MARKET IMPERFECTIONS, SOCIAL COSTS OF STRIP MINING, AND POLICY ALTERNATIVES: COMMENT

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It is appropriate to challenge the validity of the proposition that the market mechanism can deal with the difficult problem of environmental damage, as the authors of the paper have done. The very nature of externalities, not being subject to the constraints of internal cost considerations, make such a proposition, especially in the case of coal mining, truly absurd.

Additionally, the questions raised concerning the projections for energy requirements in the U. S. and World economies are most appropriate. In fact, much of the current demand has been generated by the promotion of and competition between the various energy suppliers. On the other hand, the critical shortage of electric generation capacity may be traced to the conservative investment attitudes of utility executives and their hesitancy to build additional capacity based on their own companies' optimistic projections of demand of five to ten years ago.[1] Thus we have had shortages of electric power when the projections came true and the companies were "caught with their generators down."

Some questions must be raised with respect to the authors' basic assumption that people are willing to pay (directly from their own pockets) to decrease or eliminate external costs. Even among individuals that are relatively well-informed on environmental problems, we find discussions of altering automotive air pollution control devices to increase gas mileage by reducing their pollution-controlling capability[2] and reluctance to use non-polluting detergents because "they don't get my clothes as clean.[3] The population seems willing to treat pollution control in the same category with apple pie, motherhood, and the Flag until they feel the direct impact on their family budgets.

The author's graphical analysis of cost/benefit comparisons in reclaiming stripped land is not original, but is based on earlier work on externalities done in the late 1950's and early 1960's. In fact, several authors including Crocker and Rogers[4] and Fusfeld[5] have recently presented virtually identical techniques to evaluate the benefits and costs of environmental restoration. A basic assumption underlies these analytical methods: that the valuation of benefits and costs remains the same regardless of who owns the property rights and how the income is distributed. This may be shown to be in error by considering the value placed on various social costs by the rich or wealthly as compared to the value as perceived by the poor for the same externalities. The loss of life or working time due to pollution or unhealthy working conditions are clearly more costly in terms of dollars when sustained by affluent businessmen as compared to the same losses suffered by laborers. A man who cannot afford to pay much for the pleasure of seeing stripped land restored or clean water reclaimed places a lower value on the loss of these things than his more affluent neighbor. If environmental property rights are vested in the coal mining areas, income is likely to rise significantly and higher values will be placed on the social costs caused by coal stripping, with a consequent shifting in the functional relationship between losses and acres restored rather than the static situation portrayed in Figure 1 and the accompanying description. However, if the property rights are reserved for

the coal companies, a much lower level of environmental protection is likely.

Naturally, all of the cited theoretical approaches (including the analysis presented in the subject paper) face the practical difficulty of actually quantifying the environmental costs and benefits before they can be applied to the problem of controlling externalities in the real world. The design and executive of the techniques to quantify and measure the various socio-economic parameters seems to be a more worthy endeavor than the presentation of still more economic models that will require such data to implement. Some notable work in the area of measuring social benefits and costs has been published by Ridkero, Henning[7], Kneese[8], and others.

Two of the authors' assumptions concerning their proposed model must be seriously questioned:

> "(1) that none of these costs can be passed on through higher prices for strip-mined coal because deep-mined coal is a nearly perfect substitute."

This assumption ignores the fact that strip-mined coal is considerably cheaper to obtain than underground coal with the current mining technology. U.S. Bureau of Mines data for various years indicates a favorable cost differential of about $1.50 per ton F.O.B. mine for stripped coal versus underground coal.[9] The cost differences provides a substantial margin to offset the increased costs involved in controlling environmental damage due to coal stripping.

> "(2) that the number of strip mining firms remains unchanged."

The assumption is highly unlikely in light of the larger number of marginally profitable coal mines, and the closings encountered whenever any new costs are forced upon all coal mining firms in a given region.[10]

Perhaps the major criticism of the authors' conclusions is not their offering of four potential courses of action relative to the control of external costs associated with coal stripping, and their proposal for the selection of an optimal method of control, but their failure to specify the level of which an optimum solution will be assessed. Clearly a true optimum would treat each strip mine as a separate problem, and prescribe standards, taxes, closing, or even no action as the appropriate solution based on the specific benefits and costs of the individual case. Such an approach would bear a very high investigative and administrative costs, and be conductive to bureaucratic problems that in themselves could be more costly than the ills they would be prescribed to cure. A regional optimum might appear appropriate for the region as a whole but could be expected to cause the enforcement of standards or taxation that might be inappropriate for the individual or local situation. A national solution would contribute additional inequities between regions as well as individual mines, although appearing to be optimal from the national viewpoint.

This leads to my final point of criticism -- concerning the authors' "paradigm" or conception of reality that underlies the analysis of the paper: that coal mining is and will continue to be privately owned and externalities must be forced back on the owners through government action to obtain a true socially and economically optimum solution. The alternative paradigm considers that the internalization of the perceived externalities as well as redistribution of income might be more efficiently carried out through the socialization of the coal industry under community ownership and control. Since the community itself bears the major burden of social costs, ownership and

control of the offender by the local community would automatically internalize external costs as important operational criteria.

FOOTNOTES

[1]Based on discussions with utility company marketing research personnel and private consultants hired to do demand studies for various utilities in the Eastern and Southeastern United States.

[2]Based on discussions with various colleagues in the Economics profession and other academicians with concern over rising costs of automotive operations.

[3]Based on discussions at various consumer meetings and complaints from housewives in various consumer journals.

[4]Crocker, T. D., and Rogers, A. J. III, Environmental Economics, Hinsdale, Illinois: The Dryden Press, Inc., 1971, 150 pp.

[5]Fusfeld, D. R., Economics, Lexington, Massachusetts: D. C. Health and Company, 1972, Chapter 43, "The Economics of the Natural Environment," pp. 821-837.

[6]Ridker, R. G., Economic Costs of Air Pollution: Studies in Measurement, New York, New York: W. E. Praeger Publishing Company, 1967.

[7]Ridker, R. G. and Henning, J. A., "The Determinants of Residential Property Values with Special Reference to Air Pollution," in The Review of Economics and Statistics, Vol. 44, No. 2, May, 1967, pp. 246-257.

[8]Kneese, A. V., and Bower, B. T. (Editors), Environmental Quality Analysis: Theory and Methods in the Social Sciences, Baltimore, Maryland The Johns Hopkins University Press, 1972, 424 pp.

[9]Data presented in the U. S. Bureau of Mines, Minerals Yearbooks, 1968 edition, Table 45, page 370, indicate an average cost differential of $1.50 per ton between coal mined by stripping ($3.68/ton) and underground methods (5.18/ton) in 1967 and $1.47/ton between stripped coal ($3.75/ton) and underground methods ($5.22/ton) in 1968 for the United States as a whole. Since most metallurgical coal is mined by underground methods, and this type of coal is somewhat more expensive per ton due to variations in supply and demand for metallurgical versus stream-grade coal, a check with local mining firms in the coal fields of Alabama provided an estimated cost differential of $0.90 to $1.22 per ton in favor of stripped versus underground coal mined and sold for fuel in electric power generations.

[10]Recent experience in the State of Alabama relative to the newely imposed health and safety regulations (1970 and 1971) indicates a significant impact on the number of operating mines due to the additional costs of meeting health and safety standards.