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Discussant's response to use of decision theory in auditing -- A practitioner's view

William L. Felix

Discussant's Response to Use of Decision Theory in Auditing— A Practitioner's View

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Jim Loebbecke is to be complimented on his willingness to provide a practitioner's view of a topic area that is, I am sure, very difficult to deal with.

Researchers interested in using decision theory as a descriptive model of auditing practice need feedback and criticism from practitioners. Otherwise, it is very likely that inaccurate models and inferences from these models will result. I would particularly like to observe the importance of contributions such as the auditor's logic process that Jim provided in his 1974 comment on my paper. These views of the basic audit process, including (1) steps for the collection of particular kinds of evidence and (2) steps that represent major decision points in the audit process, are the kind of basic information and feedback that is necessary to construct useful models.

Significance of Research on Decision Theory

The significance of the research efforts in decision theory may not be entirely clear. The line of argument that is most appealing to me is that a decision theory model requires rather precise specification of relationships and decisions that may have previously been left rather vague and imprecise. The result of greater precision ought to be better understanding of the consistencies and differences in the various opinion formulation processes being used in the profession. In addition, the resulting well structured and understood models would improve the ability of researchers to investigate problems and by implication, for the profession to adapt to changes.

Possible Misconceptions

On the first page of his paper, Jim indicates that approximately 30% of the practitioners he surveyed have some idea as to what decision theory implies with regard to auditing. Being realistic, I suspect that this is a fairly optimistic figure. There are probably only a handful of practitioners in this country that can approach Jim's knowledge of this particular application of statistical inference. Yet I think that his paper indicates that he has some misconceptions about the nature of decision theory, either as a normative model of the auditor's decision processes or as a descriptive model of how auditors behave. Let me illustrate my point with a couple of observations from Jim's paper. In the last paragraph on page 110 of his paper under "point 1" he states that the decision to extend work is

biased towards a one-sided expected cost. That is, that the auditor is so overwhelmed by the potential impact of Jim's Type I error that other potential decision factors don't matter. I would agree that this outcome is possible, but it seems to me that regardless of whether or not this situation will exist, a decision theory model will handle it properly. The auditor's degree of belief or probability for this type of error is used to weight the cost of the error so that the result or expected value is used in making choices. Regardless of how overwhelming the consequences of such an error, if it is of very low probability or very unlikely to occur, it may not be significant in the final outcome. Some of Jim's discussion indicates that he understands this point yet he is describing it here as a difference in the model.

Risk Assessment

On page 111, Jim's discussion indicates some concern about the objectiveness of the assessment of the risks the auditor uses in decision making. It is my belief that the critical assessments of risk made by the auditor are now, and always will be subjective. Decision theory, or its use in auditing, does not imply an objective measurement of risk. All that is required is that in some way the auditor elicit subjective assessments of risk and combine them with whatever objective sampling evidence is available to reach a composite risk assessment that is then used for decision making. This point is raised again on page 115, where Jim states that it would appear that ". . . the aspect (of auditing) which most closely relates to the formal decision theory model is the determination of the extent of procedures—that is, sample size." It may be that most near-term applications of a decision theory model would be in audit decisions that relate to samples and sample sizes, but the use of the model itself is primarily oriented toward the combination of the results of judgment and sampling in order to reach audit decisions both in terms of individual tests and as the auditor aggregates evidence from a variety of sources to reach overall decisions on balances and the financial statements taken as a whole.

Audit Process Model

To illustrate, let me refer to the flow chart in Appendix I. As complex as this chart appears, it is only a partial model of the audit process. It presents the elicitation, assessment, and evidence composition problem for accounting systems, the conversion or transition from accounting system error rates to account balance error rates, the assessment of balance error amounts and their composition for total error amounts, and the individual account error amount aggregation problem, all in one chart. Clearly missing are the beginnings of the process where the auditor engages in a general learning process before trying to disaggregate this general evidence to priors on the error rate for specific procedures, the contribution of this general learning to assessments for decision problems throughout the audit process, and most critically, the specification of the terminal loss function which will be used for decisions throughout the process. The major point that I would like to make from the chart is that it indicates that a decision theory model is certainly not oriented primarily toward determination of the extent of audit procedures. It is far broader.

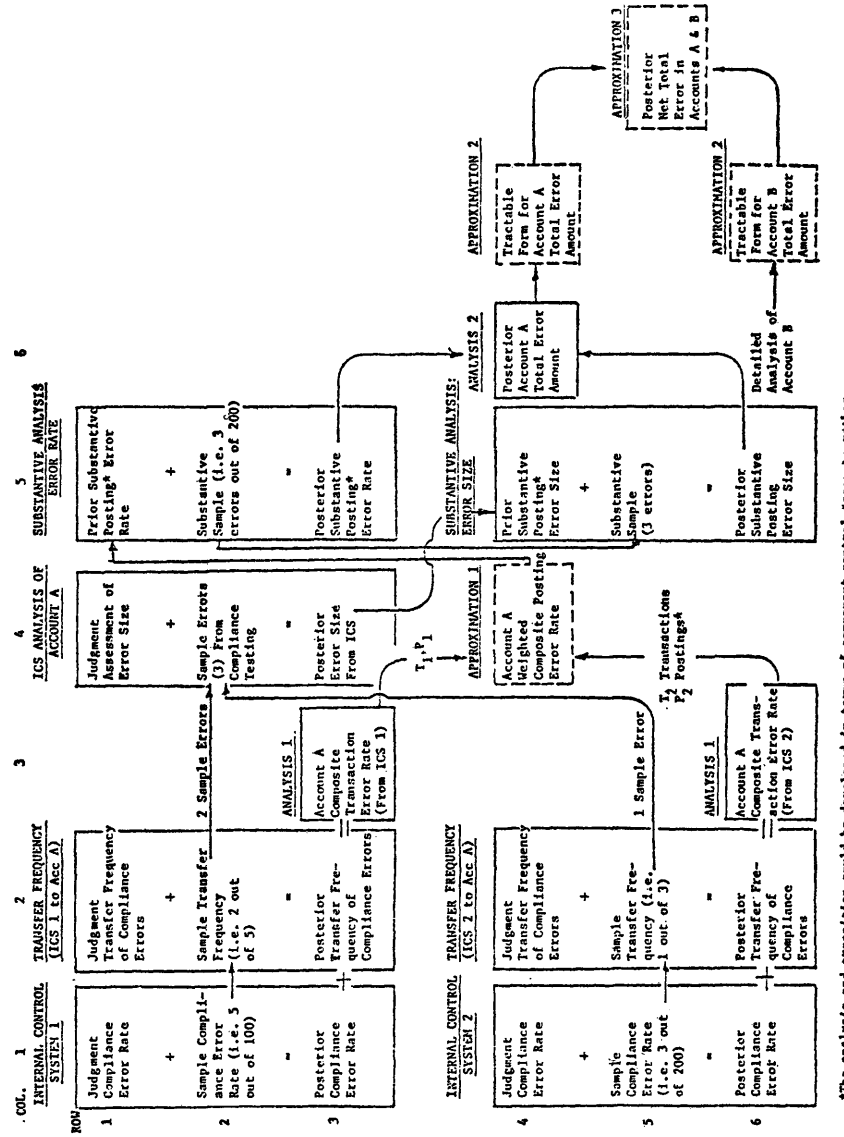
On page 110, Jim observes that the two-state decision model in my prior paper does not represent all the alternatives. I would certainly agree that the model was designed primarily to illustrate the potential rather than to be a definitive description. In another paper, a student and I have addressed the problem of expressing the auditor's payoff function more realistically. Appendix II illustrates a possible specification of the auditor's action space. Note that the action space includes a clean opinion, various kinds of non-standard opinions, and withdrawal from the engagement.

Appendix III illustrates the nature of the loss functions that we are exploring. These models allow inclusion of both fixed and variable losses. Each functional form is made up of, at most, three plateaus, corresponding to immaterial near zero error amounts, small error amounts, and extremely large error amounts. The change from one plateau to the next starts out slowly, builds up rapidly, and then slowly approaches the target plateau. Also, rather than argue for a single payoff function, we suggest a decomposition of the assessment problem into three components: professional reputation, legal costs, and settlement costs.

In conclusion, I would like to return to the title of Jim's paper. We are not ready for the *use* of decision theory in auditing, and many of Jim's comments are indicative of the reasons why such use is not now being proposed. Continued research and teaching of decision theory in auditing are both desirable, however, because of the potential of this methodology to make us better heuristic decision makers, and the promise of the research to achieve those benefits in understanding and communication mentioned at the beginning of my comments.

Appendix I

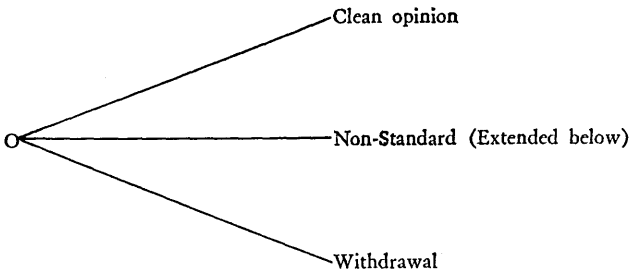
Logical Structure of the Evidential Integration Framework



*The analysis and exposition could be developed in terms of component control accounts rather than in terms of posting entries.

Appendix II

Specification of Auditor's Action Space

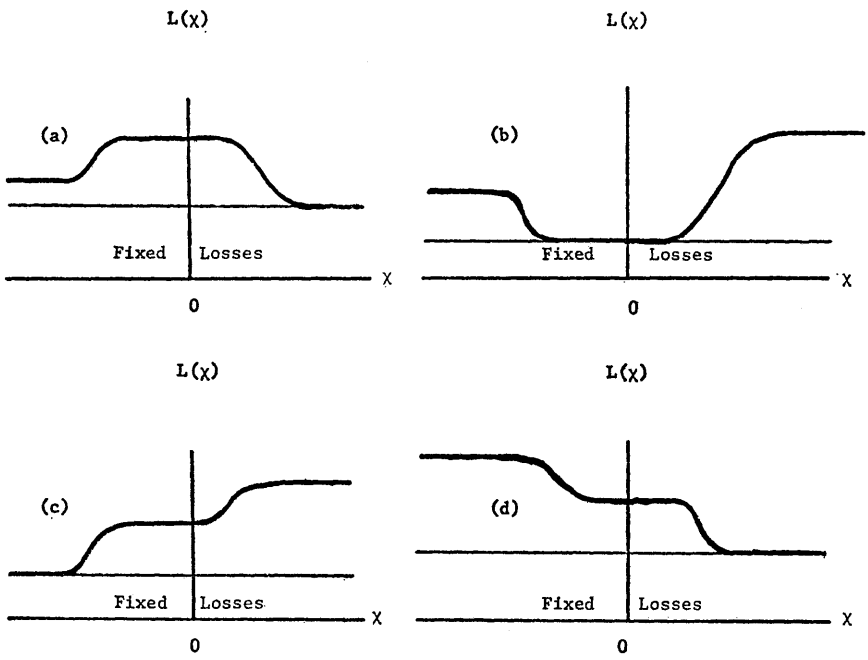


A Classification of Nonstandard Opinions

	Level of Materiality	
Cause	Moderate	Severe
1. Scope restriction	"Except for" opinion qualification	Disclaimer
2. Unusual uncertainty	"Subject to" opinion qualification	Disclaimer
3. Client-auditor dispute on GAAP	"Except for" opinion qualification	Adverse opinion
4. An inconsistency in principle or entity	"Except for" consistency qualification	ϕ

Appendix III

Three Plateau Loss Functions



$L(\chi)$ = The present value of after tax losses corresponding to error amount χ.

χ = The aggregate error amount.