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Edmund J. Boyle

Steven M. Cooper

Marshall A. Geiger

University of Richmond, mgeiger@richmond.edu

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**An Empirical Analysis of Internal Control Weaknesses Under
SAS No. 78: An Examination of State Audit Reports**

**Edmund J. Boyle
University of Rhode Island**

**Steven M. Cooper
Chief, Bureau of Audits - State of Rhode Island**

**Marshall A. Geiger
University of Richmond**

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An Empirical Analysis of Internal Control Weaknesses Under SAS No. 78: An Examination of State Audit Reports

Abstract

While there has been a considerable amount of research regarding internal control over the past several years, scant empirical research has examined SAS No. 78's integrated five-component depiction of internal control in a government setting. In particular, to our knowledge, no study has assessed the types or frequency of weaknesses under the SAS No. 78 framework using actual internal control system findings. In this study, we examine 32 state department and agency internal control reports to assess how well the theoretical framework captures actual system weaknesses, and to determine the relative distribution of weaknesses across components of the framework.

Our results indicate that the five-component framework was able to effectively classify the 213 reported control weaknesses. Control activities had the highest proportion of identified weaknesses (i.e., around 30%) and monitoring the lowest proportion of weaknesses (i.e., around 10%).

**An Empirical Analysis of Internal Control Weaknesses Under
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INTRODUCTION

The Committee of Sponsoring Organizations (COSO), an outgrowth of the National Commission on Fraudulent Financial Reporting (Treadway Commission), has had a considerable impact on how we conceptualize internal control in the U.S. Their report (COSO 1994) set forth an integrated framework for the evaluation of internal control, which was subsequently adopted by the public accounting profession in SAS No. 78, *Consideration of Internal Control in a Financial Statement Audit* (AICPA 1995). However, while there is continued interest in internal control evaluations by auditing standard setters (c.f., SAS No. 94, *The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit*, AICPA 2001), relatively little research attempts to directly assess the five interrelated internal control components espoused by COSO and codified in SAS No.78. Our purpose is to examine these theoretical control components using actual internal control system weaknesses. Specifically, we present a descriptive analysis of internal control weaknesses communicated by 32 Rhode Island state agencies categorized according to SAS No. 78. Such an evaluation provides needed feedback on the practical application of internal control currently adopted by the profession, as well as provides information on the frequency of types of internal control weaknesses that are relevant for overall audit planning decisions in government audits.

HISTORY AND CONTENT OF SAS NO. 78

In October of 1986, amid growing concerns about the extent of fraudulent financial reporting, the National Commission on Fraudulent Financial Reporting (i.e., the Treadway Commission) began an extensive study and evaluation of the integrity of our system of financial reporting. In 1987, the Commission issued their final report, which provided numerous recommendations to improve the financial reporting environment and auditing standards, enhance the regulatory and law enforcement environment, and improve education of future participants in the financial reporting process.¹ In response to the Treadway Commission Report, the Committee of Sponsoring Organizations (COSO) developed a comprehensive, integrated model of internal control to offer guidance for creating, adapting and monitoring systems of controls to the risks inherent in financial reporting. This integrated framework was later tailored to practitioners by the Auditing Standards Board (ASB) with the adoption of SAS No. 78 (AICPA 1995). This new SAS superseded the earlier internal control standard enacted only a few years earlier in SAS No. 55, *Consideration of Internal Control in a Financial Statement Audit* (AICPA 1988).

The revised framework presents a more sophisticated depiction of internal control as a process designed to provide reasonable assurance regarding the achievement of objectives for reliable financial statements, effective and efficient operations, and compliance with applicable laws and regulations. These broad objectives are directly linked to five interrelated components considered necessary to achieving the internal control objectives. The five components of the

framework include the control environment, risk assessment, control activities, information and communication, and monitoring.

As outlined in SAS No.78, the *control environment* component includes seven related factors: integrity and ethical values, commitment to competence, board of directors/audit committee participation, management philosophy and operating style, organizational structure, assignment of authority and responsibility, and human resource policies and practice. The role and importance of the control environment to the effectiveness of the client's internal control system had been evolving, both stated and implied (See for example, the Cohen Commission (AICPA 1978a); SAS No. 22 (AICPA 1978b); and SAS No. 47 (AICPA 1983)), until it became a formal component of SAS No. 55's three-component internal control structure. SAS No.78 further refined the meaning of control environment as that component which sets the tone of the organization, by influencing the control consciousness of the entity's employees and establishing the foundation for the remaining components.

In the context of financial reporting, *risk assessment* includes the identification, analysis, and management of risks inherent in the reporting process.² These risks encompass those events and circumstances which can have adverse effects on the underlying integrity of the management assertions embodied within the financial statements. Risk assessment factors identified by SAS No. 78 focus particularly on changes that can influence the extent of financial statement risks, e.g., changes in the operating environment or corporate structure, or new personnel, information systems, technology, product lines or accounting pronouncements.

The *control activities* component includes policies and procedures designed to ensure that management directives are effectively implemented. Four sub-categories are identified: (1)

Performance reviews of actual and budgeted financial information, (2) general and application controls incorporated in both manual and/or automated information processing systems, physical controls over safeguarding of assets, and segregation of duties across critical functions. These broad sub-categories of policies/procedures which can identify breakdowns in control, provide guidance for timely responses, and thus aid in achieving the entity's objectives.

The ***information and communication*** component has two separate yet integrated factors. The information system incorporates the entity's accounting system, which consists of the methods and records established to properly account for the organization's transactions, and to maintain accountability for assets and liabilities. Communication, in conjunction with the accounting system, should provide clear guidance of the roles and responsibilities of the organizational personnel.

Monitoring incorporates all management oversight of the organization's systems of internal controls, i.e., management is responsible for establishing adequate networks of control as well as maintaining those systems. Continuous monitoring of internal control performance entails ongoing evaluation of the design of the entity's control model, measuring its effectiveness, and making timely corrections for identified weaknesses.

GOVERNMENT AUDITING STANDARDS

The General Accounting Office (GAO), which serves the Congress of the United States, promulgates and oversees auditing guidelines through the *Government Auditing Standards* (GAS), commonly referred to as the "Yellow Book." GAS articulates generally accepted government audit standards (GAGAS) for both financial audits and performance audits. All

government audits, including those which fall under the jurisdiction of the Single Audit Act of 1984, must be performed according to the GAGASs. Essentially, GAGAS standards incorporate the external auditor's generally accepted auditing standards, with additional supplemental general standards for all government audits, and supplemental field work and reporting standards for financial and performance audits.

Congress passed the Single Audit Act of 1984 to promote sound financial management, establish uniform requirements for audits of federal awards, promote efficient and effective use of audit resources, reduce municipal burdens, and ensure that Federal departments/agencies rely upon and use audit work performed under the Act. The Act was later amended in 1996 and revised in 1997 in Circular A-133 *Audits of States, Local Governments, and Non-Profit Organizations* to create more consistency and uniformity among federal agency audits. At the present time, state and local governments are mandated to have a single audit if they receive Federal financial assistance in excess of \$300,000, and must report the results of those audits to the appropriate levels of management. The single audit report includes an opinion on the financial statement presentation, a report on relevant internal controls of the financial statements and major programs, and a report on compliance with laws, regulations, and provisions of contracts or grant agreements. Audits which fall under the single audit are more extensive than those performed under GAAS or GAS, in terms of the extent of compliance tests and the detail of the resultant audit report.

PRIOR RESEARCH ON SAS NO. 78 INTERNAL CONTROL COMPONENTS

Despite the considerable impact of the Treadway Commission and COSO on our contemporary conception of internal control, relatively little empirical research has been conducted on their framework for internal control, as currently codified in SAS No. 78. While research on internal control continues to evolve on theory building (e.g., Felix and Niles 1988; Kinney et al. 1990; Morton and Felix 1991; Houghton 1991; Spires 1991; Gadh et al. 1993; Abdolmohammadi 1993; Chang et al. 1993; Hooks et al. 1994; Ponemon 1994; Messier and Austen 2000; Smith et al. 2000) or guidance for practitioners (e.g., Kinney and Felix 1992, Tanki and Steinberg 1993, Galloway 1994, Cashell 1995, Frazier and Spradling 1996, Simmons 1997), empirical studies are more likely to use internal control as a context to study other research objectives such as framing effects (Emby 1994, Emby and Finley 1997), experience (Fredrick 1991), or information processing (Brown and Solomon 1990, Chang et al. 1993). Moreover, while some research has emerged regarding the former SAS No. 55 three-component internal control structure, we assess the combined import of the SAS No. 78 components on public, private or governmental systems of control. Nonetheless, some prior studies may be interpreted retrospectively under the new framework in that some prior research has examined some of the SAS No. 78 components to varying degrees.

A significant portion of the extant research performed on specific internal control components concentrates on the control environment. Prior to the enactment of SAS No. 55, research indicates that auditor conception of the client's control environment and its impact on the audit was ambiguous and ill-defined. For example, an early study by Haskins and Henarie (1985) codified a listing of 48 control environment attributes after interviewing experienced

auditors, and surveyed 146 auditors from the then Big 8 firms to rank order those attributes. Of the top twenty attributes identified, only nine would be classified as control environment factors under SAS No. 78. Interestingly, follow-up interviews revealed that while the environmental attributes were considered relevant to the quality of the client's internal controls, slightly over fifty percent of the auditors indicated that no alterations would be made to their audit plans as a result of unfavorable control environment conditions. The Haskins and Henarie study highlights the difficulty auditor's face in defining and adapting the audit plan without direct guidance concerning control environment factors. Today, however, the control environment is accepted as a tangible component of a strong system of internal control (Bell and Wright 1995), which can have a substantive impact on the nature, timing and extent of the audit. Yet, direct research and guidance to link control environment characteristics to audit procedures is still needed (Pany and Whittington 2001).

Earlier studies generally document the association between the control environment and the perceived strength/weakness of the entity's control system. In a series of studies, Kreutzfeldt and Wallace (1986, 1990) and Wallace and Kreutzfeldt (1995) used a database of 260 Arthur Andersen audit engagements to examine the relationship between financial statement errors and select internal control structure factors. Additionally, several experiments support the role of the control environment, but also raise some doubts as to the extent of its influence on audit procedures (Mayper et al. 1989; Dusenbury et al. 1996 ; Marden et al. 1997). More recently Apostolou et al. (2001) found that control environment factors were the most influential on internal and external auditors' assessments of the risk of financial statement fraud.

Asare and Davidson (1995) examined whether financial condition and control procedures influenced auditors' assessments of expected balances of selected accounts. As expected, they found a significant sensitivity to control activities, with smaller predictions of unaudited book value errors as a result of stronger control activities.

Research on the risk assessment component of SAS No. 78 to date has been indirect and has not examined this component as a fundamental and unique element of internal control. Similarly, research on the role of the information and communication component of SAS No. 78 has not been assessed directly in the extant literature. Monitoring has been investigated at length in the internal auditing literature; however, it has received little empirical research attention outside of the internal audit context.

Additionally, while several studies examine systems of internal control in governmental settings in an overall sense, we are not aware of any that examine governmental systems of control under the SAS No. 78 framework. Wallace (1981) applied content analysis to a sample of municipal government reports that included internal control disclosures. She found that inconsistencies in reporting risk assessment, doing cost/benefit analysis, and using diverse reporting formats can influence management's effective use of the report and its sensitivity to internal control weaknesses. Cox and Wichmann (1993) elicited the perceptions of government financial officers on the quality of state and local governmental internal control systems and benefits derived from internal control reports, and Jakubowski (1995) examined the impact of the Single Audit Act of 1984 on the financial management of local governments.

Strand et al. (forthcoming) empirically examined government fraudulent "red flags" using the framework articulated in SAS No. 82, *Consideration of Fraud in a Financial Statement Audit*

(AICPA 1997). Similar to our methodology, they used an external audit pronouncement to analyze the type and extent of documented frauds in all levels of the government. The authors identified numerous instances of internal control breakdown, which in turn led to fraudulent acts.

Moreover, their findings suggest that theoretical audit frameworks offered by the public sector can contribute to our understanding of government auditing issues as well.

Hence, while prior studies have at best analyzed some of the five internal control components individually, to our knowledge no study specifically documents internal control weaknesses according to the entirety of SAS No. 78's integrated component framework, and none use a governmental setting for this analysis.

INTERNAL CONTROL AND THE STATE OF RHODE ISLAND

In 1982, Congress passed the *Federal Managers' Financial Integrity Act*, which mandated that federal agencies establish and evaluate their "internal accounting and administrative controls." Beginning December 31, 1983, all agency directors were expected to report annually on the extent of their agency's compliance with federal guidelines, and also report any material weaknesses identified. Four years later, in response to this federal legislation, the Rhode Island General Assembly formally enacted the Federal Integrity and Accountability Act of 1986. This legislation declared that:

1. Each public corporation must maintain effective systems of internal accounting and administrative control as an integral part of its management practices.
2. The systems of internal accounting and administrative control of each state agency shall be evaluated on an ongoing basis and, when detected, weaknesses must be promptly corrected.

3. All levels of management of the public corporation must be involved in assessing and strengthening the systems of internal accounting and administrative control to minimize fraud, errors, abuse and waste of public and quasi public funds.

In 1987, the Rhode Island State Controller and the Auditor General jointly established a system of reporting and a general framework to guide state agencies in performing evaluations on their systems of internal control. Ultimately, due to budgetary constraints, retirements, and a governmental redirection of organizational goals, the program never achieved the success or improved accountability that had been originally intended by the Federal or State legislation. In 1995, the governor's Director of Administration revived the tabled program and requested the Bureau of Audits (the internal audit agency attached to the Governor's Office) to collect and review self-assessment internal control reports for fiscal 1996, which were due December 31, 1997. We examine the internal control weaknesses reported for fiscal year ended June 30, 1996 by the Rhode Island state departments and quasi-governmental agencies contained in the state-wide review.

RESEARCH METHOD

Data Collection

All state entities, including both public and quasi-public state agencies, were formally contacted directly after the state's 1996 fiscal year end, and charged with submitting a letter and detailed "self assessment summary" to the governor, due by December 31, 1996. Specifically, the stated purpose for this self-assessment was to "evaluate the strengths, weaknesses, opportunities and threats of goals and objectives." The Bureau of Audits used an open-ended

format for reporting agency control system weaknesses to allow agency directors flexibility in communicating their control system observations, and their intended responses to the weaknesses identified in the recently received audit reports.

We requested access to the detailed documentation during the fall of 1998 after the state government work on the reports was essentially completed. By the spring of 1999, we received the necessary approval from the Governors Chief of Staff, the Director of Administration, Auditor General and State Controller. Our study includes all department and agencies that responded to this state-wide assessment.

Data Coding

Each of the authors independently read and classified the control weaknesses identified from the self-assessment reports. Codings were compared and reconciled between two of the authors to generate a preliminary coding set. This set was then compared to the third author's independent coding. Any differences were resolved in arriving at the final coding used for analysis. Table 1 presents examples of some of the system weaknesses categorized under the SAS No. 78 framework.

Individual weaknesses could have been classified into more than one of SAS No. 78's five component categories. As indicated earlier, the authoritative literature states that the internal control components are interrelated. SAS No. 78, for example, encourages auditors to "consider the interrelationships of an entity's control environment, risk assessment, control activities, information and communication and monitoring" (AICPA 1995, AU319.75) in evaluating the degree of assurance provided by evidential matter. The Standard also emphasized the importance

of gaining a thorough understanding of the substance of the control environment because environment factors “may have a pervasive effect on internal control” (AICPA 1995, AU319.75), and conversely, “may reduce the effectiveness of other components.” (AICPA 1995, AU319.18). COSO (1994) also addressed the linkages of the five components, and their joint influence on the dynamism of internal control systems. The Committee believed that the control environment served as the foundation for all components. However, they did not limit their discussion of component interrelationships with the control environment. In particular,

the assessment of risks not only influences the control activities but also may highlight a need to reconsider information and communication needs, or the entity’s monitoring activities. Thus, internal control is not a serial process, where one component affects only the next. It is a multidirectional interactive process in which almost any component can and will influence another (p. 18).

Accordingly, since the components are not mutually exclusive, a number of weaknesses were classified into more than one component. Table 1 presents some examples of weaknesses categorized into multiple component categories.

- Insert Table 1 About Here -

The three independent sets of codings were very consistent across authors. Kappa coefficients, representing inter-coder agreement, were .89 for the first comparison and .91 for the second and final comparison. Both of these coefficients are very strong and indicate a significant ($p < .001$) amount of inter-coder agreement.⁴ Accordingly, the use of the SAS No. 78 framework allowed the researchers to consistently categorize the internal control weaknesses reported in the governmental audit reports on these agencies. The framework appeared relatively robust with

respect to capturing all types of identified control weaknesses into at least one of its component categories.

RESULTS

Table 2 presents the internal control weaknesses identified in the state audit reports. In total, the 32 state audit reports identified 213 internal control weaknesses across the varied departments and agencies audited. Each audit report included mention of at least one internal control weakness in the organization audited. These 213 weaknesses were then classified into the five SAS No. 78 internal control components. Again, since a single weakness could be categorized into more than one component, Table 2 indicates that the 213 weaknesses were categorized 349 times into the five internal control components. The greatest number of components into which any one weakness was classified was four.⁵ This, however, occurred only once, along with 13 weaknesses classified into three components. However, the vast majority (over 93 percent) of the weaknesses were considered to fall into either one or two control components. This array of classifications indicates that most weaknesses were relatively concentrated as to its effect on the internal control systems of the audited organizations. However, there remain a number of instances where the identified weaknesses span a significant portion of the control system as depicted in SAS No. 78.

- Insert Table 2 About Here -

Table 2 also indicates that the control component containing the most weaknesses was the control activities (CA) component. This one component represented almost 31 percent (107 out of 349) of all weaknesses identified in the study. The next highest control component was the control environment (CE) component with 23 percent (81 out of 349) of the identified weaknesses. The component with the least number of identified weaknesses was the monitoring (MON) component with roughly 10 percent (37 out of 349) of the weaknesses falling in this component. A proportions test confirms that the weaknesses were not evenly distributed among the five control components ($\chi^2 = 41.22, p < .01$).⁶

In order to test whether categorization of a weakness in any one component was related to simultaneous categorization in any other component, we correlated the five control components across the 213 weaknesses. The only positive correlation is between the control environment and risk assessment components ($r = .229; p < .01$). This correlation is consistent with the interrelated nature of these two components. It also supports the presence of the risk assessment factors embodied in the control environment component of the earlier three-component internal control framework of SAS No.55. Negative relationships were observed for all the other correlations, indicating that categorization in one component effectively means non-categorization in the other components.

We next assessed whether the types of weaknesses identified by the agency directors were related to the size of the state organization being audited, as measured by total operating budget amount. Correlations between the five control component categories and the total operating budgets indicate a marginally significant ($p = .05$) relationship only between the operating budget and the monitoring component. i.e., the larger the auditee, the more frequently a monitoring

weakness was observed. All other analyses found no significant relationship between size of the audited state agency/department (based on operating budget) and type of weakness identified.

Finally, we examined the weaknesses identified across the various types of governmental agencies audited. We categorized each audited agency/department into one of the following six categories: General Government (e.g., Department of Administration), Human Services (e.g., Department of Children, Youth and Families), Education (e.g., Department of Elementary and Secondary Education), Public Safety (e.g., Department of Corrections), Natural Resources (e.g., Department of Environment Management), and Quasi-Public Agencies (e.g., Rhode Island Public Transit Authority). We then ran five separate logistic regressions with the individual weakness component the dependent variable (coded 0/1), and the agency type as the independent variable. Since operating budget was found to be somewhat related to type of weakness, we also included total operating budget as an independent variable to control possible effects due to organization size. The results of all five independent analyses indicate that type of governmental agency had no significant ($p < .10$) effect on the specific types of internal control weaknesses identified. Thus, the types of internal control weaknesses were consistent across the various types of audited state agencies in this study.

We then assessed whether the six types of audited organizations were related to the raw number of weaknesses identified by the agency directors. In essence, we wanted to test whether different types of organizations exhibited a greater number or fewer internal control weaknesses. Accordingly, we ran an unbalanced ANCOVA using the total number of weaknesses identified as the dependent variable, the organization type as the grouping variable, and the organization's operating budget as the covariate, in order to control for organization size. The results indicate

that the type of governmental agency under audit did not significantly affect ($p < .25$) the total number of weaknesses identified by the state agency directors, after controlling for size of the organization being audited.⁷

CONCLUSIONS AND DISCUSSION

We use the SAS No.78 internal control framework to analyze internal control weaknesses reported in 32 state audit reports. The usefulness of the SAS No. 78 integrated framework is found to be relatively high, in that the researchers were able to independently code the weaknesses into the five-component categories very consistently. While the five-component framework is believed to effectively capture the weaknesses identified, the weaknesses were not evenly distributed among the five components. The control activities component had the highest proportion of identified weaknesses (i.e., around 30%) and the monitoring component was found to contain the lowest proportion of weaknesses (i.e., around 10%). Thus, based on this study, actual control activities performed in the organization remain a very important aspect of the system of internal control, and are most likely to be identified by the auditor as deficient.

Monitoring weaknesses were found to be positively associated with size of the audited organization. The larger the audited agency/department, the higher the likelihood that the audit report would contain a monitoring weakness. Size, however, was not related to any of the other types of weaknesses. Additionally, the type of government agency/department was not related to the number or type of weaknesses identified.

Interpretations of our results may suggest meaningful implications for future research and practice. The predominance of the control activity component highlights the need for

government managers to closely review, evaluate and amend their existing network of policies and procedures to insure that they include those designed specifically to prevent or detect control activity weaknesses. The correlation of the monitoring component to size is also significant for practice and research. As government agencies grow in size, the need for monitoring activities increase, as well as the possible need for comprehensive and timely audits of those monitoring mechanisms. In our study, the data suggests that larger government entities should continue to establish monitoring mechanisms as a worthwhile activity of an integrated system of internal control.

Our analysis gives an indication of the robustness of the SAS No. 78 framework for varying types of organizations. Although not originally designed exclusively for government agencies, based on the results of this study, the framework provided in SAS No. 78 appears useful in evaluating control systems in governmental agencies.

BIBLIOGRAPHY

- Abdolmohammadi, M. J. 1993. Discussion of modeling internal controls and their evaluation. *Auditing: A Journal of Theory and Practice*. (Supplement): 130-134.
- American Institute of Certified Public Accountants. 1978a. *The Commission on Auditor's Responsibilities: Report, Conclusions and Recommendations*. New York: American Institute of Certified Public Accountants.
- _____. 1978b. Planning and supervision. *Statement on Auditing Standards No. 22*. New York: American Institute of Certified Public Accountants.
- _____. 1983. Audit risk and materiality in conducting and audit. *Statement on Auditing Standards No. 47*. New York: American Institute of Certified Public Accountants.
- _____. 1988. Consideration of internal control in a financial statement audit. *Statement on Auditing Standards No. 55*. New York: American Institute of Certified Public Accountants.
- _____. 1995. Consideration of internal control in a financial statement audit. *Statement on Auditing Standards No. 78*. New York: American Institute of Certified Public Accountants.
- _____. 1997. Consideration of fraud in a financial statement audit. *Statement on Auditing Standards No. 82*. New York: American Institute of Certified Public Accountants.
- _____. 2001. The effect of information technology on an auditor's consideration of internal control in a financial statement audit. *Statement on Auditing Standards No. 94*. New York: American Institute of Certified Public Accountants.
- Apostolou, B.A., J. M. Hassell, S.A. Webber and G.E. Summers. 2001. The relative importance of management fraud risk factors. *Behavioral Research In Accounting* (Vol 13), pp. 1-24.
- Asare, S. K. and R. A. Davidson. 1995. Expectation of errors in unaudited book values: The effect of control procedures and financial conditions. *Auditing: A Journal of Theory and Practice*. (Spring): 1-18.
- Bell T. B. and A. M. Wright. 1995. *Auditing practice, research, and education: A productive collaboration*. New York: American Institute of Certified Public Accountants.
- Brown, C. E. and I. Solomon. 1990. Auditor configural information processing in control risk assessment. *Auditing: A Journal of Theory and Practice*. (Fall): 17-38.

- Cashell, J. D. 1995. The effects of SAS no. 55 on audits of small businesses. *Accounting Horizons*. (September): 11-22.
- Chang, A., A. D. Bailey, Jr. and A. B. Whinston. 1993. Multi-auditor decision making on internal control system reliability. *Auditing: A Journal of Theory and Practice*. (Fall): 1-21.
- Committee of Sponsoring Organizations of the Treadway Committee. 1994. *Internal control – Integrated Framework*. New York: Committee of Sponsoring Organizations of the Treadway Committee.
- Cox, Clifford T. and H. Wichmann, Jr. 1993. The perceived quality of internal control systems and reports for state and local government. *Auditing: A Journal of Theory and Practice*. (Fall): 98-107.
- Chang, A., A. D. Bailey, Jr. and A. B. Whinston. 1993. Multi-auditor decision making on internal control system reliability: a default reasoning approach. *Auditing: A Journal of Theory and Practice*. (Fall): 1-21.
- Dusenbury, R., J. L. Reimers and S. Wheeler. 1996. An empirical study of belief-based and probability-based specifications of audit risk. *Auditing: A Journal of Theory and Practice*. (Fall): 12-28.
- Elliott, R. K. and P.D. Jacobson. 1987. The Treadway Report – Its potential impact. *The CPA Journal* (November): 20-26.
- Emby, C. 1994. Framing and presentation mode effects in professional judgment: auditors internal control judgments and substantive testing decisions. *Auditing: A Journal of Practice and Theory*. (Supplement): 102-115.
- _____ and D. Finley. 1997. Debiasing framing effects in auditors' internal control judgments. *Contemporary Accounting Research*. (Summer): 55-77.
- Felix, W. L. Jr. and M. S. Niles. 1988. Research in internal control evaluation. *Auditing: A Journal of Practice and Theory*. (Spring): 43-60.
- Fredrick, D. M.. 1991. Auditors' representation and retrieval of internal control knowledge. *The Accounting Review*. (April): 240-258.
- Frazier, D. R. and L. S. Spradling. 1996. The new SAS no. 78. *The CPA Journal*. (May): 40-75.
- Gadh, V. M., R. Krishnan, and J. M. Peters. 1993. Modeling internal controls and their evaluation. *Auditing: A Journal of Practice and Theory*. 113-129.

- Galloway, D. J. 1994. Control models in perspective. *Internal Auditor*. (December): 46-52.
- Haskins, M. E. and R. L. Henarie. 1985. Attributes and audit impact of client's control environment. *The CPA Journal*. (July): 18-26.
- Hooks, K. L., S. E. Kaplan and J. J. Schultz, Jr. 1994. Enhancing communication to assist in fraud prevention and detection. *Auditing: A Journal of Practice and Theory*. (Fall): 86-117.
- Houghton, C. W. 1991. Inherent Risk. *Auditing: A Journal of Theory and Practice*. (Spring): 1-21.
- Jakubowski, S. 1995. Reporting on the control structures of local government under the Single Audit Act of 1984. *Public Budgeting & Finance*. (Summer):58-71.
- Jeffords, R., Jr., M. Marchant and P. H. Bridendall. 1992. How useful are the Treadway risk factors?. *Internal Auditor*. (June): 60-61.
- Kinney, W. R., M. W. Maher and D. W. Wright. 1990. Assertions-based standards for integrated internal controls. *Accounting Horizons*. (December): 1-8.
- Kinney, W. R., Jr. and W. L. Felix, Jr. 1992. Implementing SAS No. 55: An interim report. *Expectation GAP Standards*. (May): 86-101.
- Kreutzfeldt, R. W. and W. A. Wallace. 1986. Error characteristics in audit populations: Their profile and relationship to environmental factors. *Auditing: A Journal of Theory and Practice*. (Fall): 20-43.
- _____. 1990. Control risk assessments: Do they relate to errors? *Auditing: A Journal of Theory and Practice*. (Supplement): 1-26.
- Marden, R. E., G. L. Holstrum and S. L. Schneider. 1997. Control environment condition and the interaction between control risk, account type and management's assertions. *Auditing: A Journal of Theory and Practice*. (Spring): 51-68.
- Mayper, A. G., M. Schroeder Doucet and C. S. Warren. 1989. Auditors' materiality judgments of internal accounting control weaknesses. *Auditing: A Journal of Practice and Theory*. (Fall): 72-86.
- McEnroe, J. E. 1989. Treadway Commission recommendations: Results at Fortune 500 companies. *Internal Auditing* (Fall): 32-35.

- Messier, W. F. and L. A. Austen. 2000. Inherent risk and control risk assessments: Evidence on the effect of pervasive and specific risk factors. *Auditing: A Journal of Practice and Theory*. (Fall): 119-131.
- Mock, T. J. and A. M. Wright. 1999. Are audit programs risk adjusted. *Auditing: A Journal of Practice and Theory*. (Spring): 55-74.
- Morton, J. and W. L. Felix, Jr. 1990. Assessing control risk: Effects of procedural differences on auditor consensus. *Auditing Symposium X*. (May): 109-131, 17-18,
- Morton, J. E. and W. L. Felix, Jr. 1991. A critique of Statement on Auditing Standards No. 55. *Accounting Horizons*. (March): 1-10.
- National Commission on Fraudulent Financial Reporting (Treadway Commission). 1987. *Report of the National Commission on Fraudulent Financial Reporting*. Washington, D.C.: U. S. Government Printing Office.
- Pany, K. and R. Whittington. 2001. Research implications of the current Auditing Standards Board agenda. *Accounting Horizons* forthcoming.
- Ponemon, L. A. 1994. Whistle-blowing as an internal control mechanism: individual and organizational considerations. *Auditing: A Journal of Practice and Theory*. (Fall): 118-130.
- Reimers, J., S. Wheeler and R. Dusenbury. 1993. The effect of response mode on auditors' control risk assessments. *Auditing: A Journal of Practice and Theory*. (Fall):62-78.
- Simmons, M. S. 1997. COSO based auditing. *Internal Auditor*. 68-73.
- Smith, J. R., S. L. Tiras, and S.S. Vichitlekarn. 2000. The interaction between internal control assessment and substantive testing in audits for fraud. *Contemporary Accounting Research*. (Fall): 327-356.
- Spires, E. E. 1991. Auditors' evaluation of test-of-control strength. *The Accounting Review*. (April): 259-276.
- Strand, C. A, S. T. Welch, F. C. Sharp and S. A. Holmes. Forthcoming . An empirical investigation of misappropriation red flags in government: SAS 82 and beyond. *Research in Government and Non Profit Accounting*.
- Tanki, F. J. and R. M. Steinberg. 1993. Internal control - integrated framework: A landmark study. *The CPA Journal*. (June): 16-20.

Wallace, W. A.. 1981. Internal control reporting practices in the Municipal sector. *The Accounting Review*. (July):666-89.

Wallace, W. A. and R. W. Kreutzfeldt. 1995. The relation of inherent and control risks to audit adjustments. *Auditing: A Journal of Accounting, Auditing & Finance*. (Summer):459-81.

Table 1

Examples of Internal Control Weaknesses Categorized into the SAS No. 78 Framework

Single Component Weaknesses

Control Environment –

“Inadequate number of field staff”

“Staff development and training are severely constrained due to budgetary and staff limitations”

Risk Assessment –

“Computerization of business office only partially complete”

“Need to evaluate tort claims against the department”

Control Activities –

“Lack of segregation of duties in the cash receipt cycle”

“Some divisions reconcile inventories while others do not”

Information and Communication –

“The ‘Staff Information and Procedures Manual’ is obsolete”

“Department needs an automated profiling system to match people with opportunities”

Monitoring –

“... department has not had an independent audit of its central business operations”

“Internal audits are to be conducted”

Multiple Component Weaknesses

Risk Assessment and Information/Communication –

“Increases in sales and production of goods and services is over-burdening present resources”

Control Environment and Information/Communication –

“A new cost allocation system is needed”

Control Environment and Control Activities –

“Limited procedures documentation that provides latitude for non-uniform work product”

Table 2

**Frequency of Internal Control Weaknesses Reported by 32 Rhode Island State Agencies
for Fiscal Year 1996 – Categorized by Agency into the Five Internal Control
Components of Statement on Auditing Standards No. 78**

Total Number of Weaknesses	Control Environment	Risk Assessment	Control Activities	Information And Communication	Monitoring	Total Number of Control Components*
25	9	5	14	10	4	42
25	11	3	15	7	4	40
21	10	6	8	6	3	33
19	7	5	13	4	7	36
13	1	2	8	8	4	23
13	1	2	9	5	1	18
13	4	1	4	7	2	18
9	4	2	4	2	1	13
8	5	3	4	3	0	15
8	1	0	8	1	2	12
8	5	3	1	0	3	12
7	1	4	2	3	0	10
5	4	3	2	1	0	10
4	2	0	1	2	1	6
3	1	0	1	1	2	5
3	1	3	0	0	0	4
3	1	1	0	2	0	4
3	0	0	2	2	1	5
3	1	0	3	1	0	5
3	1	1	2	2	2	8
2	2	0	1	1	0	4
2	2	2	1	0	0	5
2	1	1	1	0	0	3
2	0	2	0	0	0	2
2	1	0	1	2	0	4
1	1	1	0	1	0	3
1	1	1	0	0	0	2
1	1	0	0	0	0	1
1	1	0	0	0	0	1
1	0	1	1	0	0	2
1	1	1	0	0	0	2
<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>
213	81	53	107	71	31	349

* Weaknesses may be categorized into more than one control component.

FOOTNOTES

- ¹ See Elliott and Jacobson (1987) and McEnroe (1989) for further discussion of the recommendations of the Treadway Commission.
- ² The risk assessment component is different from the assessment of audit risk inherent in the audit of financial statements. In an independent audit of financial statements, auditors must initially make assessments of audit risk in order to establish inherent and control risk, and ultimately detection risk.
- ³ The individual agency directors were not asked to classify their self assessed weaknesses according to a magnitude scale, e.g. reportable conditions versus material weaknesses. Thus, it is not possible to measure and rate the severity of the weaknesses reported.
- ⁴ The percentage of inter-coder agreement across all codings was 96.5 for the first comparison and 97.1 for the second.
- ⁵ This weakness related to a computer network installation issue.
- ⁶ If we delete the three largest departments from our analyses, all reported results remain substantially unchanged. Accordingly, our results do not appear to be significantly driven by the largest departments.
- ⁷ An additional unbalanced ANCOVA using total categories of weaknesses identified produced similar results. No significant relationship was found with type of government agency and total number of control components affected after controlling for size.