

# THE EVALUATION OF SOCIAL COSTS AND BENEFITS

David Conn

## INTRODUCTION

Some members of the industrial marketing profession may not realise that their efforts in creating new markets and facilitating communication between producers and consumers are grist to the mill of economic theory. One example is that observed market prices are very often taken as measures of social value in benefit/cost analyses which purport to balance economic and social benefits against economic and social disbenefits.

Furthermore benefit/cost analysis is often used when a decision is to be made on the internalisation of social cost within an enterprise. For example, should a manufacturer be asked to pay for the cost of pollution to his neighbourhood – even though he is a provider

of needed employment for his neighbours?

In this article David Conn outlines, in an easily digestible form, some of the basic considerations and tenets used in the evaluation of social costs and benefits. We hope our readers will find time to read his article, even though it may appear that the subject is not directly relevant to “hard” industrial marketing, because the future repercussion of environmental laws, like the U.S.A.’s National Environmental Policy Act (NEPA) of 1969, on industrial processes (including marketing) is likely to be considerable.

The serious professional market analyst will at least learn something of the unfamiliar nomenclature in which the arguments for and against certain industrial processes are likely to be waged in the future.

Nearly half a century has passed since Pigou (1924) demonstrated the possibility of a divergence between private and social costs and benefits. The extent to which social costs can actually pervade a competitive market economy was first examined in a comprehensive but much-neglected study written by Kapp (1950). Nevertheless until quite recently the only apparent reaction was an attempt in the literature to develop the concept of externality as an adjunct to economic theory; even today, those applying economic analysis to actual decision-making have shown little sign of appreciating the enormity of distor-

tion which *could* possibly result from the failure of market forces to encompass all costs and all benefits.

Where a distortion does occur it is, arguably, the role of the government in a mixed economy to correct it; moreover the government should base its decisions on a full assessment of the consequences for all of those affected. The technique which is being developed for this purpose is cost–benefit analysis; the intention is to weigh the values of all the benefits of an action against all its costs.

In applying this technique the normal procedure is to use observed market prices where possible as measures of social value

and, where markets are either “grossly distorted” or non-existent (as in the case of “intangibles” such as amenity and health), to attempt to derive shadow prices – these are prices which equal marginal cost and thus correspond to those in the “ideal” competitive solution. Such a solution conforms to the criterion of Pareto optimality (meaning that one person cannot be made better off without someone else being made worse off).

This essay reviews a number of criticisms – conceptual and practical – of this method of evaluation. First, it is pointed out that the Pareto criterion is no more “inherently correct” than any other objective function, and that its use in practice has certain far-reaching implications with regard to equity and the distribution of wealth. Second, even if the Pareto criterion is accepted, it is likely that market prices are seriously distorted measures of social value owing to the pervasiveness of externalities; furthermore, the overall effect of a host of “small” decisions made by individuals in a market is likely to differ from that which would be preferred by the same individuals if given the chance to vote explicitly on the larger result. Third, the problem of introducing time perspective is outlined, and it is pointed out that the choice of discount rate in practice remains arbitrary, although it is often a critical factor. Fourth, even if all the previous criticisms can be disregarded, there is the question of whether social value is attached to the provision of the *means* of consumption (i.e. to the exchange process) rather than to the *process* of consumption itself, during which needs are actually satisfied.

The review makes one uneasy about the use of market prices for evaluating social costs and benefits, particularly when the possible environmental consequences of an incomplete or distorted analysis are considered. There would appear to be a case for attempting to devise an entirely new system of evaluation based on explicitly defined social objectives; an interesting example of such an approach, adopted by the United Nations Institute for Social Development, is described in the con-

cluding section.

## THE OBJECTIVE FUNCTION AND CONSIDERATIONS OF EQUITY

As Maass (1966) has pointed out, the terms “benefits” and “costs” are meaningful only with respect to a practical objective function. In a market economy the criterion is that of

Pareto optimality; but it must be understood that this criterion is no more “inherently correct” than any other objective function. As McKean (1968a) puts it: “There is nothing illogical about my not wanting individual *X* to maximise his utility as he sees it.” The attractiveness of the Pareto criterion lies in its seemingly widespread acceptability and its apparent simplicity of application, particularly if the view is taken that gainers have only to be *able* to compensate the losers in a change, with there being no necessity for actual payment of compensation.

Practical implementation of the Pareto criterion requires separation of the twin goals of efficiency and equity. Prime consideration is invariably given to the former, but there is really no justification for doing this: questions of equity and distribution undoubtedly *do* concern people; distributional considerations are frequently *not* negligible; and transfer payments (the “correction” usually advocated) are *not* costless to administer. In any case there is no “inherently correct” distribution of wealth derivable from the Pareto criterion itself, but in employing this particular objective function one in practice implicitly takes the existing distribution as acceptable. This is quite definitely a value judgement and must be recognised as such, together with all its implications:

(a) Comparing each pound to a money “vote,” it is evident that those with more money have more votes and therefore have a greater influence on the structure of relative prices (unless costs are constant). It may be noted that in order to exert a positive effect on prices one must have not only the *willingness* but also the *ability* (i.e. enough money) to bid in the market.

(b) Many people would claim that money has decreasing marginal utility, i.e. a pound means less to a rich man than to a poor man. If *willingness* (though here not necessarily *ability*) to pay in monetary terms is used to measure value in terms of utility, then a rich man’s valuation will always be (relatively)

overestimated.

(c) Economists take revealed preferences as datum, but the claim that prices paid in the market can be used as direct measures of social values implies that the satisfaction of all kinds of human needs should be given equal priority. The case for adopting this value judgement is weakened by the now widespread recognition that needs are quite frequently influenced by what is already possessed: indeed, existing possessions may give rise to entirely new needs. For example, a woman dressed in rags is likely to express less “need” for a mink coat than one who is elegantly dressed, while a car-owner may well express a “need” for auto accessories which would be of little use to someone who cannot afford any kind of vehicle. However, even if a different value judgement on priorities is preferred, there is at this time no way of weighting needs of “high” or “low” order.

Of these implications perhaps the first springs to mind most readily, but it is vital that the others are also recognised when the decision is made to accept the present wealth distribution. All three tend to bias an analysis in favour of the goods and services preferred by the rich. Some attention has been given to this problem in the literature, although in most practical cost–benefit studies it is virtually ignored. Among others, Weisbrod (1968) has proposed that an analysis be made of those who stand to gain or lose by an action according to their race, income group, etc., and that this be presented to the decision-makers so that they may introduce their own value judgements in modifying their conclusions. Maass (1966) considers that the political process should be used to establish “trade-off ratios” between the two objectives of efficiency and equitable distribution, *prior* to the analysis. As an alternative, some sort of weighting scheme might be derived by examining past decisions where projects have been selected despite their inferiority on straightforward efficiency grounds, assuming that this resulted solely from inclusion of distribu-

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In considering whether human welfare is related to a stock or to a flow, Boulding feels that both elements are involved, as for example, eating and being well-fed. He is

inclined . . . to regard the stock concept as most fundamental, that is, to think of being well-fed as more important than eating, and to think of so-called services as essentially involving the restoration of a depleting physic capital. Thus . . . we go to a concert in order to restore a psychic condition which might be called "just having gone to a concert" which, once established, tends to depreciate. When it depreciates beyond a certain point we go to another concert in order to restore it (Boulding, 1966).

On the other hand there is undoubtedly a demand for variety rather than just a constant state, satisfaction being derived also from the flow process itself.

If, however, it is indeed mainly "the capital stock from which we derive satisfactions, and not from the additions to it (production) or the subtractions from it (consumption)," then "consumption, far from being a desideratum, is a deplorable property of the capital stock which necessitates the equally deplorable activities of production" (Boulding, 1949/50). We should aim to maintain or increase our capital stock with as little produc-

tion and consumption as possible.

## THE SITUATION REVIEWED

It must now be clear that the case against using market prices for evaluation in cost-benefit analysis is strong. The issue most vital to consider, however, is the magnitude of the divergence of values based on market prices from the "best possible" social valuations for the purpose required. Most economists and cost-benefit practitioners, while recognising the shortcomings of the market approach, evidently consider that only a minor distortion will result from using it: they continue to base their evaluations on observed or shadow market prices in the hope that their conclusions — although admittedly not optimal — will at least represent "second best."

However, the situation here could possibly be analogous to that in welfare economies where it has been shown that the piece-meal application of welfare criteria will not in general lead to the best sub-optimal solution (Lipsey and Lancaster, 1956/57). Perhaps the use in cost-benefit analysis of market prices — imperfect measures of social values as they are — could lead to solutions which are very far from "second best."

The controversy was aired at a Brookings Institution conference. Even if "there are enough things wrong with observed prices to make one's hair stand on end," said McKean, (1968b), the "markets provide an enormous amount of information at a relatively low cost" and market prices "are usually better than the alternatives" — the costs of deriving better values would frequently outweigh the benefits. (One might ask, incidentally, on what basis McKean assesses *these* costs and benefits.) In reply, Margolis (1968) commented that "there is little merit to market prices, even if 'the system of markets is a fantastic information-generating device,' if the market prices are incorrect. If markets tell us nothing about externalities and too little about the future, then we would have little confidence in the prices they generated."

attention in the literature (e.g. Baumol, 1968), but it remains nevertheless a largely unresolved and formidable problem. On the assumption that people do discount future values, two possible rates are commonly discussed: the social time preference rate (STP) which is intended to measure directly the premium which the community is willing to pay in order to enjoy benefits now rather than later; and the social opportunity cost (SOC) which reflects the stream of social costs and benefits stemming from the best alternative investment projects in the private sector. Economic efficiency requires equality of the STP and SOC, implying that consumers' marginal rates of substitution coincide with opportunity costs; but in the real world they can never be equal owing to the existence of institutional constraints, taxes on business income, risk premia, etc. There is little agreement even in principle among economists as to which rate should be used in cost-benefit analysis, and some argue that both are relevant under different circumstances: the STP in connection with determining the optimum total level of investment throughout the economy, and the SOC in determining the distribution of this optimum level between the private and public sectors. At any rate, the divergence between the STP and SOC implies the necessity of some type of "second-best" solution.

Whichever type of rate is agreed upon, there remains the problem of putting a figure to it. It is widely recognised that, owing to the divergence of private and social costs and benefits, the SOC is unlikely to equal, and cannot therefore be derived from, the private opportunity cost even if this is known; similarly, the STP is unlikely to equal the risk-free private rate of time preference, even averaged over all individuals, because the future benefits from a public investment are likely to have collective-good characteristics. Furthermore it can be argued that there is no one figure for the STP, as people view the future differently when considering different items: for example, their material possessions

and their health.

In practice many economists are prepared to admit that their choice of discount rate is arbitrary despite the fact that it may prove a critical factor in the analysis. Projects (particularly those with a relatively long time horizon) may have a very attractive benefit-cost ratio if the rate of discount is 2%, but they may be clearly undesirable at a discount rate of 10%. In the U.K. most analysts are guided by the figure of 10% currently recommended by the Treasury and based on the SOC concept, although among others, Williams (1969) considers that the rate cannot justifiably be derived from the market. In his view the STP is the appropriate rate for use in cost-benefit analysis and "the determination of the community's time preference rate is a matter for the country's elected representatives to determine."

## CONSUMPTION AND THE SATISFACTION OF NEEDS

Already there are good grounds for feeling uneasy about the use of market prices in cost-benefit analysis, and yet the most fundamental objection is perhaps still to come. So far the notion has been left unquestioned that market prices will reflect the values which people place on goods and services because they satisfy their needs. On this assumption it follows that the greater the value of goods and services exchanged (i.e. the more goods and services purchased, or the higher the price paid for them), the greater the satisfaction derived; thus economic growth measured in terms of the increased market value of output represents something desirable. Boulding (1966) and others have pointed out, however, that while market prices refer to provision of the *means* of consumption, the actual *satisfaction of needs* (with which we are primarily concerned) is more likely to take place during consumption itself, often some considerable time after exchange and frequently over an extended period.

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## ENVIRONMENTAL CONSIDERATIONS

It is important to consider some of the consequences of failing to achieve "second best." The "spaceship" nature of the planet and its implications for resource utilisation have already been mentioned. Coddington (1970) has used a simple conceptual model to illustrate the interactions which exist between firms, households and the environment, and to point out the shortcomings of conventional economic accounting which involves only flows between firms and households. The Law of Conservation of Matter (nuclear transformations apart) dictates that matter which enters or leaves the economy in the course of production or consumption cannot enter or leave the total environment: it flows into the economy as natural resources and out as waste or debris, giving rise to what we call pollution. It may well be that depletion of irreplaceable resources and pollution must inevitably continue as the consequences of man's very existence or, as Boulding (1949/50) expresses it, that "civilisations are maintained only by the expenditure of irreplaceable capital." If this is the case and if pollution (for example) cannot be stopped completely, then it is absolutely essential to balance very carefully the value of benefits from, say, material goods against the (negative) value of the pollution which results. This, in effect, is the purpose of the "materials balance" approach adopted by Kneese *et al.* (1970) mentioned earlier. However, if evaluation is based on market prices it seems more likely, at least under present market constraints, that the costs of pollution will be understated rather than overstated relative to the benefits of material goods, since the shortcomings of the market approach already described will be aggravated by the fact that the effects of pollution are usually poorly defined, often cumulative and long-acting, and frequently have collective good characteristics; this makes it particularly difficult to assign shadow prices.

Until fairly recently it may not have been

too important if the balance at any particular time was distorted, for even the maximum damage to the ecological system resulting from man's action was (with, admittedly, some notable exceptions) small and often reversible. *Options* remained open. The recent tremendous developments in technology, coupled with the population increase, have now changed the situation. We are capable of making wide-scale and frequently irreversible changes in our environment, effectively closing options for the future. In the extreme, if we are in effect using up irreplaceable capital, one of the options which we may remove altogether is that of survival itself. The environment may deteriorate to the point at which it will no longer support life. The importance of achieving a near-correct balance is thus apparent, and it can be strongly argued that we should at least ensure that any distortion is in favour of preserving the environment; it seems that by basing our analysis on the market system, any bias would go the other way.

## AN ALTERNATIVE APPROACH

If market prices are unsatisfactory, then an alternative means of evaluating social costs and benefits must be developed in order to assess projects in practice. One approach which would appear to pay more direct attention to the satisfaction of needs has been developed by Drewnowski (1966 a,b) and others at the United Nations Research Institute for Social Development (1966), primarily for use in the so-called "developing" countries.

Conventional economic growth is seen, reasonably, as solely the means to an end – namely an increase in social welfare. "Every action that is undertaken to achieve some social and/or economic results must be judged by the criterion of its contribution to the increase of well-being." Twin concepts are defined: the Level of Welfare, which is "the state of well-being of the population existing at a moment of time" and is a *stock* concept

whose economic counterpart is wealth; and the Level of Living, which is "the satisfaction of needs obtained through goods and services enjoyed in a unit of time" and is a *flow* concept whose economic counterpart is national income.

Projects are assessed on the basis of maximising the impact of a unit of resources used on the Level of Living which, it is proposed, should be measured in terms of a "generally acceptable and well-established unitary index." This index, as it currently exists, is divided into basic needs and higher needs: the basic needs are sub-divided into physical needs – of which the components are nutrition, shelter and health, and cultural needs – of which components are education, leisure with recreation and security. The components of basic needs are measured by indicators expressed in physical units; the higher needs, which are not at present sub-divided, are measured by income remaining at the disposal of individuals once basic needs have been met.

The indicators are given indices "according to a formula which provides for a ceiling (full satisfaction level) and a floor (survival level) for each indicator;" the ceiling is related to the satisfaction of biological needs or the level achieved in advanced countries (notably the U.S.A.) and "generally accepted as satisfactory." The indices are aggregated into component indices using weights which "should represent the 'general consensus' of experts, based wherever possible on the technical characteristics of the indicators themselves, but sometimes also on the generally accepted judgements of the experts." These component indices are further aggregated into an overall Level of Living Index using weights which must inevitably derive from value judgements – possibly reflecting priorities established at the national level – for there is of course "no technical relation to be discovered in the relative significance, of, say, health and education for human welfare."

A number of criticisms can be levelled at this technique. Firstly, owing to the diver-

gence between economic and social welfare, one might dispute the assumption that the so-called "advanced countries" have the highest level of social welfare and that they should represent "targets" for developing countries. Secondly, one might question the relevance and potential of a method which does not at present distinguish between different "higher needs," for it is these which may well prove the most difficult to assess. Thirdly, one might object to the overtly subjective nature of much of the assessment and to the important role of so-called "experts;" as was pointed out earlier, the market process is far from value-free (value judgements are in fact being made all in the time), and it might be claimed as an advantage that these judgements are least made explicit in this approach. Indeed, if one is concerned at the individual's possible loss of influence, there is no reason why his views should not still be given weight, perhaps by using an acceptable political process both to establish the needs and priorities and to guide the value judgements. The notion of consumer sovereignty in a modern industrial state has in any case been seriously questioned (e.g. Galbraith, 1967), so that there would seem to be no *a priori* reason why the individual's effective power in guiding resource allocation should necessarily be diminished.

It is not claimed that the UNRISD approach will solve all the problems of cost-benefit analysis; its main purpose is to enable comparison of the social benefits from different projects. Resource costs, however, are still to be evaluated in terms of market prices – despite their shortcomings – on the basis that these provide some measure at least of the scale of allocation of resources to the satisfaction of various needs. Ultimately, perhaps, one can envisage the measurement of costs in terms of "negative benefits" or *subtractions* from the Level of Living Index. From Boulding's comments quoted earlier it might, incidentally, appear more appropriate to base the Index on the stock rather than the flow concept, and it is of interest to note that



a Level of Welfare Index has now been proposed (U.N. Research Institute for Social Development, 1969).

## CONCLUSION

To sum up: since a truly optimum solution to the problem of evaluation for cost–benefit analysis cannot be attained, the key issue lies in choosing the approach which will give the next best solution. The probability of a catastrophic outcome such as total environmental destruction *may* be very low, but the potential damage is so great as to be incapable of meaningful evaluation using normal analytical techniques. On the basis of existing knowledge it is admittedly impossible to say how great a distortion will result from the shortcomings of the market approach, but there is reason to fear that the bias will be in the “wrong direction” and arguably we simply *cannot afford* to take the risk that this signifies. In looking for an alternative method of evaluation which errs rather on the side of preservation, there is conceptually much to be said for an approach which seeks from the outset to examine directly the satisfaction of needs.

## L'Évaluation des Coûts et Bénéfices Sociaux

Certains membres de la profession Marketing Industriel ne réalisent pas toujours à quel point leurs efforts en vue de créer de nouveaux marchés et de faciliter les communications entre les producteurs et les consommateurs sont essentiels pour la théorie économique. Citons pour exemple le fait que les prix du marché sont très souvent utilisés comme moyen de mesure de la valeur sociale dans les analyses de bénéfices/coûts qui tendent à équilibrer les bénéfices économiques et sociaux et les coûts économiques et sociaux.

De plus on utilise souvent l'analyse des coûts et bénéfices pour prendre une décision

sur l'internationalisation des coûts sociaux dans une entreprise. Ainsi, un fabricant doit-il verser à la région le coût de la pollution alors qu'il fournit les emplois nécessaires à cette même région?

David Conn met en relief dans le présent article de façon claire quelques unes des considérations et des principes fondamentaux utilisés pour l'évaluation des coûts et bénéfices sociaux. Nous espérons que nos lecteurs trouveront le temps de lire cet article bien que le sujet puisse leur paraître un peu éloigné du marketing industriel. Nous l'espérons d'autant plus que les lois sur l'environnement (aux Etats-Unis, le National Environmental Policy Act de 1969) amèneront sûrement des répercussions considérables sur les procédés industriels, le marketing y compris.

Grâce à cet article, l'analyste de marché se familiarisera avec une nomenclature qui lui est parfois étrangère et qui sera pourtant utilisée à l'avenir pour discuter des avantages et inconvénients de certains procédés industriels.

## Zur Bestimmung sozialen Schadens und Nutzens

Einige Angehörige des Industriemarketing-Bereiches mögen nicht erkennen, daß ihre Bemühungen, neue Märkte zu schaffen und die Kommunikation zwischen Produzenten und Konsumenten zu erleichtern, Wasser auf die Mühle der ökonomischen Theorie bringt. Ein Beispiel dafür birgt die Tatsache, daß oft beobachtete Marktpreise als Maßstab sozialen Wertes in Bezug auf Schaden-/Nutzen-Analysen betrachtet werden, die ökonomische und soziale Vorteile und ökonomische und soziale Nachteile im Gleichgewicht halten sollen.

Ferner wird die Schaden-/Nutzen-Analyse oftmals praktiziert, wenn eine Entscheidung über die Internationalisierung sozialer Nachteile innerhalb eines Unternehmens getroffen werden muß z.B. in dem Fall, ob ein Fabrikant aufgefordert werden sollte, für die Umweltverschmutzung zu bezahlen, obwohl er

für die notwendige Arbeit seiner Nachbarn sorgt.

In dieser Abhandlung hebt David Conn in leicht verständlicher Form Überlegungen und Grundsätze hervor, die für die Bestimmung sozialen Schadens und Nutzens grundlegend sind. Wir hoffen, daß unsere Leser Zeit finden, diese Abhandlung zu lesen, obgleich es den Anschein haben mag, daß der Betrachtungsgegenstand nicht direkt für das eigentliche Industriemarketing relevant ist. Dennoch dürfte der Widerhall der Umweltgesetze, wie das Nationale Umweltgesetz (NEPA) der Vereinigten Staaten aus dem Jahre 1969, in Bezug auf industrielle Verfahren einschließlich Marketing beträchtlich sein.

Der Marktanalytiker erfährt in dieser Abhandlung einiges über die unvertraute Nomenklatur, auf welcher Argument für und wider gewisse Industrieverfahren in der Zukunft basieren dürften.

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