# DECISIONMAKING ON THE CONSERVATION RESERVE: DISCUSSION

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Reichelderfer and Boggess have presented interesting analyses of some of the major issues involved in Congress' latest experiment in intervention in the farm sector. The two papers constitute a complementary yet contrasting pair. Both focus on decision analysis of the conservation reserve. Boggess presents a model of farm level decision making while Reichelderfer models the decision making of program managers. The two authors present conceptual models and generate an agenda of future research.

First some comments on the paper by Boggess will be made. Boggess presents a set of equations for calculating the break-even bid on acreage placed into the conservation reserve. Basically his model compares agricultural income including deficiency payments, crop insurance indemnities, etc. with the net income from conservation reservation participation. He does a good job of meticulously laying out the host of factors affecting foregone agricultural income versus conservation reserve income.

I would suggest two other factors worth considering. First, at the end of the 10 year lease period there will be a cost associated with converting conservation reserve land back to farmland, particularly if it is planted in trees. For example, I have seen some recent estimates of the cost of clearing forested land in North Carolina in the neighborhood of $100-150/acre (Healy). Such a conversion cost could be easily included in the framework proposed by Boggess.

Second, it may be worthwhile to consider after-tax rather than pre-tax income. This is particularly important if the conservation reserve acreage is planted in trees, because of the differential taxation of agricultural and timber income. Timber producers benefit from various tax breaks including reforestation and resource depletion provisions.

Boggess proposes using the equations given to calculate a breakeven bid for enrolling in the conservation reserve. He then suggests a number of sources of uncertainty without trying to introduce those explicitly into the bid.

I would like to suggest a possible way for considering risk in the bids. Basically, this would involve calculating certainty equivalents for growing crops on the acreage in question. To do this would require viewing the conservation reserve income as nonstochastic. I think this is not too bad an assumption to make because the conservation rental rate is locked in for ten years and I am not aware of large fluctuations in hunting leases which are the other major source of income on conservation reserve land.

This certain income from the conservation reserve would be compared to the stochastic income from producing crops on the acreage. First, a

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probability distribution of the net present value of agricultural income would be constructed using equation 2 from Boggess for commodity program participation. This would require a forecast of probability distributions in future time periods which is no easy task, or an assumption that the probability distributions will be stable over the decisionmaking time horizon. Allowing key variables to be stochastic and correlated where appropriate, a Monte Carlo simulation model could be used to generate a probability distribution of the net present value of net returns from growing crops rather than enrolling in the conservation reserve.

How much should a risk averse farmer be willing to bid on the conservation reserve? His or her breakeven bid with risk could be thought of as the certainty equivalent for the risky prospect of growing crops. To solve for the certainty equivalent would, of course, require imposing particular risk preferences. By varying the degree of risk aversion, the sensitivity of the certainty equivalent bids to risk preferences could be determined. The dispersion of risk preferences may be one of the reasons for the reported wide range of bids within localized areas. This is a case where Antle's proposal for estimating the distribution of risk preferences could be very helpful.

In the second paper, Reichelderfer has presented a very different view of the conservation reserve. Her decision model is for the conservation reserve program managers rather than farmers. She argues that it is time to depart from policy analysis which ascribes the same goals to farmers and program managers. I support her argument, although I am not sure that the goals of these two groups have ever been coincident. However, there clearly is more reason to argue for a divergence of goals now than in the past. In addition to responding to budget cutting pressures, program managers must respond to the political pressures of diverse interest groups.

This is clearly evident in the conservation reserve provisions of the Food Secutiry Act of 1985. Political forces merged the goals of supply control and soil conservation into one program. While the merger of these two goals has happened in the past, most notably in New Deal farm programs, the weight attached to the soil conservation goal appears much higher now, judging from the level of activity of conservation and environmental groups on the 1985 Farm Bill. (For a discussion of the changing policy arena for agricultural and environmental issues, see Batie, et al.)

In light of these multiple and to some extent conflicting goals of the conservation reserve, Reichelderfer proposes a dynamic, multiattribute utility model of program manager behavior. My understanding is that the ultimate purpose of her effort is to develop a decision aid for program managers, so I would like to propose some ways to develop an empirical model from her conceptual model.

One seemingly straightforward approach would be to interview program managers and elicit multiattribute utility functions following procedures outlined by Keeney and Raiffa. However, when I see the complexities of this approach in the study by Herath, Hardaker, and Anderson of rice farmers in Sri Lanka, I have doubts about the fruitfulness of this approach. Even with their assumption of only one random variable, the elicitation process was quite involved. Adding the large number of random variables affecting the performance of the conservation reserve would likely render this approach intractable.

Is there an alternative way to implement Reichelderfer's model without eliciting multi-dimensioned utility functions? There are several including the approach of the Rausser and Yausour study. I will briefly discuss another approach: a programming model based on lexicographic ordering. I think this approach is worth considering because of its intuitive appeal.

Briefly, an application of lexicographic ordering implies maximizing the least important goal subject to achieving satisfactory levels of all other goals. Applying this approach to conservation reserve management would require asking the program managers to rank the goals of the program, e.g. increase soil conservation; reduce supply of major crops; and keep program costs at a reasonable level. The program managers would then be asked to provide satisfactory levels of each goal. Then a mathematical programming model could be constructed to reflect the elicited orderings and satisfactory levels.

Agricultural economics have had less experience with lexicographic models than many other decision models, although this was one of the models used in the classic Lin, Dean, and Moore study. In one recent application, Markley reported some success using a lexicographic model to explain the portfolios of different types of rural banks. Bankers she interviewed noted the similarity of the lexicographic approaches' goal ranking and setting of satisfactory levels to the rules of thumb they used in managing the banks portfolio.

I would be remiss if I neglected to point out that there are some nontrivial shortcomings of the lexicographic approach. Namely, no tradeoffs are allowed among goals and no value is attached to levels of attributes above their satisfactory levels. Despite these shortcomings, I think a lexicographic model might prove to be a useful decision aid to help conservation reserve program managers rank goals and develop strategies for achieving program targets.

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