

Comment on "Economic Analysis of Nonrenewable Resource Supply: An Overview"

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The energy crunch of 1973 stimulated a great deal of economic research on energy and non-renewable resources. We have learned something in the intervening twelve years, but it appears that there has been uneven progress which has produced asymmetry in our understanding. It seems that we have developed a substantial body of knowledge about the demand side of these markets but considerably less about the supply side. Michael Toman's paper provides an overview of what is known about nonrenewable resource supply, identifies areas in which progress has been disappointing and suggests promising avenues for future research.

A noteworthy criticism of the theoretical approaches to nonrenewable resource supply is the amazing reliance on Hotelling's r percent rule. Toman points out that this Malthusian approach to scarcity is inappropriate if there is development of new reserves or if there is technological change in resource extraction. A Richardian user cost which incorporates these two factors is more appropriate for most applications and hence we can expect the net price to grow at a slower rate than the interest rate.

A notable criticism of the empirical research on nonrenewable resource supply is the reliance on aggregate analysis and failure to follow the rest of economics in emphasizing the collection and analysis of micro (individual firm) data. Toman notes that micro simulation models are a first step in making progress on this limitation. Also, he notes that the link between theory and empirical work may be weaker than in other areas of economic research.

Uncertainty in discovery and extraction costs deserves more attention in modelling resource supply in Toman's view and he has several suggestions. If we take a moderately long-run approach, then in addition to Toman's suggestions we ought to recognize that government regulation, tax treatment and overall policy are important sources of uncertainty which can be expected to affect firm supply decisions. Perhaps a supply model which incorporates a Stigler-Peltzman positive theory of regulation would deal with this part of supply uncertainty; see Peltzman (1976). Toman observes that the extractive sector has more and more varied government controls and interventions than most other sectors. Another concept which can be incorporated into models which yield optimal rates of extraction under certainty is that of consumer option values for reserves; see Smith (1983). Ideally this value of reserves would be considered in supply decisions.

All in all, this paper provides us with a valuable report on progress on nonrenewable resource supply. There is, of course, more to be said on this topic and for that we should read his book!

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REFERENCES

- Peltzman, Sam. "Toward a More General Theory of Regulation." *Journal of Law and Economics* 19 (1976): 211-248.
- Smith, V. Kerry. "Option Value: A Conceptual Overview." *Southern Economic Journal* 49 (January 1983): 654-668.
- Bohi, D. and Toman, M. *Analyzing Nonrenewable Resource Supply* (Washington, D.C.: RFF, 1984).