Implications of Layers of Techniques in an Islamic Economy Like Iran

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1. Introduction

In these days of expeditious economic mutation based on the technological advances, the new establishments of most of the industries are technically and economically superior than those in existence. Likewise, the construction techniques are changing, the transport and communication sectors are developing in a remarkable way, and so on. The list is actually unending. Nonetheless, to find out the direct and indirect consequences of any autonomous development, the only device with us is the input-output table representing the average technique of about half a decade earlier.

The above difficulty plagues not only the planning exercises, but also the economic forecast which have to translate their estimates of extra investment, consumption, exports or government expenditures into outputs of various industries and employment generated by them. Moreover, the analysis has to depend on the average

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coefficients given by the average input-output table, which directly affects the estimates of the effects of various policy measures. The finance department of the government and the central bank depend explicitly and implicitly on such models for deciding among various policy alternatives. Hence, it is clear that they are basing their momentous decisions on very thin data need. Further, the knowledge of the average production techniques do not give any indications of the likely structural shift in the prices of "cost plus" commodities as a result of changes in the economic activities, investment, export opportunities, rental price of working capital and policy decisions.

In view of all these factors, Leontief (1982) has said "The structure of industry, if you look at it, reminds you of geological layers we see sometimes on the shore of a river, and this is what the structure of the industry is. This is one direction in which – I think – we have to move". In this paper as a matter of fact, we intend to explore the possibilities of the articulation of those layers, and see how their statistical exploration can help us to improve our planning and forecasting procedures and thus economic policy making.

The next section makes a quick review of the work done in this field. Then we set up a mathematical model generalizing the input-output analysis to take account of the situation, and examine how this model with the layers of techniques can be constructed for an Islamic economy. We will further extend our analysis for the economic integration among the Muslim countries based on the phenomenon of layers of techniques.

2. Approaches to Technical Change

The empirical research in this field has been mainly concentrated on finding out the conditions which favor innovations. In this regard, the importance of technical opportunity, economic gain, size and monopoly power of the firms engaging in research have all been widely investigated. The pattern seems to differ from industry to industry but, at present, no general mapping is available, e.g., the rate of diffusion of an innovation is important for the economy as well as for the innovator whose profitability depends on its slowness. It has been found that the diffusion follows logistic or learning curve with large interindustry differences at the rates which, again, are not presented in a general mapping. However, a cross sectoral study of firms given by the census of production is expected to provide some indications of this by the resultant effect on the surviving firms.

Another direction of the empirical research is related to the examination of the impact of the innovative activity of the recent past on the working of the current economic system. But while the input-output analysis deals with the average techniques of production, the translation of the extra consumption and investment of macro-models as well as planning require the knowledge of marginal coefficients. This combination of the Shumpeterian insight with Leontief's comprehensive empirical schemeta started taking shape in the Sixties. In words of Anne Carter (1970):

"At the third International Conference on Input-Output Techniques in September, 1961, two of us, professor Mathur and

myself, presented papers suggesting the structural change be introduced into dynamic input-output models, under the assumption that given new techniques are capital embodied ... Mathur, whose primary emphasis was theoretical, had to restrict his implementation to a hypothetical example ... My own emphasis was operational, but empirical coverage was very limited indeed".

In the early days the concern was with the forward marginal techniques associated with the new investment. Soon Leontief was to show the importance of all the different techniques in his articulation of the dynamic inverse (1968,1970). Meanwhile, Carter was showing that the innovative activity was highly correlated with the increasing wage rate, and the incidence of the innovation for a whole spectrum of industries could be explained in terms of the rising wage rate without reference to the capital.

Mathur on the other hand, pointed out that to understand the working of the economy, we require not only a comprehensive mapping of input structures associated with the newest or best practice techniques in each sector, but also a mapping of the least efficient techniques (1963-1970). It is these latter which determine the incidence of obsolescence, unemployment, etc. with the pace of innovations and the changing macro-economic conditions, industry wise as well as region wise. They also determine the changes in the price structure and the wage and interest rates, affecting consequently the short-term fluctuations of the specific comparative advantages of industries.

2.1. Embodied Technical Change

There are two types of technical changes, the embodied and disembodied changes, whose primary aim are the reduction of the production cost. Furthermore, the embodied technical change is distinguished into the continuous and discontinuous ones meaning the technical advance embodied in the capital equipment.

When a new technical advance is embodied in the capital, equipment of the old technique also remains producing for a certain time, though by the nature of things it is likely to be earning lesser returns. The very fact that the new technology requires an accumulation of the corresponding capital will allow for the old technology to be in use for some time, that is until the time that the accumulated new capital becomes sufficient to meet the total demand of the product. Subsequently, investment of various techniques will work with different efficiencies, and hence with different requirements in inputs, labor and working stocks to produce a unit of output.

The afore-mentioned make clear that it is not necessary to assume, as Shumpeter (1934) and Galbraity (1952) do, that there must be monopoly power with the firm to prevent its capital equipment embodying old technology from becoming obsolete due to new innovations. Up until the time that sufficient equipment of new technology is not accumulated, the equipment of old technology will go on producing. Once sufficient new capital is accumulated, no amount of monopoly power can prevent the old capital equipment from being pushed out to the scrap heap, as the

demand will be met cheaply by the processes employing the new capital equipment.

If the industry is under monopolistic control, the monopolist will not find it to his advantage to go on using the old capital which produces at a higher cost. As a matter of fact, new capacity will be installed when the cost advantage outweighs the loss of abandoning some old working capacity, or there is sufficient extra demand to justify it, and the extra revenues generated by increasing prices to equate this extra demand with supply are expected to be less than those achieved by increasing the capacity. Nevertheless, the monopolist may delay, purposely, the process of new capital accumulation, thereby giving more time to the old capital goods to survive economically than would have been otherwise possible.

If the industry is working in a competitive environment, the firms possessing the technologically advanced outfit, which leads to the reduction of the production cost, would have to see that others with old capital equipment stop producing so that they can use their modern capital to the fullest capacity. This can be achieved by reducing the price of the product in such a way that production from the capital of old technology becomes loss making. The monopolist, however, needs not reduce the price to achieve this objective. He can switch off the machines of old techniques without reducing the price to such an extent as to make its use unprofitable.

2.2. Layers of Techniques

The fixed capital embodies the technology of the time when it

was installed. The embodying technology remains almost the same up to the time the equipment embodying it is scrapped. Moreover, at a particular time capital equipment installed at different past dates will be working simultaneously having, of course, different productivities and profits. Thus in a state of technical change, the economy has got various amounts of fixed capital equipment belonging to different layers of techniques.

Let C_j^k represents the capacity of the fixed capital equipment of the kth technique for producing the jth commodity. Similarly, A_j^k and L_j^k stand for the column vectors of the cammodity and labor inputs per unit of production of the jth commodity by the kth technique. Furthermore, let ${}^f B_j^k$ and ${}^w B_j^k$ give the column vectors of the fixed and working capital stock requirements respectively per unit of production of the jth commodity by the kth techniques. And finally, let there may be m_j techniques working to produce the jth commodity.

If all the capital equipments are working to the full capacity, then the total output of the jth commodity will be:

$$X_j = \sum_{K=1}^{m_j} C_j^k \tag{1}$$

where: $i = 1, 2, ..., n$

the average input-output coefficients will be given by;

$$a_{ij} \left(\frac{\sum_{K=1}^{m_j} C_j^k a_{ij}^k}{X_j} \right) \qquad i = 1,2,...,n \qquad (2)$$

whereas the price structure will be such that;

$$P_j = P_1 a_{1j}^k + P_1 a_{2j}^k + ... + P_i a_{ij}^k + ... + P_n a_{nj}^k +$$
$$w(l_{1j}^k + l_{2j}^k + ... + l_{nj}^k) + rP_1^w b_{1j}^k + rP_2^w b_{2j}^k + ... + \qquad (3)$$
$$rP_j^w b_{ij}^k + ... + rP_n^w b_{nj}^k + S_j^k$$

for all k;

and in matrix algebra notation;

$$P_j = PA_j^k + wL_j^k + rP^w B_j^k + S_j^k \qquad (4)$$

It is noted that while the row vector of prices (p), the wage rate (w) and rental price of working capital (r) are the same for all the techniques, the residual S_j^k is different for each one, which emphasizes that the technical change comes about by the installation of new equipment embodying more profitable techniques at the current price structure. In fact it is on the value of this residual that the actions of units depend. When an investment is being done in an equipment pertaining to a new technology, the expected residual should be so large as to cover not only the interest and depreciation charges of the fixed capital but also the risk as well as the profit expectations of the entrepreneur. It may be recalled that this residual is not like a fixed annuity over the physical life time of the equipment, as it is the case if there is no technical progress and,

hence, no obsolescence. In the age of advancing technology, the value of this residual should be gradually declining, and an investor should take this into account while making his investment. However, the returns on the fixed capital are not essential for the firm to remain in production. Once the fixed capital is installed and if it is not economically worthwhile to produce with it, it can only fetch its scrap value. So its opportunity cost is almost zero. This, of course, does not imply that there must not be expectation of sufficient returns before it is installed at all. Therefore, in taking decisions whether to continue the production process, the unit will not take into consideration any returns on the fixed capital by continuing production. It should go on producing until it can cover the variable cost of production. In other words, a unit will remain in production until its residual is not negative. Thus the price of the jth commodity p_j will determine which techniques should be used in the production and which should not.

Let m_j be the least efficient technique required to be in production to meet with the demand. For that

$$P_j = PA_j^{mj} + wL_j^{mj} + rP^wB_j^{mj} + S_j^{mj} \qquad\qquad (5)$$

The above equation will be valid for one technique of each of the industries, namely for the marginal technique which is on the verge of obsolescence. The condition that the total output of each industry should be just sufficient to meet with the demand of its product will uniquely determine the number of techniques in use. Consequently the price structure will be such that all those techniques required to

produce will be economically feasible. An increase in the demand might induce some obsolete techniques to be brought back into production by suitably adjusting the price structure and vice versa.

Collecting equation (5) for each industry, the marginal or zero residual units, we derive the price determining equation for the system as

$$P = P\overline{A} + w\overline{L} + rp^{w}\overline{B} \tag{6}$$

where $\overline{A}, \overline{L}$ and $^{w}\overline{B}$ denote the sets of input, labor and working capital stock requirements respectively for the marginal techniques which are on the verge of obsolescence.

As seen, the current price structure is related to the current wage and rental price of working capital as well as to the least efficient technique and not to the average or the best practice technique. Besides, the profit rate and the value of fixed capital do not play any role in the determination of price structure.

If the production of the marginal technique units is represented by the vector X, then the net output available for use is given by

$$P(I - \overline{A})\overline{X} \tag{7}$$

out of this, $rP^{w}\overline{B}X$ is the income of the interest receivers, and the rest the wage incomes of those working with the marginal units. Hence the wage rate is given by

$$P(I - \overline{A} - r^{w}\overline{B})\overline{X} \Big/ \overline{L}\overline{X} \tag{8}$$

which implies that given the rental price of working capital, the marginal technique determines both the price structure and the real wage rate. Similarly given the real wage rate, the marginal technique determines the price structure as well as the interest rate. There is one degree of freedom. Either the rental price of working capital or the wage rate can be determined.

The marginal technique itself will be determined in such a way that the total savings in the economy are equal to the total investment and other autonomous demands. As less and less efficient techniques, in the sense of having lesser values of residual, are brought into production, both employment and savings will increase. The saving rate is likely to be higher from the residual income than that from the income from wages or rental price of working capital. Therefore, such a redistribution of income in favor of the residual income earners will increase the total savings even from the old techniques. Over and above there will be some savings by the income receivers from the increased production. Thus bringing more and more marginal techniques into production will increase the total savings in the economy. In the opposite case of taking more and more marginal firms out of production will decrease the total savings. Therefore, the number of firms in operation depends on the savings out of their production matching the investment and other autonomous demand.

2.3. Obsolescence and Employment

As indicating by the preceding analysis, there is a spectrum of techniques in the economy working simultaneously and having

different productivities and profits. Out of these, the least efficient technique is the one determining the price structure. This marginal technique is in operation because the at that price structure exceeds the total capacities of all the more efficient techniques.

When the new investment is made, it is used the best practice technique available at that time for producing the commodity. But if the demand does not increase proportionally to the newly created capacity, the firm has to poach someone else's market. Being a competitive firm, or a fix price firm according to Hicks (1965), it will resort to market mechanism. It can use either of the two strategies or combination of the two. It may reduce the selling price of the commodity in such an extent as to derive the nonprofit firm out of the market. And /or it may increase the wages of its employees. Thus, it may not only be able to poach better workers from the other firms, but also to induce such an increase in the wage rate that the zero residual firm is forced to close down. However, in a period of inflationary climate it is more likely to select the latter strategy rather than the former one. On the other hand, the firm on the verge of obsolescence will try to recoup the higher wage bill by increasing the commodity price. If at the same time there is a compensating increase in the demand, the marginal firm will be able to survive. If not, its attempt to increase the price will not avert the closure.

Furthermore, as the new firms will be using less labor per unit of output than the old firms, which will be closing down, there will be a generation of unemployment if the demand will not increase *pari*

pasu; as it is the case with the replacement of old capital and / or the undertaking of new investment in order to take advantage of the higher profitability opened up by the technical change. At the other extreme there will be price rises as the increases in the wage rates instigated by the new firms will be absorbed by the old firms. As a matter of fact, the result in the real world will be associated with lesser inflation and vice versa.

Let in matrix algebra notation, $\underline{A}, \underline{L}, {}^f\underline{B}$ and ${}^w\underline{B}$ Stand for the input, labor, fixed and working capital stock requirements respectively per unit of production of the best practice technique in the economy, which is formed by collecting the technique with the largest residual for each industry, and let $\underline{F}$ denote the column vector of the extra final demand to be satisfied by the best practice technique, then the balanced capacity creation will be given by;

$$\underline{C} = (I - \underline{A})^{-1}\underline{F} \tag{9}$$

the requirements of the extra capital goods and the extra working capital stocks to achieve $\underline{C}$ by;

$$ {}^f\underline{BC} = {}^f\underline{B}(I - \underline{A})^{-1}\underline{F} \tag{10}$$

and:

$$ {}^w\underline{BC} = {}^w\underline{B}(I - \underline{A})^{-1}\underline{F} \tag{11}$$

whereas the extra employment will be;

$$\underline{LC} = \underline{L}(I - \underline{A})^{-1}\underline{F} \tag{12}$$

If the increase in the final demand is lesser than the extra demand to be satisfied by the best practice technique, $\Delta F < \underline{F}$, then capacity of the least efficient technique will be unutilized. Using the notation of equation (6), the unutilized capacity of the least efficient technique will be equal to:

$$U = (I - \underline{A})^{-1}(\underline{F} - \Delta F) \tag{13}$$

and the newly created unemployment equal to;

$$\overline{L}U = \overline{L}(I - \underline{A})^{-1}(\underline{F} - \Delta F) \tag{14}$$

Hence, the net employment will be given by the subtraction of equation (12) from equation (14):

$$\overline{L}U - \underline{L}C = \overline{L}(I - \underline{A})^{-1}(\underline{F} - \Delta F)\underline{L}(I - \underline{A})^{-1}\underline{F} \tag{15}$$

or:

$$\overline{L}U - \underline{L}C = [\overline{L}(I - \underline{A})^{-1} - \underline{L}(I - \underline{A})^{-1}]\underline{F} - \overline{L}(I - \underline{A})^{-1}\overline{F} \tag{16}$$

where the first term of the right hand side is positive, since the productivity of the best practice technique is greater than that of the least efficient technique.

Therefore, it is evident that in translating the extra final demand of macro-models, the best practice coefficients will be more useful than the average ones, while in assessing the incidence of obsolescence, unempolyment, etc. the least efficients will be the more appropriate ones. Moreover , if the extra final demand to be satisfied by the best practice technique is larger than the change in

the final demand of the economy, there will be a rise in the unempolyment. The net employment will take its highest value when there is no change in the final demand of the economy. Thus the present level of employment will be maintained when the change in the final demand of the economy is such that equation (16) will become equal to zero.

3. Layers of Techniques in Islamic Perspective

The order of Islamic epistemology is Knowledge Stock(Tawhid) and Knowledge flows (anthropic knowing). The latter is instrumental in our understanding of the knowledge-centric world view of Tawhid—Unity and unification. Shariah is primordial as Knowledge in the Knowledge Stock which comprises Sunnat al-Allah. Shariah is instrumented through knowledge flows to human world–system by Sunnat al-Rasul. Thus Shariah occupies that topological space in and from which explanations of the A'lamin proceed, including the mundane(secular) domain of self (preference formation), the market (prices and resource allocation), institution (shuratic process), science (unification of the laws), society (ecological relationalism), engineering systems (systems relationalism), globalism (ummah and the orther),etc.

In the Qudsi hadith we find that when Allah was to create the universes He asked the mystic Pen to write. The mystic Pen asked the Lord "What am I to write"? Allah commanded the Pen to write from the Beginnin to the End. The First verses of the Revelation to the Prophet Muhammad (PBUH) were to Read in the sense of imbibing(absorb) and manifesting the Divine Knowledge. The

second set of verses revealed to the Prophet Muhammad (PBUH) were to throw out the mantle(covering)and rise up and preach the Revelation on the World. Here too we find the Divine amalgam of Stock and Flow. The Quran goes on in terms of the Mother of the Book (Lauh Mahfuz) and the Trees of Knowledge and De-Knowledge (Sura Ibrahim),the Sidrathul Muntaha, the Zakkum on the other (De-Knowledge), etc. These are manifestations of the knowledge–centric universe in contrast to the de-knowledge as reality.

Science , economics, society, institutions , globalism, self and the other are reconstructed according to this world view of Tawhidi knowledge in the framework of what the Muslim community (ummah) can derive on the basis of an understanding of Tawhid and its dispensation to the world.

Neoclassicism claims just this great mistake when it assumes terminality of optimal condition and steady-state equilibrium, when it rationalizes optimal information to be attained in the large. There is no interactions left in the neoclassical system. Ethical relevance of science and humanity disappears. Exogenous tunes of feigned ethics remain. No endogenous ethics and morality is possible. Discourse is diluted into the hegemony (authority) of methodological individualism. Finance and economics are merely two branches of a great human ecological order.

As Naqvi said, "Islam is a self-sufficient entity, which clearly defined features – an arabesque wherein reside the religious, economic and social dimensions, providentially equilibrated to form

a unity". The guiding laws of Islam that relate to all different dimensions of human life are known as Sharia. Of course, there are two branches of Islamic divine law, namely Ibadah, meaning Islamic worship and mua'mulat, meaning "affairs of world". In the eyes of Sharia they are one and the same.

The main intention of this section is to discuss the economic and industrial implications of this model in the context of Islam and some further efforts will be made in the development of this model that how this will be useful for the Muslim world in the formulation of the common market..

3.1. Obsolescence

The system of Islam has completely different basis than secular system. The theory of consumption, the theory of distribution and the theory of production are all to change in this framework. A firm will not work for a maximization of profit, instead it will have the idea of reasonable profit plus a just wage, plus a just price plus welfare. These will be the four major components of the objective criteria for the firm (Chaudhary 1986).

There is a consensus among the jurists that in the Islamic system private property and private enterprise are basic institutions of Muslim society. But property is not unlimited, private property is with the concept of trusteeship, so it does not guarantee into an instrument of exploitation at any stage. The same is true for the obsolescence of economic obsolescence of physical & financial

capital. The teaching of Islam regarding obsolescence can be observed from the following sayings of Prophet (PBUH):

"Keep your property to yourselves and do not squander it."
(Bukhari)

"Allah disapproves for your irrelevant talk, persistent questioning and wasting of wealth." (Bukhari)

"The messenger of Allah forbade to debase (or scrap) the currency of Muslim except that there is a danger (of its misuse)". (Bukhari)

and

Khan A (1989) explained the obsolescence in the following way

"The Holy Prophet (PBUH) invited the people to develop dead lands. He set a stage for the development of agricultural sector. He disliked to see even the skin of a dead animal go waste. Intensive and efficient use of resources, even licking of fingers is an example.

All resources are gifts from Allah contains a suggestion that they should be utilized carefully. He assigned a high value on industry, efficiency and labor.

From above it implies that economic obsolescence of resources is not permissible. The same can be said in the context of layers of techniques existent in the economy, i. e., the old techniques should not be exploited by the introduction of new techniques. And also Allah (SWT) has created the resources for the service of man, who in turn is only the vicegerent of Allah (SWT) entrusted for the just

use or distribution of his resources. He has ordained man to use them in the strict absence of waste, for the achievement of cooperation in production and consumption and the realization of balanced economic growth.

The idea of cost in Islamic economics is one of total cost, i. e., the pure economic plus non-economic cost component may be associated with the idea of Muslim's Punishment in the *Akhira* subsequent to this indulgence in wasteful consumption in this world or it may also expressed as *Zakah, Saddaqah*, etc., which are fundamentally associated with pure Islamic belief. In the round of secondary and spill-over effects the cost of social assistance, decreased association of money capital to real investment and lower rate of profit and growth for the economy. Wastage of factors of production is not permitted. However, the argument of cost and benefit is not in favor of economic obsolescence. Benefit could be negative in case of consumption wastage, capital consumption and unrecovered capital cost over time. These are sign of dynamic inefficiencies from which the society derives lower levels of social welfare. The Islamic state is not like the secular state and has the more preference for the normative aspects. The role of *zakah* in this respect is very significant. The funds from *zakah's* social assistance programs can generate secondary and external benefits through income distribution, increased training and autonomous demand, etc. In this regard as discussed above price structure also plays a significant role in the economic obsolescence. In the Islamic literature the obsolescence is not discussed in a systematic way. Prohibition of the wastage of resources is discussed in the literature

but the procedure of its estimation is not formulated. The actual requirements and demands of the system are that a model should be developed which will be helpful in the estimation of the productivity of those firms which are in an Islamic economy on the verge of obsolescence and allow them to remain themselves in the market until physical obsolescence.

3.2. Choice of Technology

Development of knowledge introduction of new technology is very much appreciated in Islam. No restriction is imposed on the choice and development of new technology. However, the choice of alternative must be related to the two types of benefits, the pure economic benefit, and the "worldly" equivalents of factors of pure Islamic belief associated with Islamic consumption and investment behavior, the finally augment the pure economic benefit. One should consider the two ends of the spectrum of the techniques, least efficient and most efficient. The working of both tails is increasing the pure economic benefits.

In Islamic system the institution of *Zakah* may also affects the degree of obsolescence. Economic rationality on the part of the investor would motivate him to deplete his idle stock of capital and thereby make room for investment flows. Increased investment thereby causes increased income through the multiplier effect. Therefore, the presence of *Zakah* will cause holders of idle capital stock to put them in a productive use. In this respect another direction can be observed, i.e., the suppliers are selling their products more than to the secular economy, because *Zakah*

increases the pure economic benefits. Besides that in the system of Islam, savings in the form of real investment to produce the necesities and comforts of life and more capital goods over time, that increase their productive capacities over time is highly encouraged. Apart from *Zakah* the principle of *Sharakah* (partnership) is also used in Islamic economics to encourage partnership in work between labor and capital. Through such a partnership, intra-plant motivational efficiency can icrese and a choice of new technology can come about, which in turn increases X-efficiency.

3.3. Basic Requirements for Planning Model

Islamic system is based on the some of these principles such as injury may not be met by injury, injury is to be repaired, an injury cannot be removed by the commission of similar injury, a private injury is tolerated to ward off a public injury, severe damage is removed by lighter damage, in presence of two wrongful acts, the one whose injury is greater is avoided by the commission of lesser, the lesser of two evils is preferred, the repelling of events takes precedence over the acquisition of benefits, injury is to be removed as far as possible, when prohibition and exigency conflict, preference is given to prohibition, management of citizen's affairs is dependent upon public affairs, liability is an obligation accompanying gain; that is to say, a person whose enjoys the benefits of thing must submit to the benefit to the burden, liabilty lies on the direct author of an act, even though acting unintentionally, no liability lies on a person who is the (indirect)

cause of an act unless he acted intentionally, the dealing by one person with the property of another without his leaves is unlawful, no person may take the property of another without legal cause (Llewllyn 1984).

Furthermore, the concept of usefulness is the integral part of the Islamic scheme, which means that our emphasis is not merely on the physical expansion but expansion within the framework of certain moral and social moral and social priorities leads to human well-being and welfare, at the individuals as well as social levels. Next is the priciples of equalization of opportunities, which means the conditions of unequal opportunity have to be removed and the social infrastructure has to be so developed that there is equalization of opportunity in the society. There is also a principle of decentralization and regional equity and finally the point of intervention. The instruments of policy are moral training and purification of the motives and incentives of the individuals, so that a change from within takes place supplemented by social factors and instruments. It is consensus among the Muslim jurists that any kind of exploitation is not allowed. The aggregated decisions are based on the individual observations. So the planning is not as we have the sense of neoclassical or Keynesian basis. In any economy where at every time, new entrance of the techniques is observed, the obsolescence and the release of resources can only be estimated on basis of the sectoral analysis. Therefore, the appropriate analysis is the input-output analysis. In this analysis every sector of the economy is in the hand of Analyst. One can easily judge the benefits of the one sector on the other . Basically, this is the spirit of

the Islamic teaching. No sector should be deprived to the benefits of others. There should be the holding of the Pereto optimality. Again it should be noted that the model which is developed by the Leontief is not giving us the idea of the further disaggregations. From that we have to develop another model which should guide us for further disaggregations. The model which we have developed in section 2 is actually that one which depicts and explains the actual of the economy. It tells us: How many firms are on the verge of obsolescence? How many workers are becoming unemployed (after the entry of new firms)? And how many resources are released by the obsolete? As it is explained by Chaudhary (1986), Khan A (1968), Faridi (1980), Zaraqa A (1980), Khaf M (1986) and Siddiqi N (1986) that this is the duty of Islamic state to provide the basic needs to the citizens. In this regard it is also the duty of the Islamic government to forecast the obsolescence of the fixed capital. As it is observed, in an Islamic state the voluntary sector is very active, so it is the duty of the state to guide the sector to spend in the direction which will be helpful in the reduction of obsolescence. Traditionally the developing countries have the control on the wage rate and the autonomous demand. To some extent it is difficult to reduce the wage rate but it may be possible for an Islamic state to correct the directin of autonomous demand, because besides the public sector and the private sector, the voluntary sector is very active and plays a very significant role.

3.4. A Step Towards Islamic Common Market

No one can deny the importance of economic cooperation among

Muslim countries in the 21st century, economic cooperation among the Muslim countries as ordained by God Almighty. It is observed from a number of Quranic verses that God has created and made us into nations and tribes in order that we understand each other. However, Quran says: " The best among us are the righteous ones."(49:13).

Focusing on this verse, we can say it is important for the Muslims to respect all peopleand strive hard to achieve " power". Power, includes a combination of military, economic and political strengthe, which cannot be acquired unless the society possesses a lead in science and technology." Although mankind seeks cooperation, the world is generally characterized by confrontation among nations, civilizations, cultures etc. This confrontations not always harmful. It could be one of the main driving forces for progress, inventions and new discoveries. The following Quranic verse that refers to this point.

" Had it not been for cooperation among people endowed to them by the power of Allah, the world would have been destroyed". (2:251)

This is the urge of the time that the Muslims should strive to become strong nations. As at present, economic power is the most important of strength, it is duty upon all Muslim countries to strive to achieve this power. Being stable economically would not only make us stronger nations but also contribute towards the protection of our religion. Economic power, as it is admitted by the experts, should be aimed at achieving three ultimate goals, which are to

preserve the Islamic Ummah, to give a good and strong example which is the foundation for the perfection of Islamic way of life, and for the benefit of the whole human society, since Islamic is the model which realizes the balance between material needs and spritiual satisfaction.

Since the trends anticipated in the 21st century call for economic cooperation in all fields, which include trade, aid, technology and production, it is urged that the Muslim countries look into alternatives and strive to achieve the goal soon. It can be referred to the European Union as an example, it was not an over-night effort to consolidate and work as a united power. It takes years for these countries to come to terms and work as an alliance . It is recommend in the academic discussions that the Muslim countries start now, as otherwise their vision of achieving this goal would just be buried off, however small efforts maybe now, will finally see the fruit of these efforts in times to come. In many studies the following recommendations proposed for the further enhancement in the economic cooperation among the Muslim countries;

(i)   Stronger political commitment on behalf of the Muslim countries needs to be established.

(ii)   The existing cooperative institutions in the Muslim countries should be provided with necessary authority and responsibilities, instead of creating unnecessary new regional institutions.

(iii) Serious steps should be taken toward establishing Muslim Multinational Companies (MNCs) in specific sectors and production of goods and services should be encourage

(iv) Plan or layout agreements and treaties such as customs union, free trade area and single market realize gradual economic integration.

(v) With the spread of privatization and the mounting role of the private sector, give businessmen in the Muslim countries greater roles to play.

(vi) The concept of regionalism should be established. As Muslim countries are spread over three continents, regional sub-groupings, closer relationships and ties should be encouraged between the sub-groupings to facilitate and strengthen economic cooperation within the Islamic World.

The world is changing very fast. Distances and time have greatly diminished. Muslim countries should match this change. Great causes push nations to heights that would not otherwise be achieved. Closer economic cooperation and among Muslim countries is such a cause, shall they strive to fulfill it.

In this study, we will try to discuss the hypothesis of techniques in the context of economic cooperation among Muslim countries.

The above hypothesis stated that in a growing economy, layers of techniques with different productive efficiencies exist and are employed simultaneously. That is called a phenomenon of layers of

techniques. A successful innovation the variable cost parent of output and an entrepreneur's decision on whether to continue to production or not depends on the variable of cost per unit of output. The introduction of a new and most efficient technology can cause variable cost per unit of output for the existing technologies to increase (in relative term), forcing the least efficient one(s) to become obsolete. The marginal techniques which are on the verge of obsolescence, will determine the price. Technological progress mostly comes about the installation of new equipment, embodying more profitable techniques at the current price structure. If demand is not increasing pari pasu with increase in the level of production, the technique which works at the highest cost becomes economically obsolete. Because once capital is installed, is opportunity cost becomes equal to zero. In this mutable economic milieu, a flood of techniques enters the market, so only that technique can survive which has lower variable cost per unit of output than prevailing price structure. The only remedy for the obsolescence is to increase the demand of that product. The solution is suggested by the above mentioned model is the mutual keynesianism, i.e., to formulate the common market , through which the demand level will be increased and economically obsolete technology again will start to work. Most of the Islamic states have not the modern technology to compare with the Western Europe, North America and the Far Eastern developed countries. It is difficult rather impossible for them to compete these nations because of their cost advantage. The only way out for them is to formulate a policy of common market with the other Islamic states.

Hence the formulation of common market is likely to have an effect on the rate of obsolescence of these economies and their capital can economically survive a longer spell.

3.4.1. Mutual Keynesianism

As already pointed out, nearly all the Islamic states are not employing the advanced technologies. The survival of the old technology is dependent on the volume of demand. With the formulation of economic integration, the overall demand in this block can be increased.

The production of the commodities is organized in two ways. One is where immediate demand met from stocks and production is in response to the stock holders demand for replacing their stocks. These have been designated as Fix- Price commodities as the level of demand does not effect the prices directly. The other group consists of these commodities where production decisions are taken in advance of the known demand and are based on the command resources. This will be mostly the case with natural resourcebased production such as agriculture , plantations and mining. These have been termedas Flex-Price commodities. For them, in the short period, both supply and demand are given and the changes in prices act as equilibrium force.

Changing in autonomous demand will affect the two types of commodities differently. If autonomous demand decreases, the demand curve of Flex-Price commodities will shift downwards reducing the prices in its turn .For Fix–Price commodities it will

imply less orders by stockholders. And they in turn will order from the cheapest (least price) supplies. The fixed capital embodies the technology of the time when it was newly installed and this technology remains almost same up to the equipment embodying it is a scraped.

Almost , all the Muslim states are major producers of agricultural and minerals (primary commodities), whereas primary product market follow the Flex-Price system which relies on variations in prices for keeping demand and supply aligned to one another, both in the short-run and long–run. In the short-run price stability depends crucially on the professional traders willingness to absorb stocks or to release them in response to small variations in the market prices. In the long-run it crucially depends on the correct forecast of future demand sufficiently in advance of creating new capacities, which may be quite a while in natural resource based industries. These conditions, by and large, have not been satisfied in the present century in large price fluctuations in their prices. These price fluctuations are in no way conducive to economic development of the producers, even their well-being is in jeopardy. As the result of economic integration, the demand of their industrial product should be increased. This increase in demand will lead to the survival of that technology which is on the verge of obsolescence as these are following the Fix-Price system. Owing to this a positive cycle will be started, which leads to the increase in prices of the industrial product, in return the level of employment and enhance the demand level.

It can be concluded from the above discussion that one should be interested in both types of firms, i.e., best practice and least efficient. Because, in translating the extra final demand of macro models, the best-practice coefficients will be more useful than the average ones while on the other hand the coefficients of least efficient techniques are best for the assessment of the incidence of obsolescence and unemployment, etc.

The preceding analysis points out that the knowledge of both best practice and least efficient coefficient is more essential than the knowledge both best practice and least efficient coefficient is more essential than the knowledge of average coefficients for desegregating planning and forecasting as well as exercising a suitable economic policy. Therefore, the analysis underlines the need for compiling input-output tables referring to the best practice and the least efficient techniques, rather than to the average technique, in order to improve the reliability of input-output estimates.

The data required for the construction of best practice and least efficient matrices are available in the files of the Census of Manufacture, but to analyse them is extremely time and resource consuming. Consequently, before embarking on that, it is possible to have a summary analysis which may go a long way in meeting the need and also indicate whether the detailed analysis will be justified.

On the basis of summary file, the Statistical office may calculate the production cost per unit of output and arrange that the

establishments in each industry should be divided into as many groups as possible. The groups are to be formed in such a way that the unit cost in each establishment of a group be less than that in any subsequent group.

Moreover ,the important characteristics for each group, such as output, total cost, employment, material cost, fuel etc; should be tabulated. The tabulation may be further analyzed technological variation, continuity or discontinuity, and the feasibility of fitting algebraic. Finally, the effect of macro-economic conditions on capacity utilization, employment, fuel requirements etc., may be elaborated industry and technique wise. For the establishment of the common market a marginal input-output table should be constructed. From this table the technological change can be measured, this table will also depict the coefficients of every region and every existing technique, on the bases a policy for autonomous demand can be formulated.

4. Recapitulations

From the above thesis one can recapitulate that the Islamic world should consider the problem of economic obsolescence seriously. A new institutional framework, which is capable of enhancing the efficient economic activities in modern Islamic society, to ensure a better and durable management of the continuous flow of techniques should be established. It is the requirement of the time to construct the table of marginal input-output coefficients for the whole Islamic world, which depicts that different layers of

techniques exist in these economies. So this will enable the whole Islamic block for the further policy formation.

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