particularly important with regard to enforcement of standards, removal of nuisances and prevention of the abuse of rights, misuse of property, and mistreatment of animals, and this institution should be revived and further developed.\(^81\)

The revival of this institution, headed by an expert in Islamic law and working with the Shari‘ah court, would seem essential for the implementation of Islamic environmental and land use law. Matters which may require further elaboration for the full repair of injuries suffered by non-human creatures include their representation in court, assessment of injuries to them, and awarding of relief to them.\(^82\)

4. Empirical Factors in the Islamic Framework

To lead to prosperity in the present and hereafter, planning, design and management must be done in accordance with the ways of Allah (sunan Allah) or “laws of nature”. The revelations (ayāt) of Allah’s sunan are found in the Qur’an, in the environment, and within the souls.\(^83\) The role of the first in Islamic law has been discussed; the roles of the latter two in the planning process must also be examined.

i. Social Factors: inhabitants’ and users’ desires

Once the requirements of Islamic law have been fulfilled, there remains


a wide scope for freedom of choice in planning and design. The Qur’an requires that Muslim conduct their affairs through mutual consultation (shūra). Accordingly, a region’s plan must be responsive to the inhabitants’ and other users’ desires, which might be seen as āyāt or indications of the divine will, provided that they do not violate the revealed law.\footnote{Husaini, pp. 2-3, 9, 26, 79, 81, 87, ref. to Faruki, pp. 148-150, 198-200, 243 ff.; Masud, pp. 294-295, ref. to al-Shātibī, al-Muwāfaqāt, vol. 3, p. 265; Qur‘aā 5:52-53.} Natural desires, lawful pleasures and esthetics are, as al-Shātibī maintained, stimuli which excite man to acquire what he and his fellow beings need; since this requires cooperation, each individual works for the benefit of others while fulfilling his own desires. Thus they are designed to serve the purposes of the Shari‘ah. If they were not good, he held, they would not have been mentioned in the Qur’an as among Allah’s favours.\footnote{Al-Shātibī, al-Muwāfaqāt, vol. 2, pp. 175-179, 196-202, 222; Masud, pp. 267-270.}

Such desires, when in the best interests of Allah’s creatures, could be considered masāliḥ of the grade of tahsīnīyāt. Like needs (hajiyāt) and absolute necessities (darārīyāt), they might be discovered by anthropological and sociological methods and by open meetings for consultation (shūra), within the framework of Islamic law. It is essential that people of all social and ethnic groups affected be consulted equally, in accordance with the Qur’an (3:159; 4:58,135; 5:8; 6:153; 16:90; 42:38; 49:10,13) and sunnah,\footnote{Mishkāt al-Masābīh, vol. 2, p. 321, nos. 3685, 3688; p. 606, nos. 4953-4955, 4957; p. 607, no. 4961; p. 611, no. 4987; p. 632, no. 5095; p. 640, no. 5134; p. 641, no. 5135; Abū Sulayman, p. 17; Azzam, pp. 240-241; Yanani, pp. 36-45; Abdul Latif, pp. 177-180.} and the policy of the first four Khalifahs to hold the weakest of their subjects as the strongest until his rights were fully established, and to hold the strongest as the weakest until he complied fully with the law.\footnote{Ibn ‘Abd al-Salām, vol. 1, p. 69; ‘Uthmān ibn Fūdā, pp. 135, 138; English tr.; Abdul Latif, p. 192; Abū Yusuf, pp. 12-13, 117-119; tr. Ben Shemesh, vol. 3, pp. 45, 112-114; Yanani, p. 43; ‘Azzam, pp. 140-141; Nu'mān Shibli, tr. Zafar Ali Khan, vol. 1, p. xvi; Abd Allah, pp. 42-43, 198; Ramadan, p. 35, ref. to Ibn Qayyim al-Jawziyyah; Abū Sulayman, pp. 15-20.}

\textit{ii. Natural or environmental factors}

The plan must also be in accord with the natural processes or sunan Allah in the environment, which by making specific sites most suitable for particular uses, are indications (āyāt) of the divine will. Planning, design, and management may thus be based on enhancement of these divinely ordained natural processes rather than resisting them. Natural factors must be inventoried, analyzed, synthesized, and evaluated in terms of the opportunities offered and constraints imposed on each desired land use.
Favourable locations may then be correlated with the users’ needs and desires. The potential uses may be weighed by specialists in the legal, natural, and social sciences, and by the users - all the users - of the land. Trade-offs may be made according to the hierarchy of Islamic values, and the plan may be finalized and revised as necessary through shūra or consultation (Husaini, pp. 82-83, 93-94, 111-119).

Environmental Planning at the Design Scale

A plan is finally implemented at the design scale. Islamic civilization’s values of moral, material, and esthetic goodness (iḥsān) and revival, betterment, and enhancement of the earth are realized in the Islamic tradition of landscape architecture. It is a utilitarian orchard tradition, maximizing benefit for Allah’s creatures by providing fruit for humans, fodder for livestock, habitat for wild-life, and water for all. At the same time, its esthetics emphasize the principle of divinely ordained design in nature, centered around life-sustaining water. It is furthermore an earthly approximation of the Qur’anic description of paradise, maximizing beauty for all the senses: fragrant smells, sublime views, sounds of running water, birds, and rustling foliage, delicious fruits, and refreshing shade and water-cooled breezes - the greatest possible intensification of lushness and abundance.88 As such it is an expression of human Khilafah or trusteeship: in making nature prosper to the utmost, man enjoys and benefits from nature to the utmost, thus establishing a relationship of reciprocity or symbiosis (takāfūl) so that the fundamental objective of Islamic law, the welfare of the entire creation is realized.

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