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ENVIRONMENTAL HAZARDS OF FARMING: THINKING ABOUT THE MANAGEMENT CHALLENGE: DISCUSSION

E. Jane Luzar

As the farm financial crisis of the 1980s has faded from our collective short-term memory, agricultural economists have turned their attention to what may emerge in retrospect as *the* agricultural crisis of the decade: the environmental hazards of farming. Given this financially healthier farm economy, environmental issues long associated with farming are surfacing as areas of key concern in the debates shaping the 1990 Food Security Act. As a result, Shabman's thoughtful paper on the management challenges presented by the environmental hazards of farming is not only timely, but also potentially influential as an input in the ongoing policy process.

Shabman has developed two economic "touchstones," one more familiar to economists than the other, to describe the role economists can play in the management of environmental farming hazards. While this paper briefly discusses the more familiar Expected Net Benefits Rule as an economic touchstone, it focuses attention on the less familiar concept of Resiliency as an economic touchstone. Questions raised by Shabman, including:

- Is risk assessment a science?
- Is voluntary risk a meaningful concept?
- Is it a meaningful concept in agriculture? and
- Is progress a meaningful concept?

play a central role in determining which touchstone economists adhere to and promote as a basis for their contribution to the agricultural policy process. Shabman has, however, duly noted that the inherent subjectivity of any economist's perspective on these largely noneconomic concepts will bias the choice of touchstone. With this caveat in mind, and with a noted lack of professional consensus regarding environmental risk assessment, it is possible, if not likely, that the economic contribution to managing the environmental hazards of farming will be ill-focused and hence ultimately trivialized in the immediate policy process.

EXPECTED NET BENEFITS RULE: AN ECONOMIC TOUCHSTONE?

As Shabman has noted, the environmental hazards of production agriculture extend beyond simple cultural practices determining the use and fate of agricultural chemicals to include restructuring and controlling nature from its essential genetic level to altering entire ecosystems. This is correctly expressed as a metaphor for all technological change and associated perceived hazards. Regulation of technological hazards, including those associated with agriculture, is based largely on anticipated effects. As economists, our domain in this assessment may be defined as anticipated social welfare effects.

Risk assessments in agriculture made using the Expected Net Benefits Rule only serve to illustrate much of what is frustratingly inconclusive about economic attempts to assess or value social welfare. In order for risks to be understood and risk acceptance to be voluntary, risk markets must not fail. The research program that underlies the Expected Net Benefits Rule approach to the economics of risk management parallels and builds upon existing market failure research and the nonmarket valuation of natural resources. As an extension of this research program, it faces the same unresolved issues, such as the validity of hypothetical markets and the actualization of potential pareto-improvements as an economic compensation rule.

In addition, the Expected Net Benefits Rule approach requires critical noneconomic inputs in the form of quantification of the extent and likelihood of harm. This final input into calculating expected net benefits is in itself enough to generate substantial skepticism. Shabman has reported one example of the potential cultural bias associated with risk measurement and quantification: depending upon on which continent the analysis is conducted, results may vary dramatically. In an era of internationalization in agriculture and realization of global environ-

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mental hazards, this knowledge is unsettling. Unfortunately, this case of potential cultural bias is only one example of the myriad problems that confront researchers attempting to quantify the basic scientific inputs needed to quantify the likelihood of harm.

Given requirements of voluntary risk bearing, the unknowns of irreversibilities, and latent effects, together with the economic analytical limitations of the Expected Net Benefits Rule approach, it is not surprising that economists can muster the same neo-classical efficiency logic in support for or against this approach to risk management. While the rhetoric of economics makes for a pliable policy instrument, this ability to muster the same economic logic *for* or *against* the Expected Net Benefits Rule approach to risk management is potentially a limiting factor in economists' effectiveness in the public policy process (McCloskey, p.31).

RESILIENCY AS AN ALTERNATIVE ECONOMIC TOUCHSTONE

The concept of Resiliency has also been proposed as an alternative economic touchstone for the management of the environmental hazards associated with farming or, in keeping with the earlier discussion, general technological hazards. Resiliency argues for the capacity to cope with unanticipated dangers *after* they have become apparent, "learning to bounce back" (Wildavsky). This approach to risks capable of altering genetic structure or destroying globally significant ecosystems hints at naivete, but Resiliency is being associated with the currently popular, if ill-defined, concept of sustainable agriculture. This experimental, trial and error approach requires a societal attitude far different than what has evolved as the norm, one which according to Raiffa is a "more experimental societal approach, a more adaptive approach. We need to remain loose, flexible, and resilient" (Raiffa, p. 339). In this loose, flexible society envisioned by proponents of Resiliency, learning errors are welcome, as long as they are *small* and not cumulative. Again, the environmental costs associated with *small* genetic learning errors are potentially infinitely large.

Resiliency proposes a somewhat unholy marriage of key evolutionary principles with more traditional, market-oriented economics. The evolutionary perspective that sees technological change as a defining feature of human progress can be viewed as a supporting argument for Resiliency and weak risk aversion. It can, however, also be suggested that this view of technological change as the defining feature of human progress is itself culturally bound, if in-

deed it is the evolutionary perspective to recognize that error will be made and corrected, this is correct. One must consider, however, that from a historical, cross-cultural perspective, the cost or form of this evolutionary process has been species and cultural extinction. Placing primary dependence on the institution of markets (yet another perspective defined by culture *and* academic discipline) to serve as the engine of change assumes two critical things:

- (1) Markets that are well-ordered and well-informed, and
- (2) Policy process that sends the "correct" market signals.

Skepticism regarding the state of markets relevant to risk markets has been expressed earlier. Added to this is another healthy dose of skepticism stemming from public policies toward agriculture that are distorted away from a competitive outcome, in part as a result of rent-seeking behavior in agricultural commodity and special interest groups (Luzar). Decoupling and reliance on liability law have been proposed as two means of encouraging, if not ensuring, conservative risk taking. In dealing with the global environmental hazards mentioned earlier, these political solutions are not universally acceptable and hence are ineffective in dealing with the international level of environmental externalities. Resiliency can only have an intuitively appealing call if one describes an approach seeking the best of all worlds; that is, proceed with technological developments in a weakly risk averse manner, safe in the knowledge that we will "bounce back" in case of error.

MANAGING RISK OR INFORMATION?

The complexity of the environmental hazards of farming are well documented in Shabman's paper. The complexity of the issue is in fact one recurring theme in the paper, raising the question: What is it that agricultural economists hope to manage? At the current level of professional dialogue, agricultural economists are perhaps still only managing the information and often only the data fundamental to meaningful debate. Concepts such as weak versus strong risk aversion, Resiliency, and the philosophical basis of technological progress are not recurring topics in the literature of the agricultural economics profession. At the same time, efforts to manage data or information may actually interfere with the markets for information underlying the public policy process.

CONCLUSION

Shabman concludes his paper with the series of provocative questions listed earlier. In many ways, as economists, our current inability to answer these questions with anything approaching a professional consensus provides more than a hint with respect to our professional relevancy in the public policy process pertaining to risk management. The answers to these critical questions will be found beyond the boundaries of economics or any other single aca-

demical discipline. This is perhaps one of the most difficult dimensions of managing risks. However difficult, a professional dialogue in the discussion of these questions would enhance the economic contribution to the process of environmental risk management. Unfortunately, a disciplinary infatuation with markets will probably limit agricultural economists' ability to respond to these issues and limit our professional contribution to the management of environmental risks in agriculture.

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