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Charles D. Bailey

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Internal Control Evaluation

The State of the Art

By Charles D. Bailey

So much has been written recently about internal control evaluation that auditors may wonder whether they are current. CPA firms have issued voluminous guides, Statement on Auditing Standards No. 30 has been issued, and articles have appeared in most accounting journals expounding specific evaluative approaches.

Internal control evaluation has been, at least until recently, a highly subjective operation. In a process best described as "expert judgment," the auditor combines numerous bits of uncertain (probabilistic) information to arrive at an overall subjective evaluation of the strength of the internal controls in a particular system. The process is comparable to a physician's diagnosis of, say, the probability that a stomach ulcer is malignant based upon the relevant symptoms.

For about two decades, methods have been suggested to increase the objectivity of this judgment process. The account provisions of the *Foreign Corrupt Practices Act of 1977* have, of course, accelerated the trend. In view of recent developments, is the traditional "internal control questionnaire" still considered appropriate by most auditors? Have any breakthroughs been achieved? Is a truly objective ap-

proach possible and, if so, why has it not been widely implemented? Some tentative answers to these questions are offered below.

The Profession's Acceptance of Traditional Methods

Data from an October 1980 random sample of CPAs sheds some light upon the acceptability of the traditional internal control questionnaire. The CPAs involved were members of the AICPA and were auditors practicing with the twenty-five firms having the largest numbers of AICPA members. Their auditing experience ranged from two years to thirty-five years, with a mean of 11.4 years. The percentage of partners and principals among those who responded was 33 percent. Thus the sample seems to be representative of the auditing personnel of the major firms.

The main purpose of the research was to study auditors' judgment patterns by having them evaluate the internal controls in hypothetical cases. The cases first presented appropriate background information about a company's management and internal control environment. Then the internal controls in the cash receipts department were described by a pre-an-

swered internal control questionnaire, which was adapted from a thirty-one-year-old AIA publication¹ and from various current auditing textbooks and CPA firm questionnaires. The auditors were asked to evaluate, on a five-point scale, the strength of the internal accounting controls over cash receipts.

There were some misgivings about the use of a traditional internal control questionnaire, in view of the recent efforts by many firms to upgrade their methodology. However, similar internal control questionnaires had been used in other recent and similar experiments.

Surprisingly, the auditors overwhelmingly accepted the internal control questionnaire approach as valid. Of 141 auditors surveyed, 117 (83 percent) responded. When asked for their criticisms, only four of them, representing three different "Big-Eight" firms, criticized the use of a traditional questionnaire approach to internal control evaluation. They offered this type of comment:

One cannot realistically evaluate internal controls through a checklist approach. One must review the transaction flow and determine key control techniques to accomplish the control objectives. (Auditor with seven years experience. Another auditor with the same years of experience, and located at another office of the same firm, voiced a very similar criticism.)

This is the old approach of procedures orientation. The new approach which focuses on objectives of controls would be much better. (Partner with nine and one-half years experience.)

An auditor with another firm refused to evaluate the case because of the questionnaire design but sent his firm's literature. However, seven other auditors from his firm, including three partners, responded without similar objections.

Thus out of an experienced group of 117 auditors, only four protested the use of a traditional questionnaire approach to internal control evaluation. These results indicate that the method is still widely accepted.

The Perplexing Task of Internal Control Evaluation

The design and evaluation of systems of internal accounting controls, as now performed, appears to be more an art than a science. The best internal control systems offer only subjective reassurance that the risk of errors and irregularities has been

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satisfactorily reduced. Mautz and Sharaf offered these observations twenty years ago:

*Thus each audit poses an individual situation. From the infinite variety of possible internal control procedures, which ones are employed and how well are they functioning?*²

*It must be recognized that the evaluation of internal control is at best a difficult and subjective weighing of imponderables.*³

When *Statement on Auditing Standards No. 20* was issued in 1977, requiring auditors to report to management any material weakness in internal accounting control which come to their attention during the course of an audit, some of the dissenting comments by Auditing Standards Executive Committee members were prompted by the limitations they saw in the state of the art:

Existing authoritative literature does not provide guidance sufficient for the auditor to measure objectively and uniformly the materiality of weakness in systems of internal accounting control. SAS No. 20 does not provide a uniform approach to objective criteria for the identification of material weaknesses.

And in its recent statement of standards for reporting on internal accounting control, the Auditing Standards Board declared:

*The evaluation of identified weaknesses is necessarily a very subjective process that depends upon such factors as the nature of the accounting process and of any assets exposed to the weaknesses, the overall control environment and the experience and judgment of those making the estimates.*³

Such comments as these, stressing the inescapable subjectivity of auditors' judgments, would seem to indicate that the methodology has advanced little since 1949, when the Committee on Auditing Procedure issued its study *Internal Control*. The study presented an overview of the principles, practices, and relationships involved in a system of internal controls and warned:

*The committee wishes to make it clear that neither the preceding discussion of internal control nor the illustrative charts...purport to set forth any formula or pattern by which the effectiveness of a particular system may be measured. The problem, of course, is much too complex for any such treatment.*⁶

Despite the difficulties and obstacles cited above, the auditing profession has been moving deliberately toward more objective criteria and procedures. In the following section, some

of the major attempts at improving objectivity will be discussed.

The Quest for Objective Internal Control Evaluation

Almost two decades ago, R. Gene Brown's article "Objective Internal Control Evaluation" appeared in the *Journal of Accountancy*.⁷ He proposed a quantified questionnaire in which numerical values would be assigned to each question. A "yes" answer would yield the assigned value, while a "no" answer would yield zero, and the percentage of potential points achieved by a system of controls would be called its "effectiveness index." The weights assigned to each question would reflect the auditor's expert judgment, but Brown envisioned establishing weights on a national, or at least intrafirm, basis.

The approach did not, of course, take root. Cushing attributed this failure to the "dubious value" of nominal (yes-or-no) measures "for purposes of developing comprehensive models of internal control systems."⁸ Brown's idea does seem to have some merit, particularly as a "trend analysis on recurring engagements."⁹ But even a small subsystem of controls in a single company will not likely remain unchanged for more than a couple of years. Some function will be added or removed or the relationships to other functional areas of the organization will change. And when a single factor changes, the effects of interactions with other controls will change. For example, the removal of one control may alter the importance of several other controls; or the introduction of a mini-computer may weaken the controls over separation of duties.

Guidance from the AICPA

Underlying the AICPA's philosophy of internal control evaluation is the assumption that "generalized or overall evaluations are not useful to auditors because they do not help the auditor decide the extent to which auditing procedures may be restricted. On the other hand, the auditor would ordinarily confine his evaluation to broad classes of transactions."¹⁰ The Committee on Auditing Procedure, in its 1949 report, illustrated this principle by segregating a company into sales, accounts receivable, cash receipts, purchases, cash disbursements, and payroll cycles.¹¹

While the cycle approach is firmly entrenched, David Burns has cited some dangers of relying exclusively upon it: The auditor "enters upon uncharted seas" when he or she "goes beyond the small group of accounting controls." Yet certain important audit decisions require reliance upon an *extensive* subsystem of controls. Although weaknesses in the separately-examined subsystems may be considered minor, "a combined evaluation of the same controls may disclose that they jointly pose a material threat."¹² This phenomenon is related to the interaction effect mentioned above; when a single control factor in a system changes, it may alter the importance of several other controls.

The AICPA has traditionally viewed internal control evaluation in the context of an auditor's needs under the second standard of field work: "as a basis for reliance thereon and for the determination of the resultant extent of the tests to which auditing procedures are to be restricted."¹³ The Cohen Commission proposed that auditors should expand their study and evaluation to "form an opinion on the functioning of the internal accounting control system."¹⁴ Most recently, pressure from the SEC has propelled the profession, and in turn the AICPA, toward a broader view of the problem.

firms have been following for years.¹⁵ Using the cycle approach, the report illustrates specific control procedures to meet specifically identified objectives.

In recognition of the increased importance of auditors' engagements to report on internal accounting control, a new standard for such reporting was issued in July 1980. The statement gave no additional guidance on techniques of evaluation, but re-emphasized that specific control procedures should be related to specific control objectives: "The accountant should focus on procedures in terms of their significance to the achievement of specific objectives rather than consider the specific procedures in isolation."¹⁶

Thus the AICPA has encouraged a systematic approach which is consistent with the documentation now used by most large CPA firms. At the same time, it has re-affirmed its belief in the ultimate subjectivity of the process and has therefore not embraced quantitative, objective techniques.

Mathematical Models: Truly Objective Evaluation?

There exists an intriguing alternative to the subjective techniques now being used. Mathematical models of accounting systems and the related controls can be constructed and used to

rected. Thus the likelihood of the existence of particular types of errors will change. These error types, or "error states," may be defined in various ways, depending upon the characteristics of a particular system. In their simple example involving the processing of a time card, Yu and Neter defined just two types of error: monetary and nonmonetary. Monetary errors were those involving dollars, while nonmonetary errors involved anything else such as social security numbers, names, or work hours. With these two error types, there are four error states: (1) error-free output, (2) output with monetary error only, (3) output with nonmonetary error only, and (4) output with monetary and nonmonetary errors. For each processing step in the system, it is necessary to determine a "transformation probability matrix."

Another mathematical modeling approach was described by Cushing.¹⁹ He adapted techniques of reliability theory, originally developed by engineers who needed to predict the reliability of hardware and electrical equipment in the space programs. In addition to modeling system reliability under various levels of complexity, Cushing discussed the incorporation of costs into the model so that the cost effectiveness of various controls might be evaluated. Stratton later undertook to demonstrate the workability of the

Error State of the Input Document:	Probability that the Output Document will Contain:			
	No Errors	Monetary Error Only	Nonmonetary Error Only	Both Monetary and Nonmonetary Errors
Absence of Any Errors	.90	.02	.06	.02
Presence of Monetary Error Only	.02	.95	.02	.01
Presence of Nonmonetary Error Only	.50	.05	.40	.05
Presence of Monetary and Nonmonetary Errors	.80	.10	.05	.05

Exhibit 1: Transformation probability matrix for a particular clerical task, adapted from Yu and Neter.

The AICPA's special advisory committee on internal accounting control issued its report in April 1979, providing general guidelines for corporate management to follow in their evaluations. The principles set forth are the ones which most large accounting

predict the accuracy and reliability of the output of an accounting system.¹⁷

Yu and Neter¹⁸ proposed a model using matrix algebra. As information is processed through various steps, or "operating elements," of a system, errors may be either introduced or cor-

rected by using computer-simulated data.²⁰

The models are indeed theoretically applicable, but the problems of implementation are considerable. The major obstacle is the estimation of probability (and cost) parameters.

What is the probability that a payroll clerk will overlook the absence of a supervisor's signature on a time card? How frequently will an accounts payable clerk fail to take a cash discount? Cushing saw the task of estimating parameters as being feasible "if a structured program of collection and analysis of past error and cost data is developed." Yu and Neter cited estimation-sampling methodology from statistical literature and said that "the basic data necessary for estimating the transition probabilities...are generally available in the audit working papers."

Cushing recognized another major practical problem: obtaining probabilities related to embezzlement and other irregularities. He suggested that the experience of bonding companies and major CPA firms might fill this gap. Bodnar suggested that such probabilities might have to be excluded from the models, but that the models still would be useful for ranking systems according to relative reliability.²¹

Even if substantial bodies of data are accumulated to estimate the probability parameters, estimates obtained from the population will not be correct for a particular individual. People are not produced on an assembly line, and the very idea that they are interchangeable is anathema.²² While all transistors of a given type may be equally acceptable in an electronic circuit, the same is not true of all accounting personnel performing a particular type of task — particularly when they have been hired and trained by different organizations.

Furthermore, the error rate for a specific accounting function will surely depend upon the environment in which it is performed. If an individual's work load is too high, the error rate will likely increase. Distractions built into the work environment or resulting from an ill-conceived system may have a similar effect. Each person's job is in some way unique, and so is each task that the person performs. Sales invoices, for example, vary greatly in

their layout and design, and these factors may serve to induce errors or to prevent them. Thus it is difficult to envision useful error-rate data being collected on an intercompany basis.

Summary

Evaluation of internal control is a complex task requiring an auditor's expert judgment. Because control systems and the people involved vary so widely, the art of evaluating them has not been reduced to a formula or computer algorithm.²³

The exercise of judgment is necessary in every profession. Nothing has happened to change dramatically the way in which auditors evaluate internal control, but considerable effort has already been made by the accounting firms, the AICPA and others to encourage a more systematic, documented approach to judgment formation.

NOTES

¹American Institute of Accountants, *Internal Control* (New York: AIA, 1949).

²R.K. Mautz and Hussein A. Sharaf, *The Philosophy of Auditing* (Sarasota, Florida: American Accounting Association, 1961), p.141.

³*Ibid.*, p. 145.

⁴AICPA, *Statement on Auditing Standards No. 20: Required Communication of Material Weaknesses in Internal Accounting Control* (New York: AICPA, 1977), pp. 10-11.

⁵AICPA, *Statement on Auditing Standards No. 30: Reporting on Internal Accounting Control* (New York: AICPA, 1980), paragraph 33.

⁶AIA *Internal Control*, p. 21.

⁷November 1962, pp. 50-56.

⁸Barry E. Cushing, "A Mathematical Approach to the Analysis and Design of Internal Control Systems," *Accounting Review*, January 1974, p. 24.

⁹Brown, p. 53.

¹⁰*Statement on Auditing Standards No. 1*, sec. 320.67.

¹¹AIA, *Internal Control*, appendix.

¹²David C. Burns, "Extending the Study and Evaluation of Internal Controls," *CPA Journal*, May 1974, pp. 31-35.

¹³SAS NO. 7, Sec. 320.01.

¹⁴Commission on Auditor's Responsibilities, *Report, Conclusions, and Recommendations* (New York, 1978), p. 60.

¹⁵A version of the method is presented in detail by Kenneth P. Johnson and Henry R. Jaenicke in *Evaluating Internal Control* (New York: John Wiley & Sons, 1980). In the same spirit is the technique expounded by James K. Loebbecke

and George R. Zuber in "Evaluating Internal Control," *Journal of Accountancy*, February 1980, pp. 49-56. In a tabular arrangement, Loebbecke and Zuber relate columns of specific control objectives with rows of control procedures. The process is quite subjective, though well organized.

¹⁶SAS No. 30, paragraph 22.

¹⁷A method closely related to mathematical modeling is computer simulation, as expounded by David C. Burns and James K. Loebbecke in "Internal Control Evaluation: How the Computer Can Help," *Journal of Accountancy*, August 1975, pp. 60-70. Simulation has advantages over analytical mathematical models when a system is very complex, and it can yield useful insights into the dynamics of a system. It tends to be time-consuming, however, because of the programming and debugging requirements. Most of the following discussion of mathematical models applies also to computer simulation.

¹⁸Seongjae Yu and John Neter, "A Stochastic Model of the Internal Control System," *Journal of Accounting Research*, Autumn 1973, pp. 273-95.

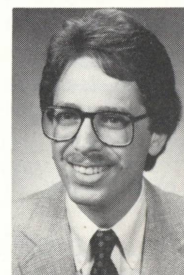
¹⁹Barry E. Cushing, "A Mathematical Approach to the Design of Internal Control Systems," *Accounting Review*, January 1974, pp. 24-41.

²⁰William O. Stratton, "Accounting Systems: The Reliability Approach to Internal Control Evaluation," *Decision Sciences*, January 1981, pp. 51-67.

²¹George Bodnar, "Reliability Modeling of Internal Control Systems," *Accounting Review*, October 1975, pp. 747-57.

²²*Ibid.*, p. 754.

²³Research is being done to gain insight into auditors' judgment processes. A recent example is Auding Research Monograph No. 3, *Internal Accounting Control Evaluation and Auditor Judgment*, by Theodore J. Mock and Jerry L. Turner (New York: AICPA, 1981). Mock and Turner's attempts at modeling auditors' information search and decision processes underscore the complexity of the judgment task.



Charles D. Bailey, Ph.D., is assistant professor of accounting at Florida State University. His accounting career includes ten years in banking and five years in credit management.