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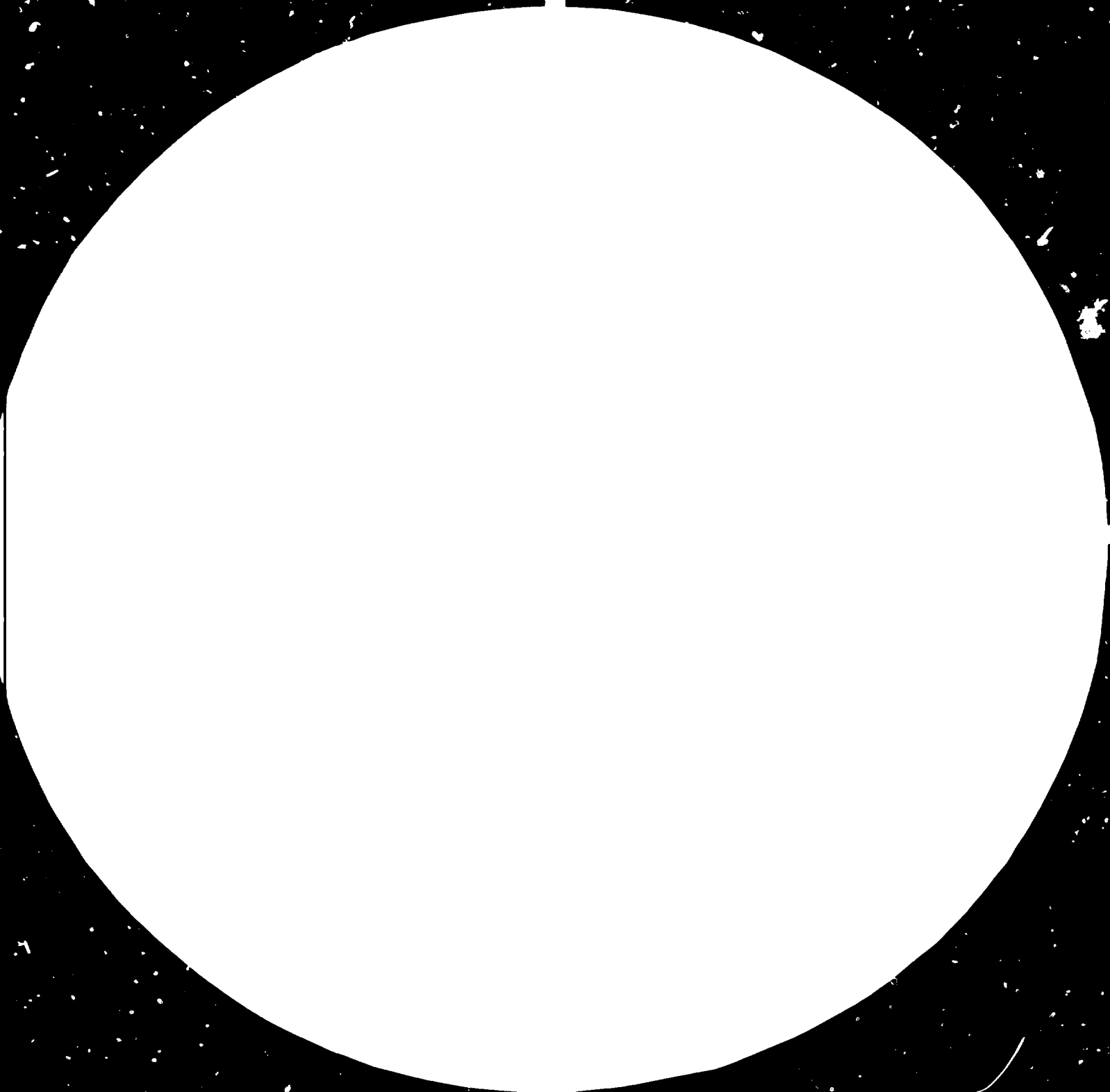

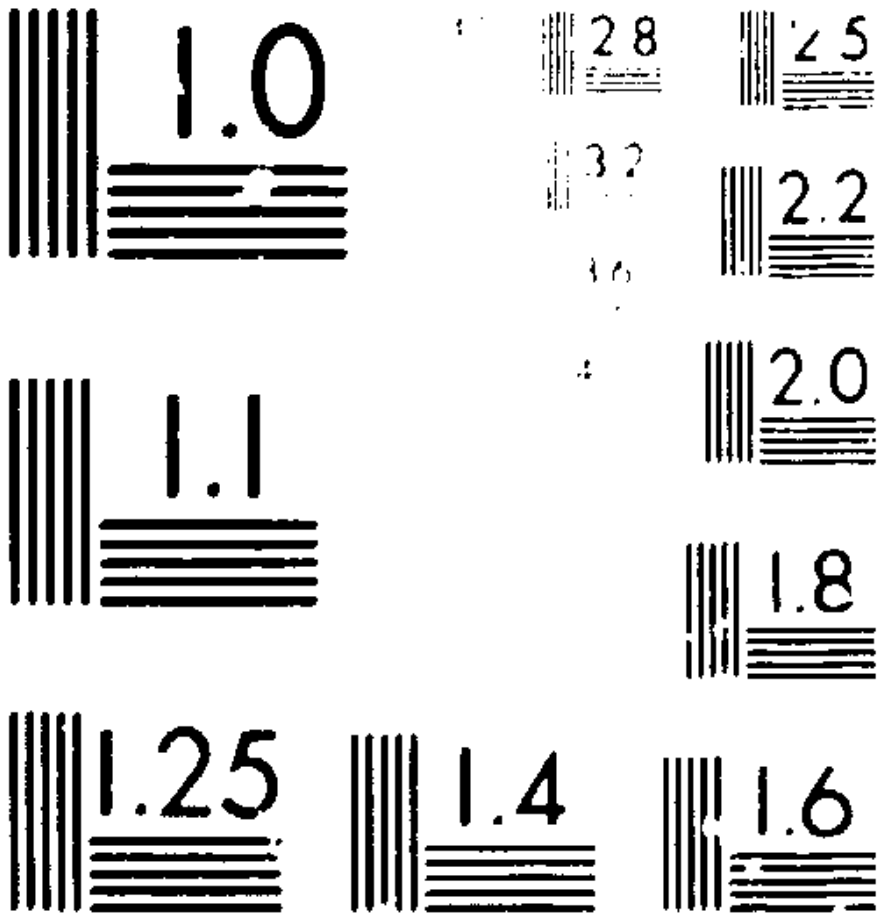

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HOW 'SCIENTIFIC' IS COST-BENEFIT ANALYSIS?*

by

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1. From the point of view of economic analysis perhaps the most awkward aspect of investment decisions is the fact that considerable uncertainty regarding the future surrounds all such decisions. Actuarial calculations on the basis 'expected value' is possible only when there is some knowledge or belief about the probabilities of various outcomes, but investment in long-lived industrial projects typically involve parameters about whose likely values we simply do not know. As Keynes reminded us long ago: "About these matters there is no scientific basis on which to form any capable probability whatever. Nevertheless, the necessity for action and for decision compels us as practical men to do our best to overlock this awkward fact and to behave exactly as we should if we had behind us a good Benthamatic calculation of a series of prospective advantages and disadvantages, each multiplied by its appropriate probability, waiting to be summed" [1/]. What emerges from such decision "rules" in the face of uncertainity is a set of conventions which pretend to have a scientific basis, but actually are mere conventions for action. The entire set of decision 'rules' related to investment in long-lived industrial projects - the pay-off period, the recoupment period, internal rate of return calculation and the private or social cost benefit analysis [2/] - strikingly illustrate how economic conventions can often be presented as precise scientific calculations.

2. The first point to note therefore is that pervasive uncertainty robs all investment criteria of their scientific status. Some of the crucial parameters in the calculation are likely to change over the future years in a totally unpredictable way about which we know nothing. And in so far as the results are sensitive to such unpredictable parametric changes - e.g., the likely date of breakthrough in energy substitute or the rate of interest twenty years hence - these calculations cannot provide a logically firm basis for action. Of course, we may still use them as conventional basis of action. But, then those calculations have the same status as conventions devoid of compelling logical reasoning.

1/ J.M. Keynes, 'The General Theory: fundamental concepts and ideas', Quarterly Journal of Economics, Vol. 51, 1937 p. 211.

2/ These are analytically interrelated criteria, as any standard treatment of the subject shows e.g. P. Massé', The Theory of Investment Decisions.

3. Social conventions often evolve to give cohesions to a society. Conventional judgement about economic uncertainty also serves the same function in many instances. "The psychology of a society of individuals each of whom is endeavouring to copy the others leads to what we may strictly term conventional judgement",[3] which typically rules say, the overall sentiment of a stock-exchange market. Nevertheless, conventions set for economic analysis of evaluating long-lived projects have an additional dimension. How each "actor in the play" decides to follow a particular set of conventions necessitated by uncertainty remains an open question. Those participants who have a stronger position of bargain (e.g. the aid/load giver in the financing of projects) may be able to set the conventions that the weaker party has to accept not because one is better informed than the other, but simply because one party has a superior bargaining position. The wide acceptance of 'cost-benefit analysis' as the criterion of project evaluation follows precisely from this fact. It is not a matter of "conventional judgement" arrived at by both sides, but often an imposition or setting of convention by the party with superior economic position. Thus, private or social cost benefit analysis today has an unquestioned "scientific" status only because the financing agencies largely agree on this convention which has to be accepted by the borrowing developing country in a weaker position of bargain.

4. This point may be illustrated by two telling examples. Use of <u>existing</u> international prices in project evaluation (for directly and indirectly traded goods) as recommended by an influencial OECD manual on the subject entails that projects have to be viable in terms of the existing pattern of international division of labour. Developing countries trying to industrialize precisely to alter the existing pattern of international division of labour simply have no logical reason to accept such procedure for evaluation.[4] Yet, they often conform to it only to convince their financiers who set the procedure.

3/ Keynes, <u>opcit</u> p. 211

4/ Indeed, it is a logically contradictory position to maintain that industrialization of developing countries is needed to alter the existing pattern of international division of labour and at the sametime, to accept international prices in industrial project evaluation, as those prices reflect precisely the existing pattern of international division of labour.

A second example relates to the recent developments in international finance. Since the total breakdown of the Bretton Woods System of exchange parity, externally financed projects have been exposed to serious uncertainty of exchange rate fluctuations as well as interest rate fluctuations. In 1973, only about 28 percent of the total outstanding loan of the developing countries were on a flexible interest basis (i.e. an agreed 'spread' on the fluctuating LIBOR or American prime rate), while in 1980 that share rose to over 60 percent. In the meantime, American short rate has risen from a meagre 5-6 percent in 1974-75 to 19-20 percent by 1980-81. Similarly, exchange fluctuations have been wide and unpredictable. And yet, private or social cost benefit analysis of externally financed industrial projects continue the convention of "scientific calculations" to justify or reject projects without taking into account the fact that a project may be viable at certain configurations of interest/exchange rate and not at others. Since such movements in interest and exchange rate are uncertain for any individual borrowing country, it again has no compelling logical reason to accept cost benefit analysis as the basis for evaluating industrial projects. But, again, such a country tends to conform only because external financing of the projects typically requires this.

5. What appears to be even worse is that these conventional procedures are not even uniform for all. There are plenty of examples when a national government acting as a lender through multilateral agencies or bilateral negotiation does not even follow the same procedure at home. Thus, one would like to know how much of armament expenditure or public works at home by major lending countries are justified in terms of explicit cost-benefit calculations. If cost-benefit analysis were logically sound, then that logic should have been the same for everyone. But it hardly appears to be the case - those who set the convention for others do not seem to follow it themselves in many important instances.

6. The lesson to be drawn is obvious: since a convention does not necessarily have scientific status, it should not be allowed to impinge on the economic autonomy of nations. There should be a mutual acceptance of such autonomy between the borrower and the external lender, that should never be sacrified in the interest of applying scientifically unfounded conventions. And, in at least two fundamental respects social cost-benefit analysis is scientifically unfounded. First, the method does not cope with uncertainty in any satisfactory manner, while long lived investment projects are necessarily surrounded by uncertainty. Secondly, the very idea of 'shadow' or 'accounting' prices merge as 'duals' associated with an efficient output programme.[5/] Hence, the two are <u>simultaneously</u> determined in a logical way, where information regarding one (i.e. prices) cannot be used to determine or derive information regarding the other (i.e. outputs). There is no basis even in conventional economic or programming theory to make use of accounting prices without <u>simultaneously</u> determining the output path. But social cost benefit analysis has never been able to provide a logically satisfactory answer to this problem.

7. One conceivable way to allow for project evaluation within the framework of national project evaluation within the framework of national economic autonomy is to follow three broad principles:

(a) It should be cost effectiveness rather than cost benefit analysis. Thus the borrowing country autonomously decides what to produce i.e. the output composition, while the least cost method for producing the <u>given</u> output is identified through evaluation procedures. In other words, the 'benefit' side is left to the judgement of the borrowing country/agent, while the 'cost' side is investigated into in greater detail.

(b) International cost "norms" may be compiled and, if an individual borrower intends to deviate too much from it, the burden of justification or explanation may fall largely on the borrower in an attempt to convince the lender. This will essentially take care of 'efficiency arguments' in negotiating and monitoring external loans.

5/ Provided the 'production set' has the required 'convexity properties' ruling out increasing returns to scale in static and dynamic senses.

(c) Maximum effort should be made to ensure programme lending over a specified number of years rather than lending tied to individual projects. This will tend to ensure the "critical minimum" size of an interconnected investment programme (taking into account external economies), so that international cost norms would not simply be used to inhibit countries with poor infrastructure facilities or lack of related investment facilities. Commitment to programme lending over a stipulated number of years would also help to reduce one of the main uncertainties in the area of external financing for industrialization.