Regional Welfare Weights in Investment Appraisal - The Case of India

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Abstract. Pareto welfare criterion based only on people's willingness to pay for the project's output is regarded by many as being a narrow interpretation of an improvement in social well-being. A broader opinion is that even though poorer individuals may be less able to pay for a particular benefit, they may obtain greater utility from it. In line with the broader opinion, this paper looks at regional welfare weights in India on the basis of a conventional consumption utility function which assumes diminishing marginal utility. Estimated parameters are; elasticity of marginal utility of consumption, and per capita national and regional incomes which are used in the calculation of welfare weights for 17 states of India.

1. Introduction

The importance of distributional issues related to communal projects has long been debated in the cost-benefit literature. Essentially, cost-benefit analysis is an application of welfare economics whose aim is the maximization of social well-being from a series of options. It could, therefore, be argued that project analysts should provide some information to the decision-makers as to which option is socially more desirable from distributional as well as efficiency view points.

Some economists believe that cost-benefit analysis should proceed under the assumption that existing distribution of income is optimal. Even if it is not, income distribution can be handled in a variety of different ways, for instance through the tax system. According to Musgrave (1969) and Harberger (1972) distributional issues should be left out of cost-benefit analysis in which the emphasis should be on economic efficiency. However, if a project imposes a cost on some section of the community then a compensation

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scheme should be implemented. The Kaldor-Hicks principle recommends that projects should be constructed if they improve the welfare of some individuals, even though others might lose out, provided that the gainers, at least in theory, would compensate the losers and still have some benefit left over. Other than this, there is no need to deal with the wider distributional issues.

At the opposite end of the spectrum, distributional issues should form an integral part of cost-benefit analysis so that specific welfare weights can be used to achieve equity as well as efficiency objectives in poor and rich countries alike, Prest and Turvey (1965), Layard (1972), Seton (1972), and Stern (1977). However, this does not mean that project analysts should dictate the welfare weights to be used in project appraisal as such weights must eventually be approved by the public representative. One important task for the economic profession is to help the government in the calculation of various sets of weights so that they can, if desired, be used in the appraisal of proposed projects which may include some form of sensitivity analysis as to the variation of these weights, Stern (1977). Layard and Glaister (1994) consider that distribution by way of taxation or subsidy may not happen, even if it should happen. Then there may be a case for welfare weights to decide whether or not projects meet greater social objectives.

More recently, Blue and Tweeten (1997) argued that applied mainstream economists have, by and large, disregarded the equity criterion in cost-benefit analysis by focusing exclusively on economic efficiency whereas others, such as Goldschmitt (1968 and 1978) and Strange (1988), rendered to economic efficiency the same obscurity that neoclassical economists have rendered to equity. In effect, both groups are concerned about the human well-being and thus work incorporating both equity and efficiency concerns helping to bridge the gap between the two schools of thought.

In a broader study, Murty and Ray (1989) contended that welfare weights attached to different social groups change by income levels, prices, and taxation. Therefore, non-recognition of these items on the well-being of diverse groups by the government is unlikely to be effective in achieving the socially optimum results from a wider perspective. Also see Roberts (1980) and Christiansen (1983).

Generally speaking, welfare weights mean the relative values attached to unit increments in incomes accruing to various sections of the population. The introduction of distributional effects explicitly into cost-benefit analysis would be to supplement estimates of the total costs and benefits that stem from a project with indications of how these are divided among the population. If the distributional dimensions of a project are to be made explicit then there must be a decision concerning which distributional dimensions are worthy of consideration. According to Weisbrod (1972) there are a number of criteria by which the distribution would be categorized as: income levels, age, sex, family size, race, religion, region, and possibly some others.

Schreiner (1989) postulates that in order to achieve maximum welfare gain in the community, costs and benefits of investment projects should be distributed between individuals on the basis of marginal utility of incomes. This paper considers distributional weights from the viewpoint of regional incomes in India. In other words, the paper addresses a methodological question; how can one estimate welfare weights for regions in a country which has theoretical grounding in welfare economics? The resulting weights may give some clue to the Indian government in establishing re-gional priorities regarding channelling public expenditures in a variety of forms. By exposing these weights one can also look at the issue of their ethi-cal acceptability as well as their practical implications.

In economics analysis regarding the welfare foundation of project ap-praisal, a Bergson-Samuelson type of utility function is usually employed for making communal choices in which income-utility levels of individu-als/households are affected. For example:

$$SW = f(U_1, U_2, U_3, ...) \qquad (1)$$

where *SW* is social welfare which is a function of the utilities of individu-als/households in the community. From this expression the change in com-munal welfare may be aggregated on the basis of increments in individual income. That is;

$$\Delta SW = \sum_{i=1}^{n} U_i \Delta Y_i \qquad (2)$$

where U_i is the ith person/household's utility resulting from a change in its income, Y_i .

In the tradition of Weisbrod we modify (1) by focusing on the regions of the country;

$$SW = f(U_A, U_B, U_C, ...) \qquad (3)$$

where each subscript refers to a region. In this, it is postulated that the gov-ernment is considering a social welfare function from the view point of the regions, a highly realistic position in many countries.

Regions can be defined strictly by political/administrative borders, e.g., states, or loosely by taking some broad geographical factors into considera-tion, e.g., northern, southern or central India, etc. Each region can, of course, be put into various sub-sections. In theory, the policymaker can have as many regions as he wishes, although in reality most regions are established by geographic, historic and political considerations. This paper considers the

17 states of India with a view to calculating welfare weights for each one based upon income-utility levels.

One contentious issue with (3) is that of the problem of interregional comparison of utility similar to that of (1) in which interpersonal utility is considered. There is a tendency among some economists regarding statements involving interpersonal or interregional comparison of utility as value judgments. However, Klapholz (1963) and Ng (1972) challenge this by arguing that such statements are, essentially, individual judgements of the facts on the ground. Since the regional utility indices are to be summed up, a common unit of measurement must be found and this is taken to be the per capita regional income.

The assumption that there is a strong correlation between income/consumption and utility levels between regions is supported by migration in most countries of the world, from the impoverished areas to the better off regions and this is highly conspicuous in India. For example, Mumbai is the largest and richest city in India and thus it attracts migrants from all corners of the country. When income levels vary sharply between the regions of a country, the use of regional welfare weights in cost-benefit analysis may become a policy instrument to moderate the movement of the people by giving poor regions priority in the location of public and private projects which generates much needed income and employment in these areas. This has already been done in many European countries by supporting agriculture, fisheries, and forestry projects in the rural sector where income levels tend to be lower than in urban districts. The state support for relatively poor rural communities is even a constitutional obligation in the Republic of Ireland, Kula (1997). As for the United Kingdom, there are regional development boards in Scotland, Wales and Northern Ireland providing subsidies to attract private investors to their regions. Such subsidies are highest in the least well of region. For example, the government grant per manufacturing employee in Northern Ireland is higher than the grant given for the same purposes in Wales, Department of Economic Development (1999).

The use of regional welfare weights in cost-benefit analysis would give priority to poor states in the choice of public sector project venues. In addition, the government by way of a financial support policy may wish to attract private projects into the disadvantaged regions. Regional welfare weights may help to decide the extent of a support package.

2. A Model for Welfare Weights

The main economic rationale for giving greater weights to additional incomes accruing to the poor as compared with the rich is the theory of diminishing marginal utility of increasing income, which is one of the oldest theories in economics as its roots go back to Dupuit (1844), Gossen (1854) and

Jennings (1855). According to Stigler (1972), despite its great potential in economic analysis this theory has been severely under- utilized in the economic profession. Irving Fisher (1927) was one of the earliest economists to use this theory in his justification of the progressive income tax structures that exist in most countries.

Conventional total and marginal utility functions are shown in Figure 1. Along the horizontal axis regional income levels are measured and the vertical axis indicates the corresponding utility levels. It is postulated that each region's utility stems from its own income/consumption. That is, there are no intraregional externalities in the form of envy or pity. Total utility is increasing at a diminishing rate as the consumption levels grow making subjects less keen on further consumption. The downward sloping curve measures the marginal utility of income/consumption which has a constant elasticity. Empirical research lends support to the theoretical shape of both functions. For example, Blue and Tweeten (1997) by using data on incomes taken from the US General Social Surveys construct a quality of life index, a proxy measure for utility, in which income levels turn out to be the most significant variable among all the factors considered. Furthermore, the majority of regression models used in their analysis confirms the shape of the marginal utility function which is employed in this paper.
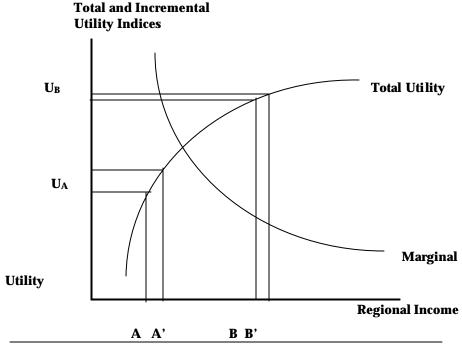

Figure 1. Total and Marginal Utility Functions with Constant Elasticity

Consider two regions, A and B, where the latter enjoys higher per capita consumption. For example, any transfer of money in favor of A by way of a fiscal measure with total spending being constant in the country would raise the social welfare. This would also shift the Lorenz curve upwards so the Gini coefficient falls. Likewise, locating a public project in Region A rather than B would, other things being equal, add more to (3) as additional utility generated from the same level of consumption would be greater. According to Figure 1;

$$A'A = B'B; \Delta U_A > \Delta U_B$$

When there are n regions in the country the social welfare function would be;

$$SW = \sum_{i=1}^{n} U_i \quad (4)$$

where U_i is the utility level of the ith region. According to Squire and van der Tak (1975), if we assume that all utility functions are similar and the elasticity of marginal utility of consumption is constant throughout then we can write;

$$U_i = \frac{C_i^{1-e}}{1-e} \tag{5}$$

where C_i is per capita consumption in the region, e is the elasticity of marginal utility of consumption. The incremental utility would be;

$$\frac{dU_i}{dC_i} = C_i^{-e} \tag{6}$$

The elasticity of this function becomes;

$$\frac{d^2 U_i}{dC_i^2} \frac{C_i}{dU_i/dC_i} \tag{7}$$

which will yields -e.

As we are interested in comparing consumption and corresponding utility levels between different regions the relevant ratio between Region (i) and Region (j) would be:

$$\frac{C_i^e}{C_j^e} = \left(\frac{C_j}{C_i} \right)^e \tag{8}$$

The distributional weight, w, for region i compared with the national average, $\overline{C}$, would be:

$$w = \left(\frac{\overline{C}}{C_i} \right)^e \tag{9}$$

3. An Estimate of Elasticity of Marginal Utility of Income for India

The task in this section is to estimate the elasticity of the marginal utility function shown in Figure 1. There are a number of methods available to calculate this parameter. One approach uses complete demand systems, in particular the Rotterdam model. Unfortunately, in addition to the extensive data requirement, such models tend to yield unacceptably high figures for e, around -5. Another model suggested by Stern (1977) uses the consumption and saving behavior of individuals to estimate e for some countries. He suggests a likely estimate of -5, though accepts that -10 or even higher numbers are possible. On the other hand, Betencourt (1968) by using a Stone-Geary type of utility function in which the wage rate is considered to be the price of leisure estimates e for a number of income classes in Chile. Some of these figures turn out to be as high as -14. For low income classes, Betencourt's model yields a positive sign which is theoretically unacceptable.

One of the most popular methods to calculate the elasticity of marginal utility of consumption is to lean on the work of Fisher (1927), Frisch (1932) and Fellner (1967) who adopt an additively separable utility function which contains two goods, food and non-food. Consumers under their budget constraint spend their money on these goods in order to maximize utility. By using the Lagrangian multiplier method, the first order conditions yield;

$$\frac{\partial U / \partial FC}{P_f} = \frac{\partial U / \partial NFC}{P_{nf}} = \boldsymbol{1} \tag{10}$$

where $\partial U / \partial FC$ and $\partial U / \partial NFC$ are marginal utility of food and non-food respectively, P_f is the price of food, P_{nf} is the price of non-food and λ is the marginal utility of money.

In the Fisher-Frisch-Fellner model (F-F-F model) it is possible to estimate λ indirectly by observing consumers' behavior in two situations; first, all prices and incomes are low; second, the price of food goes up by x percent. Then we may explore how much money we need to give consumers as inducement so that they would be able to purchase the same amount of food as they did before. In the new high-price high-income situation the marginal

utility of food should be the same since consumers consume an identical amount of food as before. That is, the numerator of the first term in (10) is unchanged, but the denominator, P_f, is increased. Then (10) tells us that the marginal utility of income in the new situation is x percent lower than the previous one.

The F-F-F model yields an operational result which enables researchers to measure the elasticity of marginal utility of money spent on consumption, Fellner (1967). That is;

$$e = \frac{y}{\hat{p}_f} \tag{11}$$

where e is the elasticity of marginal utility of income, which relates to the downward sloping in figure 1, y is income elasticity of food demand function, and $\hat{p}_f$ is the compensated price elasticity of food demand equation after the elimination of the income effect. For example, if the average propensity to consume food was 25 percent and a 1 percent increase in the relative food price would involve a 1/4 percent reduction in real income. In this way one can eliminate the income effect from the price elasticity, that is;

$$\hat{p}_f = p_f - (a)y \tag{12}$$

where p_f is the uncompensated price elasticity of food demand and (a) is the share of food in the consumer's budget, 25 percent in the above example.

Unfortunately, the F-F-F model does not always yield satisfactory results for some developing countries where the budget share of food is large. This problem turned out to be particularly serious for India because the high value of (a) wiped out the compensated price elasticity. When the proportion of income spent on food is low, which is the case in almost all advanced countries, equation (12) gives good results. For example, Kula (1984) by using the F-F-F model on time series data calculates the elasticity of marginal utility of consumption with plausible results for the United States and Canada where the average propensity to consume food is under 20 percent.

A similar criterion to that of the F-F-F model which circumvents the above problem has been used by Amundsen (1964) and Jones (1993) in which food and non-food are considered to be complementary goods with homogeneity restraints. This yields:

$$e = (b)\frac{y}{p_f} \tag{13}$$

where (b) is marginal propensity to spend money on non-food, p_f is the price elasticity of substitution for food, and y is the income elasticity of food demand function. The marginal propensity to spend money on non-food, (b), plus marginal propensity to spend on food, (a), is, of course, one. If real incomes rise by 1 percent while prices of food and non-food remain constant

an extra (b) y/100 will be spent on the latter while the marginal utility of money declines by e percent.

Equation (13) proved to be suitable for the calculation of e for India. After trying out various specifications the best econometric model for the food demand function turned out to be the Cobb-Douglas type. That is;

$$D = (A)(Y)^y \left(\frac{P1}{P2}\right)^{pf} \tag{14}$$

Or in double logarithmic form;

$$ln\,D = ln\,A + y\,lnY + p_f\,ln(P_1 / P_2) \tag{15}$$

where D is per capita demand for food, A is constant, Y is per capita income, P_1 is price of food, P_2 price of non-food and p_f is the uncompensated relative price elasticity for food.

A time series such as ln D_t can be written in general form as;

$$lnD_t = a + (1 - \Phi)d_t + \Phi\,lnD_{t-1} + \sum_{i=1}^{p+1} \Phi_i \ln D_{t-i} + e_t$$

where α is constant, t is deterministic trend and p is number of lagged values of *lnD* introduced to ensure that there is no serial correlation in ε_t, the error term. The hypothesis, H_0: $\phi = 1$, is particularly important. If H_0 is true then the series is not stationary in the sense that it does not tend to oscillate around a mean value. If H_1: $\phi < 1$ is accepted then the series is trend stationary. For the test of H_0 in the above equation, the actual values for the t statistic are given by the non-standard Dickey-Fuller unit root distribution. If p lagged values of lnD are introduced into the unit root test the t statistic has an identical asymptotic distribution but is referred to as the Augmented Dicky-Fuller distribution. Dickey-Fuller test helps us to identify whether a specific time series, such as demand for food, is integrated in order of one, I(1). The first step in the unit root test is to determine the level of p and for this the Schwarz Bayesian Criterion was employed. This indicated that p was generally zero (Dickey-Fuller) though sometimes it was close to that of one (Augmented Dicky-Fuller). Accordingly, both test statistics are produced in the table below which indicates that it is possible to reject the null of a unit root in all the differenced variables. While the Schwarz Bayesian Criterion suggested that either p = 0 or = 1 for the three series it is evident that results are not sensitive to the choice. The unit root tests indicated that all the variables are I(1), that is first difference stationary; the unit root tests results for the differenced series are given below in Table 1:

Table 1. Unit Root Test Results

	Dickey-Fuller	Augmented Dickey-Fuller	Critical Value
ΔD	-6.50	-4.99	-2.97
ΔY	-7.53	-4.87	-2.97
ΔP1/P2	-7.33	-6.21	-2.97

A cointegrating regression was run on the time series data shown in Table 2. It was not possible to obtain a suitable cross-section data for the regression variables in India. The results are as follows;

$$\ln D = 0.053 + 0.89 \ln Y - 0.26 \ln(P1/P2)$$
$$(0.12)\quad(13.4)\qquad(-4.20)$$

$R^2 = 0.94$; F-Statistics = 215 ; Augmented Dickey-Fuller (1) = -3.5 (critical value at 95% = -4.1).

Table 2. Time Series Data for Food Demand Function in India.

Year	Per capita food demand 1965 rupees (D)	Per capita income 1965 prices (Y)	Price of food relative to non-food 1970=100 (P1/P2)
1965	316	574	0.72
1966	321	594	0.80
1967	313	579	1.01
1968	390	722	0.99
1969	406	751	0.95
1970	404	748	1.00
1971	403	748	0.95
1972	363	725	0.99
1973	368	736	1.06
1974	362	724	1.05
1975	373	777	1.05
1976	355	772	1.22
1977	374	818	1.05
1978	430	865	1.13
1979	389	803	1.32
1980	370	838	1.46
1981	413	868	1.36
1982	395	881	1.48
1983	404	929	1.53
1984	399	944	1.55
1985	418	961	1.64
1986	431	971	1.63
1987	444	1006	1.61
1988	455	1084	1.61
1989	421	1002	1.62
1990	509	1190	1.63
1991	521	1178	1.60
1992	521	1162	1.73
1993	528	1200	1.66
1994	533	1249	1.51
1995	540	1311	1.51

Source: <u>Statistical Yearbook for Asia and the Pacific</u>, UN< Bangkok, Thailand. Various years. <u>Marketing Data and Statistics</u>, Euromonitor plc. London various years. <u>National Accounts Statistics in India</u>, 1950-51 to 1995-96, Economic and Political Weekly Research Foundation, Mumbai.

The residuals were tested for the presence of a unit root which led to the rejection of H_0. According to econometric results, expenditure elasticity of food demand function, y, is 0.89 and relative price elasticity is -0.26. Statistics available in <u>International Marketing Data by Euromonitor and Statistical Yearbook for Asia and the Pacific</u> by the United Nations revealed that the average propensity to consume food (excluding tobacco and alcoholic beverages) was 52 percent between 1965 and 1995 which made spending on nonfood 48 percent for the whole country. By using these figures in (13) we get;

$$e = -(0.89/0.26) (0.48)$$
$$e = -1.64$$

4. Regional Incomes and Welfare Weights

Bhagwati and Sirinivasan (1975) contended that Indian economic policies aimed at achieving rapid economic growth have been a total failure. According to Bhagwati (1985) it would be unconvincing to argue that India has been successful in either economic growth or in the reduction of income inequality during the last few decades when many Asian countries displayed a robust progress. These writers recommend a number of changes in Indian economic policy including greater efforts by private and public sectors to increase investment in deprived regions. In particular, private investment projects in these areas should be encouraged by special subsidies.

Chakravarty (1993) emphasises that India is a large country with considerable agroclimatic variations. The pattern of economic development encouraged during the colonial times, with infrastructure concentrated in certain coastal cities while the hinterland supplied labor and raw material and thus the gains of international trade were unevenly shared, had left an adverse impression on the perceptions of the Indian ruling class about the Western style of economic development policies. However, despite the good intention of the Indian elite to moderate inter as well as intraregional inequalities, the state development plan which came into effect after Independence did nothing to improve the situation; in fact it polarized growth and development.

Columns 2, 3 and 4 of Table 3 show per capita average income levels for Indian states during 1971/72, 1981/82, and 1991/92 respectively. There are substantial differences in regional incomes. For example, on the basis of 1991/92 figures, income per capita in Bihar, the poorest state, is only about 30 per cent of income in Punjab, the richest state. Furthermore, the Table reveals that regional inequalities remain fairly static over the 30 year period. States better off such as Punjab, Haryana, Maharashtra and Gujarat stay at the top of the table whereas Uttar Pradesh and Bihar are stuck at the bottom. Sirivastava (1993) makes the point that during the period when the state's

planning power was at its height the regional income distribution became worse. The pattern of public expenditure during that time strongly favored the better off states and as a result the increase in labour productivity and incomes there exceeded other areas, Byres (1994).

On the basis of equation (9) regional welfare weights are calculated for 17 states of India and the results are shown in the last three columns of Table 3. These weights, in fact, capture the worsening regional inequalities over time. For example, welfare weights (or priority measures) display a marked decline between 1971/72 and 1991/91 for the top three states whereas the figures for the last three states rise. This situation is partly due to the concentration of public spending in the relatively better off states. Srivastava (1994) argues that during the first forty years of state planning the bulk of the government expenditure, measured on a per capita basis, flowed to the better off states. For example, in 1973 Punjab received 1.7 times more public money per head than Bihar. This figure rose to 2.4 in 1986.

Table 3. Regional Per Capita Incomes (Rs) and Welfare Weights on the basis of e = 1.64.

	GNP per capita, market prices			Regional Welfare Weights, W		
States	1971/72	1981/82	1991/92	1971/72	1981/82	1991/92
Punjab	1085	2941	9643	0.46	0.40	0.41
Haryana	948	2533	8600	0.57	0.51	0.49
Maharashtra	824	2411	8180	0.72	0.51	0.53
Gujurat	859	2225	6425	0.67	0.62	0.79
Andhra Pradesh	596	1408	5570	1.22	1.31	1.00
Karnataka	686	1614	5555	0.97	1.05	1.01
West Bengal	741	1642	5383	0.86	1.03	1.06
Himachal Pradesh	687	1626	5355	0.97	1.05	1.07
Tamil Nadu	626	1462	5078	1.13	1.24	1.17
Kerela	649	1594	4618	1.07	1.08	1.37
Rajasthan	640	1263	4361	1.08	1.58	1.50
Assam	580	1174	4230	1.28	1.78	1.58
Madhya Pradesh	497	1280	4070	1.66	1.54	1.68
Orissa	550	1331	4068	1.40	1.44	1.68
Jammu Kashmir	566	1603	4051	1.33	1.07	1.69
Uttar Pradesh	501	1254	4012	1.61	1.60	1.72
Bihar	425	992	2003	2.14	2.34	2.92
National Average	674	1667	5583			

Source: National Accounts of Statistics in India and Monthly Abstracts of Statistics in India, various years, Central Statistical Office, New Delhi.

The role of public spending in the provision of essential infrastructure and in pump-priming activities in industrial as well as agricultural development is widely recognized, Patnaik (1972), Barness and Binswanger (1986), and Chakravarty (1987). These writers believe that the role of public investment in India is complementary to private investment. It is therefore expected that government spending in deprived regions will not only lead to direct income increase there but also stimulation of the private sector. In this way poor regions will embark on a self-sustaining path of economic devel-

opment. Bardhan (1984) strongly emphasises that public investment is a catalyst to promote economic development in backward regions of India.

Regional welfare weights calculated in this way may be of some help to Indian policymakers to prioritize the establishment of infrastructure and other projects in poor states. For example, the net present value of a public project considered in Rajastan may be multiplied by 1.50 (1991/92 welfare weight for that state, last column in Table 3) to improve its ranking in the overall public sector investment portfolio. If one of the objectives of the Indian government was to maximize social welfare by way of project selection then a state like Bihar would be given the highest priority. In this way, such weights could be used as part of the Indian government's regional policy tool kit to improve the position of the deprived states. This could also help the other states in a variety of ways. For example, it is well known that concentration of public and private sector investment projects in better off states is leading to rapid migration and consequently slum development, congestion, and pollution.

There is no reason why Indian states should not be divided up into further regions with different income levels and hence different welfare weights to establish further priorities within states. Similarly, welfare weights can also be calculated on the basis of gender, class, religion and ethnic origin with a view to targeting the most deprived sections of the community.

5. Conclusion

The use of distributional weights normally produces a systematic bias in investment analysis favoring projects that benefit the poor rather than the rich. This should not be regarded as being a distortion in the rational use of scarce resources, but rather a manifestation of fundamental socio-economic objectives of the community who may wish to consider equity and efficiency objectives simultaneously. Although welfare weights may or may not be decisive for any particular project choice, it is quite clear that this type of broader analysis will result in a pattern of decisions that would differ significantly from the one that would emerge if distributional considerations were continuously ignored. This does not mean that in determining the social value of public, or even private, projects appraisal standards would be diminished. On the contrary, the introduction of welfare weights into cost-benefit analysis involves a broader and more rigorous analysis than before that proposed projects meet more than one objective.

With the use of regional welfare weights the cost-benefit analysis will make the poor districts a much more favorable venue than the richer ones. In many countries priorities have already been given to poor districts on the basis of intuitive judgements. However, there is always a danger that these judgements may sometimes be exaggerated or may not apply to all districts

across the board. A systematic estimation of regional welfare weights based upon established economic principles and supported by objective facts such as income levels, real prices, and food consumption would encourage impartiality and consistency in decision making. In this way a government's concern with efficiency can be balanced against its concern for regional equity in such a manner that neither would be neglected.

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