CHAPTER IV

ADJUSTMENTS, MODIFICATIONS, AND SUPPLEMENTATIONS IN THE MICRO AND MACRO MEASUREMENT OF WELFARE AND FOR DERIVING MEW AND MEC FROM NATIONAL INCOME

In this chapter the nature of adjustments, modifications and supplementations which become necessary, as discussed in the earlier chapters, in the National Income Accounts if MEW and MEC are to be derived from it are discussed.

The literature on National Income in general and ICNI in particular is centred around exclusion (or inclusion) of various categories of economic activities (goods and services) from (or to) these measures and devising methods for the selection of appropriate prices (weights) to reduce the quantities of goods and services to be included in the national incomes of different nations to the common denominator. As national income data can be used for different purposes, majority of the errors and problems of measurement of national income seem to arise due to lack of clear specification of its purpose and lack of an indepth analysis for the selection of most appropriate sets of quantities of economic activities.
and their appropriate weight for each purpose.

If the derivation of National Income as a MEW is the main purpose to which national income data is to be put, then according to the discussion given in Chapter II (PP. 69-72). It becomes necessary to discriminate economic activities included in the national incomes which are representatives of cost from those which are representative of benefits. In the absence of this, it is very difficult to derive MEW and determine changes in social welfare. But since national income accounts do not discriminate between costs and benefits, prima facia they can not provide means of determining changes in social welfare. See, for instance, Barkley and Seckler (1972, p. 37). Therefore, in the presence of above limitation of national income accounts, the question of major importance is, how this limitation can be overcome and national income data can be used to discriminate between costs and benefits to determine changes in social welfare. It is felt that based upon the ideas developed in Chapter II, national income accounts can be adjusted, modified and supplemented to discriminate costs and benefits to determine net changes in social welfare.

The purpose of the present chapter is to devise a
general and comprehensive procedure for differentiating final economic activities (REN, PEN) from indirect ones; and REN fulfilling economic activities from those which fulfill PEN to clearly differentiate costs and benefits. Discussion in Chapter II (PP. 69-72) clearly reveals that these are some of the main prerequisites for the derivation of MEW and MEC from MEA or for determining changes in social welfare. Moreover, it follows from the discussion in Chapter III (PP. 97-108) that some further adjustments, modifications and supplementations in the level of MEA become necessary if interpersonal and international comparisons of welfare are to be made, the reasons for which can be best understood by analysing the various characteristics of economic activities consumed by different individuals nations. This forms the subject matter of Section I below. This is followed by an attempt to formulate general and comprehensive framework for deriving MEW and MEC from MEA in Section II.

SECTION I

REASONS FOR THE NECESSITY OF ADJUSTMENTS, MODIFICATIONS AND SUPPLEMENTATIONS IN MEA FOR DERIVING MEW AND MEC FROM IT

The necessity for adjustments, modifications and
supplementations in GNP or ICNI as a MEA, if MEW are to be derived from these measures, or if ICNI as a MEW are to be made, arises mainly due to the following reasons:

The first reason for these follows from Chapter II (PP.69-72). It is well known that economists in general and national income accountants in particular, are interested only in economic welfare. On the basis of discussion given in the last two chapters, economic welfare is a function of human economic needs and their WPCs. Since national income accounts provide summary of goods and services produced in a particular year, which are just means to satisfy human economic needs, it becomes essential to categorise them on the basis of nature of human economic needs they fulfil, if MEW and MEC are to be derived from them. In other words, if information about the level of economic welfare is to be derived from the level of consumption or production of various goods and services (economic activities) for a particular year, it becomes essential to categorise them on the basis of human economic needs they fulfil and make some value judgement about their WPCs. According to the discussion given in Chapter II, it becomes necessary to clearly segregate economic activities which satisfy final (REN, PEN) needs from
those which satisfy indirect ones (IEN); and economic activities which satisfy REN from those which satisfy PEN (as MEW is dependent only upon the fulfilment of REW) to get measures of real MEW and MEC. It is strongly felt that some of the presently considered consumption economic activities can turn out to be the source of fulfilment of IEW only. Thus, if MEW and MEC are to be derived from a MEA it becomes necessary to clearly segregate economic activities which satisfy final economic needs from those which satisfy IEN. Achievement of this objective necessitates general and comprehensive adjustments, modifications and supplementations in MEA. It needs to be noted clearly that these should be general enough to be applicable both at micro and macro levels which, in turn, makes it obligatory to consider producers as well as consumers as producers of both utility and income.

Secondly, with economic development and prosperity:

a. consumption and hence production of all the categories of economic activities are likely to rise;

b. some new goods (economic activities) are likely to be added to the initial bundle of economic
activities; c. change in the form of economic activities may take place. For instance, some economic activities which are non-marketed in the initial stage of economic development may become marketed; and 
d. different human needs may begin to be fulfilled differently. For example, more expensive goods (both final and intermediate) may be substituted for less expensive goods.

Thirdly, different individuals/countries may have different levels of economic activities to satisfy the same level of need and vice-versa, due to differences in demographic structure or geographical location (climate, distances, etc.).

Fourthly, there may be economic activities which simultaneously fulfil different economic needs, that is, there may be economic activities which simultaneously fulfil REN and UPEN; REN, UPEN and IEN, etc. These economic activities can be called Joint Economic Needs (JEN) fulfilling economic activities. To illustrate these type of economic activities, let us assume that someone is looking for a place to live, which fulfils one's REN of shelter. But the kind of house one goes for, may be the result of the desire to
fulfil one's UPEN, IEN as well. One may seek a house in an exclusive place, in order to impress one's friends and relatives and fulfil one's status or ego needs; further one may seek a house which can fulfil one's business needs or IEN. Thus, the house an individual ultimately goes for may serve to fulfil his REN, UPEN as well as IEN. From welfare point of view the existence of JEN fulfilling economic activities raise the problem of finding the level of different individual economic needs which these activities fulfil to make reliable interpersonal/international comparisons of economic welfare.

It is worth noting that, for GNP or ICNI as MEA, no information is required about the nature of economic needs which various economic activities satisfy and how important and useful those needs are to human beings. As long as one measures the value of economic activities consumed or produced and exclude the intermediate goods correctly for a particular year, depending upon how economic activity is being defined, one is through.

But its implications for making ICNI as MEW are that different countries for which these comparisons are to be made are likely to have different
proportions, quantities, number and types of various economic activities due to various qualitative and quantitative differences among them viz. differences in resource endowment, stage of economic development, mode of production, requirements, cultural traditions, tastes of people etc. Therefore, if reliable ICNI as MEW are to be made, it becomes necessary to make above discussed adjustments, modifications, and supplementations in ICNI as MEA to reduce the latter to a common denominator which is most suitable from welfare point of view.

SECTION-II

The nature of adjustments, modifications and supplementations in MEA if MEW is to be derived from it to serve also the purpose of ICNI as a MEW, which follow from the above discussion and that of Chapters II (PP. 69-72) and III (PP. 94-95) can be summarised as:

i. Division of the various economic activities into different categories depending upon the nature and type of human needs they serve and their (needs) respective Welfare Providing Capacities (WPCs).

ii. Distinguish the various economic activities on the
basis of nature of human needs they satisfy and critically analysing the effect of the various qualitative and quantitative differences that exist among different nations on economic welfare, keeping in view that it is the need and WPC of the need which various economic activities satisfy, which ultimately matters from welfare point of view. This necessitates the need to devise procedures to account for such differences among nations and to reduce to a common denominator on the basis of level of various economic needs they (levels of economic activities) satisfy and their (needs) WPCs. This will automatically eliminate that part of economic activities which do not affect the level of economic welfare to account for various qualitative and quantitative differences.

iii. Critically analysing the relation between the level of each economic activity within each broad category of economic activities and its welfare providing capacities, that is, finding an appropriate set of weights for each economic activity within each broad category of economic activities to arrive at comparable welfare figures. Moreover, whether the increase in the level of
economic activity exerts any negative or positive externality on the fulfilment of REN or not becomes equally important to analyse. See Chapter III (PP. 147).

iv. Analysing the relationship among the level of different forms of welfare viz: REW, UPEW and IEW or REC which each broad category of economic activities viz. Types I, II and III, respectively, lead to. Moreover critical analysis of the relation between REW and UPEW also becomes essential.

The present chapter is limited only to (i) and (ii) above, (iii) and (iv) will be dealt with in Chapters V and VI, respectively.

CATEGORISATION OF ECONOMIC ACTIVITIES

It has been been discussed in Chapter II (PP. 47-60) that human economic needs can broadly be categorised into three parts: (a) Real Economic Needs (REN), fulfilment of which is the source of Real Economic Welfare (REW); (b) Unreal Psychological Economic Needs (UPEN), fulfilment of which is the source of Unreal Psychological Economic Welfare (UPEW); and (c) Intermediate Economic Needs (IEN), fulfilment
of which is the source of Intermediate Economic Welfare (IEW) and which is also representative of Real Economic Cost (REC). It is felt that various economic activities can also be broadly divided on the basis of the nature of above mentioned human needs they satisfy viz.

1. Type I economic activities satisfying the final REN, fulfilment of which is the source of REW;

2. Type II economic activities satisfying the final UPEN, fulfilment of which is the source of UPEW;

and

3. Type III economic activities satisfying IEN fulfilment of which is the source of IEW and which also represent Real Economic Cost (REC).

DIFFERENTIATION OF ECONOMIC ACTIVITIES

In the literature lot of controversy exists so far as defining and distinguishing the various economic activities as final and intermediate. As Alder (1982, P.122)

"If we exclude government, police or fire expenditure on the ground that these merely provide the infrastructure of welfare rather than welfare itself, should we not exclude consumer expenditure on, for
instance, private security system? And if we agree to this either because of consistency, admittedly the weaker argument, or because after all, we neither enjoy meeting this expenditure nor derive greater welfare when because of increased criminal activity, we have to spend more funds on protecting ourselves, why should we not exclude expenditure on dentists when we have a tooth ache or car repair expenses after we have had an accident? Where do we draw the line? How much time and effort we are going to spend arguing about these items? How often do we change our treatment?"

The following procedure to distinguish among the various types of economic activities viz. Types I, II and III will interalia clear this confusion:

(a) To differentiate between final economic activities viz. Types I and II and intermediate economic activities viz. Type III. The main distinguishing features adopted are: 1) whether the economic activities satisfy the needs of human beings or needs of the economic activities, which, in turn, satisfy the needs of human beings. e.g. wheat which satisfies the need of human beings becomes final and agricultural equipment which satisfies the need of production of wheat becomes
intermediate economic activity; and (2) in order to overcome the confusion which the existence of various differences among nations cause for distinguishing final and intermediate economic activities, some adjustments, modifications and supplementations in (1) above become necessary which will be discussed along with the discussion on adjustments, modifications and supplementations which become necessary for each broad category of economic activities viz. Types I, II and III if they are to be used as MEW.

(b) To differentiate between Type I and Type II economic activities Duesenberry type of effect as discussed in Chapter II (PP. 56-57) is followed, that is, differentiation between these types of economic activities is made on the principle whether economic activities satisfy the needs of human beings or needs of the economic system human beings live in.

The need for adjustments, modifications and supplementations in the levels of economic activity of different countries to derive comparable MEW from them and the procedure adopted in the present study to achieve this objective, can best be explained with the
help of an example. Assuming that a particular place say X, has a beautiful natural lake and enchanting surroundings. People, who live at this, place gain a particular level of social welfare from this natural set-up without incurring any cost or with zero level of economic activity. Now if residents of some other place, say Y, do not have these amenities and they try to construct a similar artificial lake and create similar type of surroundings, they will have to incur a huge cost or level of their economic activity will increase tremendously. It requires no hard thinking to infer that the level of social welfare of the residents of both the places X and Y will be equal. But it raises a question and a problem if the level of economic welfare is to be derived from the level of economic activity of these two places X and Y for making a comparison of economic welfare of these countries. A little bit of thinking reveals that if this objective is to be achieved, then one of the following adjustments in the level of economic activities of places X and Y become necessary:

i. no weight in the first place be assigned to the expenditure incurred by the residents of place Y;
or
ii. if the expenditure incurred (or the level of economic activity) by the residents of place Y is to be considered as welfare in itself, then it becomes necessary to assign equivalent weight to place X as well; or

iii. consider the expenditure incurred by the residents of Y as cost of gaining a particular level of welfare.

For generalising the above example it can be said that if some needs are fulfilled at first stage of economic development (or by an individual in a particular country) with zero or lower level of economic activity, fulfilment of which requires non-zero or higher level of economic activities at second stage of economic development (or by some other individual in a particular country) then to derive MEW from MEA one of the following adjustments in MEA become necessary. Let us assume that the difference between these two stages of economic development (or between two individuals of a particular country) is $D$. Then either:

a. no weight be assigned to $D$; or

b. if $D$ is to be assigned weight, then weight equivalent to $D$ should also be assigned to first stage
of economic development; or

c. D be treated as cost of welfare rather than welfare in itself.

It appears that (c) is most appropriate because given the limited economic resources, process of satisfying the same level of need by higher level of economic activities, when it, in fact, can be satisfied by their lower level, is nothing else but a process of wasting scarce economic resources. The real question which the process of economic development raises from welfare point of view is that given the limited economic resources whether the benefits of economic development in terms of its capability to fulfil more and more of REN exceeds the loss in terms of its generation of new and higher level of some economic activities, which, in the real sense of the term, can be considered as cost of economic development rather than the source of welfare.

Analysis of each of the broad categories of economic activities viz. Types I, II and III will provide further insights into the nature of adjustments, modifications and supplementations as become necessary to derive MEW and MEC from MEA.
TYPE I ECONOMIC ACTIVITIES

These are the activities which aim to satisfy the biological human needs and are a source of REW. For example, cooked food, stitched and washed clothes, shelter and medical facilities etc. Derivation of MEW from MEA of these economic activities necessitates the following adjustments, modifications and supplementations:

a) Separating the level of these needs fulfilled by Joint Economic Needs (JEN) fulfilling economic activities. As discussed earlier, this becomes a prerequisite because fulfillment of different human needs have different implications from welfare point of view. Solution to this problem shall be discussed in Chapter V.

b) Given the various differences among different countries, these countries are likely to have different proportions, quantities, number and type of various economic activities to fulfil these needs. Therefore, if various economic activities which fulfil these needs are to be reduced to a common denominator to derive a MEW from a MEA, these economic activities have to be adjusted by some suitable objective explanatory
variable/variables which can reliably be used as proxy for the quantity of need that is fulfilled by the consumption of these economic activities. The main idea here is that GNP as a MEA is estimated without any reference to the degree of need that is fulfilled by various economic activities. But for welfare measurement, particularly ICNI as MEW, this aspect is all the more important because different countries due to their various differences have different means (economic activities) to fulfil these needs. Therefore, reliable ICNI as a MEW have to be based on degree to which economic activities have served different needs keeping also in view the WPCs of those needs. For example, one of the primary biological human need for hunger is satisfied in different countries as well as within a country differently due, of course, to differences in various factors viz. climatic, cultural, natural, religious differences etc. Studies made by psychologists reveal that people in different societies become so much used to one set of food items that they do not like to consume other types of food that frequently as their own, that is, they may take other types of foods but only occasionally for a change. Consequently, if information regarding economic welfare is to be derived from the level of eco-
onomic activity satisfying the human need of hunger in different countries then it becomes essential to make adjustments and supplementations in the latter for the extent to which this economic activity has served its final purpose, measured, say, in terms of calories consumed in different countries 14.

The idea here is that there may not be that strong a relation between the level of economic activity satisfying the biological need of hunger and the corresponding level of REW. For instance, there may not be much difference in the REW derived from fulfilling one's need of hunger by consuming a cheap food (low level of economic activity) which provides the required number of calories, say 3000, and that of a costly food (high level of economic activity) which provides the same number of calories. Thus, there may not be any significant positive relation between the levels of economic activity fulfilling REN and the corresponding level of REW.

On similar lines, the level of economic activity of cloth production has to be supplemented and adjusted for the need of cloth which is different in different countries due to differences in weather; the level of economic activity of medical facilities by, say, the
life expectancy and so on become indispensable for deriving information about REW from the level of economic activities, respectively.

**TYPE II ECONOMIC ACTIVITIES**

These type of economic activities require the following adjustments, modifications and supplementations to derive MEW and MEC from MEA:

1. Separating the level of each of the need fulfilled by Joint Economic Needs (JEN) fulfilling economic activities. As discussed earlier, this becomes a prerequisite because fulfilment of different human needs have different implications from welfare point of view. Solution to this problem shall be discussed in Chapter V.

2. As different means exist in different countries to satisfy UPEN, it becomes necessary to ascertain the intensity of relation between the level of economic activities consumed to fulfil UPEN in different countries and the corresponding level of UPEW. This can be determined by analysing the following characteristics of these needs:

   a) The origin behind the desire to fulfil these needs through consumption of various economic activities can
be traced back to the human need to get arousal, mental stimulation, etc.. The latter has been discussed in detail by Scitovsky (1976, Chs. 2 and 3);

b) Following the Duesenberry effect, the source of arousal, mental stimulation etc., which the fulfilment of these needs are aimed to provide comes from the relative position of an individual in a particular locality, society, country etc., Scitovsky (1976, P.139) reaches the same conclusions when he remarks,

"I have reconciled four different explanations to reconcile the secular rise in our material standard of living with the peculiar behaviour of the self rated happiness survey. One way the satisfaction of status, another the satisfaction of work, the third the enjoyment of novelty, the fourth addiction, with all it implies. Taken together, they will explain why happiness should depend so much on one's ranking in society and so little on the absolute level of one's income".

a) and b) above can be used to show that: (i) There may not be any significant positive relation between the level of economic activity fulfilling $U^\text{EN}$ and the corresponding level of economic welfare; and (ii) It is more appropriate to treat the level of economic
activities satisfying UPEN as cost of UPEW rather than welfare in itself.

(i) Let us assume 'S' is the set of all the countries and there are no means available to the people of any country to get information about the consumption habits of people of other countries. The latter is equivalent to assuming that no means of transport and communication exist.

Let us take a country 'A' belonging to set 'S'. In the absence of any means to get information about the consumption pattern of other countries, people of country 'A' will try to satisfy UPEN by the available set of economic activities. As discussed in Chapter II (PP. 56-57), the net effect on welfare due to the fulfilment of these needs by the people of country 'A' may be zero or even negative because:

(a) satisfaction derived from the fulfilment of UPEN by a few can lead to dissatisfaction among a larger number of people who can not afford to fulfil these needs, leading to negative net welfare. If everyone in country 'A' is in a position to fulfil these needs, the basic purpose of fulfilling these needs gets defeated leading to zero
net welfare; and

(b) If we relax the assumption that people of any country do not have any means to get information about the consumption pattern of other countries (which is the natural outcome of economic development), then in the above discussed situation, the net welfare is further decreased. The reason being that in the absence of any means to get information about the consumption pattern of other countries, atleast some people who could afford to fulfil their UPEN could feel satisfied. But when these very people get information about the way these needs are fulfilled in other countries they are likely to feel somewhat dissatisfied if in other countries higher level of economic activities are used to satisfy these needs. This implies further increase in dissatisfaction.

Similar analysis applies to other countries belonging to set 'S' of all the countries, irrespective of the level of economic activities consumed in these countries, to satisfy UPEN.

Implications of the above analyses for deriving MEW from MEA of different countries is that even if different countries employ different levels of
economic activities to fulfil their UPEN, they will have more or less the same level of UPEN, that is, in some countries low level of economic activities (cheap) and in others, high level of economic activities (expensive) can be used to satisfy UPEN but without affecting the level of UPEW. For instance, an individual in a particular country may derive much more UPEW from a cheap status good, say silver ornaments, where very few people own them than an individual, living in some other country, can derive from owning gold ornaments, where everyone owns them. Further, individuals in the latter country may derive much more UPEW by owning diamond studded gold ornaments which may only be a source of negligible level of UPEW for people of some other country and so on.

(ii) Presuming that UPEW is not at all related to the level of economic activity and economic resources are limited, the existence and use of different levels of economic activities to satisfy UPEW only implies the use of scarce economic resources to get the same level of UPEW. This together with the fact that UPEN can also be satisfied through non-economic means implies inefficient use of scarce
economic resources. Alternatively, we can say that satisfaction of UPEN by higher and higher levels of economic activities just becomes a method of wasting scarce economic resources. This argument gets further support from the fact that some of the socially scarce economic resources which are used in the production of UPEN fulfilling economic activities can also be used to produce REN fulfilling economic activities. Fulfilment, thus, of UPEN by more and more of socially scarce economic resources may exert greater and greater negative externality on REW or on socially scarce economic resources, particularly, irreproducible form of energy and land.

The preceeding discussion warrants that the level of economic activities consumed to satisfy UPEN be only treated as cost of UPEW rather than welfare in itself because, welfare in any case, remains the same. Different levels of economic activities to satisfy UPEN in different countries, thus, just represent the cost each country has to pay to achieve a given level of UPEW. In this sense these economic activities become more or less similar to Type III economic activities which are discussed below.
The (ii) above does not only apply to goods and services which are a source of fulfilment of human needs of status, prestige ego. etc., but also to:

1. goods and services which are aimed to provide comfort to human beings if one follows the relation, as discussed by Scitovsky (1976, PP. 57-79), that there is no significant positive relation between comfort and pleasure. Scitovsky (1976, P. 71) remarks,

"Satisfaction of a need gives both pleasure and comfort. But the continuous maintenance of comfort would eliminate pleasure, because, with arousal continuously at its optimum level, there can be no change in arousal towards the optima. In other words, incomplete and intermittent comfort is accompanied by pleasure, while complete and continuous comfort is incompatible with pleasure."

But our argument for treating the goods providing comfort not as the source of pleasure is somewhat different. This will be discussed along with the discussion on Type III economic activities given below.
2. Economic activities which do provide arousal and mental stimulation such as recreational economic activities, may not necessarily be a source of fulfilment of human ego, status and prestige needs. These economic activities should also be considered as cost of economic welfare since the nature of welfare derived from the consumption of these economic activities can also be derived through non-economic activities. But:

a. in the absence of the availability of any reliable procedure to measure the level of such welfare derived from non-economic activities which serve exactly the same type of need as economic activities, it is more appropriate to treat them as cost of welfare rather than welfare in itself which can be attributed to the reasons given earlier; and

b. they can exert negative externality on the fulfilment of REN or can just use the socially scarce resources. Further reasons why (1) and (2) types of economic activities should be excluded from MEW and be treated as REC and how to account for these economic activities will also become clear from the
discussion on Type III economic activities given below.

TYPE III ECONOMIC ACTIVITIES

These economic activities are just intermediate ones which are required in the process of production of Type I and Type II economic activities which ultimately satisfy final human economic needs. Consequently, they are representative of cost of attaining REW and UPEW. The necessity for adjustments, modifications and supplementations in the level of these economic activities prevailing in different countries to arrive at their comparable measure of cost arises out of the fact that due to various differences among different countries different types of Type III economic activities are employed to satisfy REN or UPEN and sometimes it is not simple to differentiate Type-III economic activities from those of Types I and II.

Different countries due to their variations in resource endowment (both physical and human), stage of economic development etc. are likely to adopt different types of Type III economic activities. In some countries capital intensive and in others labour intensive techniques can be employed. Further, in some countries the same need can be satisfied in the non-
marketed sector and in others in the marketed sector. But, as discussed earlier, from welfare point of view it is the quantity of the final need and importance of that need, which Type I and Type II economic activities aim to satisfy, which matters, and Type III economic activities just represent the cost of welfare.

The main theoretical and statistical problems which emerge while making an attempt to arrive at comparable cost of welfare of different countries are of the following types:

(i) Segregating the Type III economic activities from those of Type I and Type II economic activities;

(ii) Separating the level of these needs fulfilled by JEN fulfilling economic activities. Solution to this problem shall be discussed in chapter V; and

(iii) Selection of an appropriate procedure (weight) to reduce the level of these economic activities prevailing in different countries to a common comparable denominator. Solution to this will also be discussed in Chapter V.

It was felt that (i) above requires the segregation of two types of Type III economic activities
DIRECT TYPE III ECONOMIC ACTIVITIES

There are Type III economic activities which really do not raise any doubt about the nature of human need they fulfil and can clearly be differentiated from Type I and Type II economic activities by just applying the rule whether the economic activities serve the needs of human beings or the needs of Type I and Type II economic activities. For instance, agricultural equipment used in the production of wheat, rice, sugarcane etc. can clearly be differentiated as Type III economic activities compared to Type I of the latter. For these types of Type-III economic activities, even after technological progress no problem arises. For example, instead of a simple plough if tractor is employed, latter still remains an intermediate economic activity (Type III). But the significance of the latter as intermediate economic activity increases because besides serving the purpose of intermediate economic activity for agriculture, it also serves the purpose of releasing the labour force from agriculture to other sectors. So, in the real sense, tractor becomes an intermediate economic
activity not only for agriculture but also for other economic activities, which employ the labour force released by the employment of tractors.

Thus, for above types of intermediate economic activities only problem that is left to be solved is the problem (iii) mentioned above. This forms the subject matter of the next chapter.

**INDIRECT TYPE III ECONOMIC ACTIVITIES**

There are some economic activities for which it is not that simple and clear to differentiate whether they fulfil REN and UPEN or IEN. It is this set of economic activities which can raise some real doubts and some serious theoretical and statistical problems for evaluation of Types I, II and III economic activities from the point of view of the measurement of welfare and its cost in general and for making interpersonal/international comparisons of welfare and its cost in particular. Major controversy in the literature regarding defining and distinguishing various economic activities as final and intermediate can be noticed to be mainly associated with this set of economic activities [For details see Alder (1982, p. 122)]. Therefore, it is this set of economic activities which require an indepth analysis so far as the basic
human needs they fulfil; the WPCs of these needs; and the relation between the level of these economic activities and economic welfare.

It seems that the most appropriate procedure to carry out the required analysis is: (1) to observe the various economic activities which come into existence with economic development; (2) analysing the human needs the new set of economic activities fulfil and nature of improvements these make over the old set of economic activities which used to fulfil the same human needs at a lower stage of economic development; and (3) analysing the relation between the level of these economic activities and economic welfare.

(1) This can be accomplished by observing the level of these economic activities which (a) come into existence as a particular country moves up from a lower stage to a higher stage of economic development; (b) prevail in a particular country (or area within the same country) which is at a lower stage of economic development and that of some other country (or other area within the same country) which is at a higher stage of economic development.

It is perceived that with economic development the
economic activities belonging to this category which come into existence can broadly be divided into two categories.

(i) Intermediate consumption economic activities; and
(ii) Economic activities which become necessary for the higher stage of economic development or so called economic compulsions.

(i) and (ii) can be used to analyse (2) and (3) above.

(i) **Intermediate Consumption Economic Activities (ICEA)**

With economic development a range of economic activities such as cooking, cleaning, washing appliances, refrigerators, automobiles come into existence. It is felt that from an individual (micro) consumer point of view these economic activities seem to be consumption economic activities but from society or national (macro) point of view, they may turn out to be only intermediate economic activities.

No doubt arises about the basic human needs which these economic activities fulfil. Cooking appliances are needed to cook food, cleaning appliances are needed to clean spaces, washing appliances are needed to wash clothes and utensils, refrigerators to preserve food, automobiles are needed to transport goods and people
from one place to another and so on.

Given the differences among nations and varying levels of these economic activities which exist among different countries, to assess the WPC of the latter it becomes first of all important to review the various other human economic needs, besides those mentioned above, which the latter (varying levels of economic activities) can fulfil.

It is perceived that various other human needs which varying levels of above mentioned economic activities can fulfil are the following:

1. they can be the source of fulfilment of human UPEN and comfort needs; and

2. they can save human time to do the required jobs.

Analysis of (1) and (2) can help to draw inference about the most appropriate human need from the objective of welfare and its cost measurement point of view, which the varying levels of these economic activities fulfil.

1. So far as fulfilment of UPEN and comfort needs are concerned, it has already been discussed in Section II that from welfare point of view there is no relation between the level of these economic activities and
economic welfare and higher level of these economic activities need more be treated as cost of welfare rather than welfare in itself.

2. Higher level of these economic activities can save time which, in turn, can be utilised for: (a) leisure; and (b) releasing the labour force from these activities for some other economic activities.

(a) Leisure: In line with Scitovsky (1976, P.113) it is felt that so far as leisure is concerned, it may not always be a source of happiness and work may not always be a source of dissatisfaction. It is contrary to the accepted terminology of economics where leisure is always considered as a source of satisfaction and work the source of dissatisfaction.

To argue that leisure may not always be a source of happiness Scitovsky (1976, P.113) remarks

"In modern America, where the average person not getting enough exercise and not knowing what to do with his leisure time are becoming universally recognised as increasing serious social problems"

If leisure were really pleasure giving, then all the rich people who can afford to have more leisure
viz-a-viz poor people would have preferred to have more of it. But this is not always the case which becomes clear from the summary of 'The Harried Leisure Class' by Scitovsky (1976, P. 163).

"Much has been written recently of the paradox in our society of The Harried Leisure Class, whose high hourly earnings make their time so precious that they can not afford the time it takes to enjoy life and are forced to eat their meals on the run, cut short their foreplay in love-making, attend abbreviated religious services, buy books to glance at, not to read, and have no time to look at the beauty spots of the world to which their conferences, take them. Such is the lifestyle of today's elite. The paradox lies not in their behaviour, but in the use of the term, "leisure class, " to refer to people with no interest in leisure and with work their only passion."

From the above quote it becomes clear that leisure may not always be a source of happiness whereas work can be a source of great satisfaction. Even if work may not be a source of satisfaction it is a useful mean to pass time which otherwise can be extremely boring and difficult to spend.

Applying these ideas to the level of above
mentioned activities is that whereas some people can derive lot of satisfaction even from working for long hours to cook food, wash clothes and clean the house with low level of economic activities which others may not derive from sum total of working for short hours with high level of these economic activities and the leisure time\textsuperscript{15}.

Therefore, leisure generated out of the consumption of high level of these economic activities may not necessarily be welfare increasing rather it can lead to boredom as well as one's involvement in harmful or wasteful economic activities. For example, due to boredom one may start taking drugs or one may use leisure for recreational purposes which can use scarce economic activities\textsuperscript{16}.

Implication of the above analysis for making ICNI as a MEW is that since leisure is not accounted for in the national income, the leisure generated through the use of high level of these economic activities should be ignored as a source of welfare. Further, if leisure is to be accounted for while making ICNI as a MEW then it also becomes necessary to account for the pleasure which may be derived out of work, which is extremely difficult if not impossible. Thus leisure as a
source of satisfaction does not seem to have any more meaning than work.

(b) The other use to which the time saved due to the use of high level of these economic activities can be put is to produce other economic activities. In this sense these economic activities become instrumental in releasing the labour force from domestic or non-market sector to market sector. This together with the fact that: (1) given different stages of economic development and different social set ups basic human needs which these economic activities aim to satisfy can, in fact, be fulfilled by least expensive to most expensive economic activities. Clothes can be washed by hand on the one hand and by most sophisticated computerised washing machines on the other; house can be cleaned by simple waste cloth and water on the one hand and most sophisticated cleaning appliances on the other and so on; and (2) The production and use of these economic activities is associated with the use of more and more of scarce economic resources, particularly, energy and land, warrants that the most appropriate economic need which these economic activities fulfil is the generation of surplus time from one set of activities, which can be utilised in the production of some other set of
economic activities that is, releasing labour supply from domestic or non-market activities for market economic activities. In this sense these economic activities become intermediate economic activities and represent cost of welfare.

Considering the most appropriate economic need which these economic activities fulfil, it can be said that higher level of these economic activities fulfil the need of the system (higher stage of economic development) rather than the needs of human beings, because human needs can be satisfied even by the lower level of these economic activities. In this sense they can be considered as economic compulsions of the system as will become clear from the discussion given below.

(ii) Economic Compulsions

The process of economic development also makes it necessary to keep introducing newer and newer sets of economic activities to satisfy the needs of the economic systems which keep on emerging with economic development.

The necessity for newer and newer economic activities arises due to the following reasons.

Firstly, as the economic system develops, need for
additional labour force arises. Given the available labour supply, this need can only be fulfilled, if some labour is released from their present activities (economic or non-economic) for some other economic activities. This necessitates the introduction of new time saving economic activities to do certain jobs which were done by comparatively more time consuming economic activities in the previous economic system. Considering the needs of the previous economic system, these new time saving economic activities were not necessary and they may still be unnecessary for some in the new economic system. For example, the new economic system may warrant release of labour force from agriculture which necessitates introduction of labour saving economic activities such as tractor, combine harvester, etc. in agriculture. Or if women are to be induced to join the labour market then introduction of some economic activities such as time saving domestic appliances or hiring the services of some one else to do the domestic jobs, child day care centres etc. become necessary.

Secondly, with economic development technological progress takes place which makes available a new and improved set of economic activities. Some of these new
economic activities may just be means to satisfy the needs of the new economic system. For instance, technological progress in some of the economic activities may itself necessitate special type of education, defence equipment and arms, means of communication and transportation for the police force etc.

A careful perusal of the role of these new economic activities in fulfilling the needs of human beings or of the new economic system reveals that they do not make much improvement in the fulfilment of the latter compared to their previous counterparts that exist even in the new system or those which existed in the previous one. In other words, the introduction of some new economic activities which satisfy the same human needs or just the needs of the economic system may just represent change in the means to satisfy the latter without affecting the quantity and quality of the needs of human beings or of the economic system that are to be fulfilled since, from the economic welfare point of view, it is the quantity and quality of the needs of human beings or of the economic systems that are fulfilled rather than means to fulfil these needs, that is most important. New set of economic activities introduced to satisfy these needs are not
likely to significantly improve the level of economic welfare as the quantity and quality of these needs that are fulfilled even by the new economic activities remain more or less the same as those fulfilled for the old economic activities.

Due to their above mentioned characteristics, the difference between the level of new set of economic activities and the old ones can just be called economic compulsions of the new economic system. The difference between the level of new and old sets of economic activities just works like instruments in the generation of some other economic activities or become necessary for the new system. Thus, it seems more appropriate to treat the difference between the level of new and old sets of these economic activities as cost of development rather than development in itself.

Adjustments, modifications and supplementations in the level of these economic activities that become necessary if a MEW is to be derived from a MEA are similar to those discussed for intermediate consumption economic activities which are discussed below.
IMPLICATION OF INTERMEDIATE CONSUMPTION ECONOMIC ACTIVITIES AND ECONOMIC COMPULSIONS FOR DERIVING ICNI AS A MEW AND A MEC FROM A MEA

The implications of the above analysis for deriving a MEW and a MEC from a MEA and the consequent problems and need for adjustments, modifications and supplementations in MEA, to derive comparable MEW and MEC for different countries, arises out of the fact that, in the present internationally adopted system of arriving at a MEA (National Income): (1) weight is assigned to marketed economic activities and not to the non-marketed economic activities although the latter serve the same human need as the marketed ones; and (2) no account is made for the economic activities which fulfil the needs of the economic system rather than those of human beings. Due to these reasons if MEA is used as a proxy for MEW it will lead to an over estimation of welfare of a country which is employing more of marketed/higher level of some other economic activities, because, the stage of economic development which this country has attained makes it necessary to do so, compared to some other country, which due to its different stage of economic development can either do without these economic activities or requires only their lower level.

It immediately follows from the above discussion
that if comparable MEW and MEC are to be derived from MEA for two countries which are at different stages of economic development then one of the following adjustments in the latter becomes necessary:

(i) no weight be assigned to additional marketed/higher level of some economic activities of one country which fulfils just the needs of the economic system (higher stage of economic development) compared to a country for which even their lower level is sufficient; or

(ii) if weight is assigned to additional marketed/higher level of some economic activities of one country, which fulfil the needs of the economic system, then weight equivalent to this should also be assigned to the country for which even their lower level is sufficient; or

(iii) the additional marketed/higher level of some activities employed by one country, which fulfil the needs of the economic system, compared to another country be treated as cost of economic development rather than welfare in itself.

As per discussion given earlier, the option (iii) seems to be most realistic.
Let us illustrate the above arguments with the help of an example. Let us assume that there are two countries A and B. A is assumed to be at a higher stage of economic development and B at a lower stage of economic development. Let us assume that in both the countries the only human need that is to be fulfilled is to wash a fixed number of clothes, say C.

Clothes we know can be washed with the help of hand (human capital) on the one hand and most sophisticated washing machines (physical capital) on the other. Let us assume that physical capital is a marketed economic activity and human capital is a non-marketed economic activity. Let us call physical capital as Direct Economic Activity.

In figure 4.1 let us assume that IQ = C is the isoquant which represents the fixed number of clothes = C, which can be washed with various combinations of physical capital (K) represented on the vertical axis and human capital (L) represented on the horizontal axis. As clothes can be washed just with the help of human capital, the isoquant can touch the horizontal axis, but it can not touch the vertical axis because some amount of human capital will always be required, whatever may be the level of physical capital.
Let us assume that country A which is at a higher stage of economic development is at point E on the isoquant IQ = C employing OK of physical capital and OL of human capital. And country B which is at a lower stage of economic development is at point F on the isoquant IQ = C employing OK₀ of physical capital and OL₀ of human capital.

Given the above situation, the question that arises is: given the internationally accepted system of national income accounting or measurement of product (ICP), where weight is assigned to marketed economic activities (physical capital in this case) and not to the non-marketed economic activities (human capital in this case) and number of clothes washed in a particular year are not accounted for, will the use of national income as a proxy for welfare not lead to an overestimation of welfare level of country A by \( K₀ K₁ - K₀ K₁ \) (additional physical capital employed by A compared to B to wash the same number, C, of clothes?). The answer, of course, is simple "Yes". It also follows from the figure that if both countries A and B were at point E or F on the isoquant IQ = C, no inconsistency would have arisen in the use of MEA as a proxy for MEW.
Moreover, it also follows immediately from Figure 4.1 that if comparable MEW are to be derived from MEA (National income for both the countries A and B) then one of the following adjustments in MEA of these countries become necessary:

(1) Additional weight equivalent to $K_0 K_1$ of physical capital be also assigned to country B; or

(2) No weight be assigned to $K_0 K_1$ of physical capital employed by country A; or

(3) Given the prerequisite of economic development which necessitates the employment of more and more of physical capital to release the labour force from non-market and even marketed economic activities for some other marketed economic activities, additional physical capital $K_0 K_1$ employed by country A be treated as cost of development which country A has to pay to release $L_1 L_0$ of human capital (labour) from non-marketed cloth washing economic activity for some other marketed economic activities.

If (3) above is accepted as the mode of adjustment to arrive at comparable MEW from the corresponding levels of MEA, which as per discussion given earlier seems to be economically the most reliable and correct
form of adjustments, then \( K_0 K_1 \) represents the level of economic activity which becomes necessary to achieve a higher stage of economic development. \( K_0 K_1 \) thus fulfils the needs of the economic system (higher stage of economic development) rather than need of the human beings. They are, thus, economic compulsions of the system. Therefore, as discussed earlier, the level of economic activity \( K_0 K_1 \) are representative of cost of development rather than welfare itself.

Moreover, the increase in the level of this economic activity (washing machines) will have a chain effect on the level of so many other economic activities. Increase in the level of many other marketed economic activities such as mining, transport, packing, energy, distribution etc. will become necessary. Natural impact of increase in the level of these economic activities (including that of washing machines) will be increase in urbanisation, which, itself, makes it necessary to increase the level of so many other economic activities. Let us call all economic activities other than that of washing machines, which become necessary if human need of cloth washing is to be fulfilled partly by physical capital as Indirect Economic Activities or Indirect Economic compulsions. Further let these form a
proportion $a, a > 0$ of the Direct Economic Activity. Now if both direct and indirect economic activities which become necessary if human capital is to be substituted for physical capital are considered, then the isocost $IQ = C$ will shift upward by $a$ times $K_0$, as is indicated in fig 4.1. Country A will now require $K_1 = K_1 + aK_1$ and country B $K_0 = K_0 + aK_0$ of direct as well as indirect physical capital, human capital remaining the same. $aK_1$ will be greater than $aK_0$ since $K_1 > K_0$ and $a > 0$. An attempt to use MEA as a proxy for MEW will further overestimate the welfare level of country A. The suggested adjustments discussed above to derive comparable MEW from MEA will now be for $K_0K_1$ of physical capital instead of $K_0K_1$.

The above argument applies to all the activities (marketed or non-marketed) where employment of higher level of physical capital becomes necessary to release the labour force from their present activities for the generation of some other economic activities.

In this chapter the need for adjustments, modifications and supplementations in the level of broad categories of economic activities and their form to derive a comparable MEW from them (level of economic activity) has been discussed. In the next chapter the
ideas developed in this chapter are utilised to suggest a statistical procedure to make adjustments, modifications, supplemen-
tations in the MEA of different countries (as provided in ICP) to derive their comparable MEW and MEC.

NOTES

1. This applies to both interpersonal and international situations.

2. For a comprehensive analysis as to how with economic prosperity these changes can take place see Kuznet (1941 pp. 10-11).

3. Based on market or factor prices, that is, taking these as weights.

4. Economic activity can be defined to include marketed as well as non-marketed goods or just the marketed goods.

5. Type here represents quality and marketed or non-marketed nature of economic activities. It needs to be noted clearly that from welfare point of view it does not make any difference whether the goods and services have been produced in the marketed or the non-marketed sector. It is the need and WPC of the need which really matters from welfare point of view. See Chaps. II. and III.

6. See (PP.6-7) and footnote (8) of Introduction.

7. Level of economic activity refers to quantity or expensiveness of economic activity.
8. This is not only to make possible the exclusion from MEA of those activities which are welfare neutral or welfare decreasing but also to make some value judgement about the level of welfare providing capacities of welfare increasing economic activities. That is, it is to satisfy our initial presumption that although consumption of economic activities is the main source of economic welfare, every consumption is not necessarily welfare increasing. It can very well be welfare decreasing and welfare neutral as well, and can have varying levels of WPCs.

9. It follows from Chapter II (PP. 69-72). As IEW, in real sense of the term, represents cost of welfare (both REW and PEW) any discussion on welfare measurement and comparison is bound to be incomplete without any clear analysis of the relation between them. The need for this follows from the objective of either welfare maximisation or cost minimisation.

10. This is to take into consideration any possible negative externality which the fulfilment of PEN or IEN can exert on REN as discussed in Chapter II (PP. 63-69). This is also applicable to (9) above as demand pattern due to so many factors for IEN may also not be consistent with the national resource endowment or socially desirable level of REN.

11. Because the question which arises is: what is the most suitable mean to satisfy the same quantity of a particular need? Simple economic theory reveals that one can not answer this question unless one knows what the resource endowment is. Assume that irreproducible energy is the most scarce economic resource and possibility of substitution between irreproducible and other forms of energy (including the human one), exists. It is the irreproducible energy that imposes a limit upon the output of a given commodity. So the objective of meeting the maximum of a particular human need and hence maximising welfare through the consumption of this commodity can only be achieved by adopting a
process that requires minimum quantity of the irreproducible energy. See Dorfman, Samuelson, Solow (1958, P. 209).


14. If quality of food, measured in terms of an objective explanatory variable, is not taken into account then we are likely to face the well known fundamental index number problem. The main reason being that prices of various eatables can vary largely among countries due to cultural, moral, natural, tastes and other factors. In a country, for example, of vegetarians, meat becomes a free good and in that of teatotallers alcholic drinks become free good and vice-versa. Due to these reasons it becomes indispensable to supplement and adjust the levels of these economic activities by some suitable objective explanatory variable if information about economic welfare is to be derived from the level of these activities.

15. It needs to be noted that some of the economic activities which are recreational economic activities for some people are, in fact, part of the work of some other people. For example, going for long drives, cooking, gardening, hiking, trekking. People who get satisfaction out of such work get the same satisfaction which others get out of their recreational activities. Therefore, to estimate satisfaction out of leisure and work becomes very complex to handle and can lead to controversies and never ending debate.

16. For details see the discussion on recreational economic activities given in Section II.
17. It should however be noted that while estimating the national incomes some estimates of non-market subsistence output like: (i) all the dwellings which household or private non-profit institutions own and use join their account; (ii) the own account construction of dwelling, residential, non-residential buildings and other projects by households and private non-profit bodies, as well as government organs; and (iii) the own account production by households of primary commodities, that is, the characteristic products of agriculture, forestry, fishing, hunting, mining and quarrying etc. is made. But no account of so many other non-market activities like unpaid services of housewives and of other members of the household, members of the society to other members, gambling, smuggling etc. is made. See Studenski (1958 PP. 16-21). Related studies regarding measurement of non-market production, unrecorded economic activities, waste, services etc. are Muellbauer (1974), Fitzgerald and Wicks (1990), Kantor (1989), Chadeau (1985), Schettkat (1985), Alm (1985), Bivens and Volkar (1986), Anaestal (1987), Harberger (1964), Hammes et al. (1989), Quash (1987), Alder and Hawrylyshyn (1978).