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Financial Statement Fraud: Insights from the Academic Literature

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SUMMARY: We summarize relevant academic research findings to contribute to the Public Company Accounting Oversight Board (PCAOB) project on financial statement fraud and to offer insights and conclusions relevant to academics, standard setters, and practitioners. We discuss the characteristics of firms committing financial statement fraud, as identified in the literature, and research related to the fraud triangle. We then discuss research related to the procedures and abilities of auditors to detect fraud, and how fraud risk assessments impact audit planning and testing. In addition, we discuss several "high risk" areas and other issues as identified by the PCAOB. Finally, we summarize prior findings and offer conclusions and suggestions for areas where future research is needed.

Keywords: financial statement fraud; fraud detection; fraud triangle; audit procedures; audit planning; high-risk audit areas.

INTRODUCTION

To facilitate the development of auditing standards and to inform regulators of insights from the academic auditing literature, the Auditing Section of the American Accounting Association (AAA) has decided to develop a series of literature syntheses for the Public Company Accounting Oversight Board (PCAOB). This paper synthesizes and discusses implications of academic research on fraudulent financial reporting that should be relevant to regulators, practitioners, and academics.[1]

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[1] The views expressed in this paper are those of the authors and do not reflect an official position of the AAA or the Auditing Standards Committee. In addition, while discussions with PCAOB staff helped us identify the issues that are most relevant to setting auditing standards, the author team was not selected or managed by the PCAOB, and the resulting paper expresses our views, which may or may not correspond with the views held by the PCAOB and its staff.

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Over the past several decades, a significant amount of academic research has been focused on fraud in general and financial statement fraud in particular.[2] These studies address the trends, determinants, and consequences of financial fraud, as well as the responsibility for preventing, detecting, and remediating that fraud. The PCAOB since its inception in 2003 has included financial statement fraud among its top priorities of standard setting as evidenced by discussions in the Standing Advisory Group (SAG) meetings (PCAOB 2004a). Specifically, the SAG meeting held September 8–9, 2004, was devoted to 49 fraud-related discussion questions, which are summarized in Table 1 (PCAOB 2004b).

The wave of financial scandals at the turn of the 21st century elevated the awareness of fraud and the auditor's responsibilities for detecting it. The frequency of financial statement fraud has not seemed to decline since the passage of the Sarbanes-Oxley Act in July 2002. For example, the 2005 biennial survey of more than 3,000 corporate officers in 34 countries conducted by PricewaterhouseCoopers (PwC) reveals that in the post-Sarbanes-Oxley era, more financial statement frauds have been discovered and reported, as evidenced by a 140 percent increase in the discovered number of financial misrepresentations (from 10 percent of companies reporting financial misrepresentation in the 2003 survey to 24 percent in the 2005 survey). The increase in fraud discoveries may be due to an increase in the amount of fraud being committed and/or also due to more stringent controls and risk management systems being implemented (PricewaterhouseCoopers 2005). The high incidence of fraud is a serious concern for investors as fraudulent financial reports can have a substantial negative impact on a company's existence as well as market value. For instance, the lost market capitalization of 30 high-profile financial scandals caused by fraud from 1997 to 2004 is more than $900 billion, which represents a loss of 77 percent of market value for these firms (Glass Lewis & Co. 2005), while recognizing that the initial market values were likely inflated as a result of the financial statement fraud.

In this paper, we summarize insights from the academic literature in the area of financial statement fraud. Our summary is organized as follows. In the next section, we discuss the factors that affect fraudulent financial behavior at an organization. We then discuss the procedures and ability of auditors to detect fraud, including the use of "red flag" checklists and analytical procedures. The following section addresses the effect of fraud risk assessment on audit planning and testing. High-risk audit areas, including revenue recognition, related party transactions, quarterly financial statements, fair value estimates, and unusual journal entries, are discussed next. Finally, we discuss the role of audit committees, the detection of illegal acts, the mindset of the auditor, and the role of forensic specialists. Concluding comments, overall recommendations, and suggestions for future research are presented in the final section.

FACTORS AFFECTING FINANCIAL FRAUD AT AN ORGANIZATION

Statement on Auditing Standards (SAS) No. 99, *Consideration of Fraud in a Financial Statement Audit*, states that three conditions are generally present when fraud occurs. First, there is an *incentive* or a *pressure* to commit fraud. Second, circumstances provide an *opportunity* for fraud to be perpetrated (e.g., weak controls or ability of management to override controls). Finally, there is an *attitude* or *rationalization* for committing fraud. These conditions collectively are

[2] The academic research related to fraudulent financial reporting is extensive. We have tried throughout the paper to recognize all relevant published studies; however we realize there may be papers we have not cited. We apologize to the authors if we have inadvertently excluded studies. In addition, there is extensive literature on earnings management that is related but does not directly address fraudulent financial reporting that we do not cite. We refer the reader to a summary of the earnings management literature by Healy and Wahlen (1999).

TABLE 1

Summary of PCAOB Fraud-Related Questions

Question	Description	Classification
1a.	Is it appropriate for stockholders to expect auditors to detect fraud that could have a material effect on the financial statements?	Auditor's responsibilities to detect fraud
1b.	Does SAS No. 99 appropriately describe the auditor's responsibility for detecting fraud?	Auditor's responsibilities to detect fraud
2.	Is the focus on fraud risk factors/considerations helpful to the auditor in detecting financial fraud?	Characteristics of firms committing fraud/ fraud detection decision aids
3.	Should auditors presume that certain areas represent higher risk (areas include revenue recognition, accruals, related party transactions, fair value estimates, and nonstandard journal entries) and should a fraud standard include specific additional audit procedures related to these high risk areas?	High-risk audit areas
4.	Should auditors be required to identify key *performance indicators for the firm and industry* when performing and evaluating analytical procedures? Do auditors over-rely on analytical procedures?	Analytical procedures
5.	How important are quarterly reviews in detecting financial fraud? Should auditors perform additional procedures related to higher risk areas and unusual transactions or follow up on material matters from the prior audit during quarterly reviews?	Quarterly reviews
6.	Is the auditor's communication with the audit committee helpful in detecting fraud, and should the auditor inquire of the audit committee about information on complaints and concerns?	Communications with audit committee
7.	Should a proposed fraud standard include specific procedures related to detecting illegal acts?	Illegal acts
8.	To what extent should the auditor use the work of others (forensic specialists) in detecting financial fraud?	Forensic specialists
9.	Does the forensic accountant employ an investigative mindset that is different from the professional skepticism of an auditor of financial statements?	Mindset of the auditor

Source: Summarized from the list of 49 discussion questions included in the SAG's briefing materials (September 8-9, 2004), Available at: http://www.pcaobus.org.

known as the fraud triangle. We reviewed the academic findings related to the presence of these conditions in cases of financial statement fraud. This helps provide a basis for understanding the development of the questionnaires and checklists in SAS No. 82 and SAS No. 99, which we discuss in the next section of the paper.

Bell and Carcello (2000) find support for the existence of fraud triangle conditions for a sample of financial fraud companies. They estimate a logistic regression model predicting the incidence of fraud and find several risk factors associated with fraud: rapid growth, weak control environment, management overly preoccupied with meeting analysts' forecasts, management that lied to auditors or was overly evasive, ownership status, and an interaction between the control environment and management attitude toward financial reporting. The Bell and Carcello (2000) study does not, however, find evidence of a significant association between financial fraud and some of the traditional risk factors such as high management turnover, rapid industry growth, declining industry conditions, significant and unusual related party transactions, and compensation arrangements tied to reported earnings. Hernandez and Groot (2007b) also find that the use of incentive systems and opportunities for fraudulent behavior are associated with higher fraud risk assessments by audit partners; however, the most important factors are senior management ethical attitudes and dishonest communication from management with the external auditor. Rezaee (2005), in his analysis of five alleged fraud cases, also finds support for the existence of all three of the fraud triangle conditions in fraud firms. Many other studies have focused on just one of the three aspects of the fraud triangle. These studies are discussed below.

Incentives/Pressures

The incentive to misstate earnings can arise due to pressure to meet analysts' forecasts, compensation and incentive structures, the need for external financing, or poor performance. Dechow et al. (1996), using a sample of 92 firms subject to accounting enforcement releases during the period 1982–1992, find that an important motivation to manipulate earnings is the desire to attract external financing at low cost. Erickson et al. (2006) investigate whether executive equity incentives are associated with accounting fraud. They examine a sample of firms accused of fraud during the 1996–2003 period and do not find any relation between equity incentives and the likelihood of the firm reporting fraudulent financial information. In contrast, Efendi et al. (2007), using a sample of firms that restated their financial statements, find the likelihood of a misstated financial statement increases when the CEO has a sizable amount of stock options "in-the-money." They also find that misstatements are more likely for firms constrained by debt covenants, firms raising new debt or equity capital, or firms that have a CEO who serves as the chairman of the board. Burns and Kedia (2006) also document that stock options are associated with stronger incentives to misreport because options make CEO wealth a convex function of stock price. Beneish (1999a) finds that, for a group of firms subject to accounting enforcement actions by the SEC, managers are more likely to sell equity holdings and exercise stock appreciation rights in periods when earnings are inflated, suggesting insider trading behavior may be informative about earnings overstatements. Summers and Sweeney (1998) find similar results for the relationship between insider trading and fraud. More recently, there is evidence that hundreds of firms were involved in intentional backdating of stock options (Lie 2005), which again provides evidence that stock option compensation provides incentives for fraudulent behavior. A Glass Lewis & Co. (2006) report states that about half of the companies implicated in backdating their stock options have restated their financial statements.

With regard to poorly performing firms, Rosner (2003) examines whether failing firms are more likely to engage in income-increasing manipulation, and whether auditors detect the overstatements in firms they perceive to be failing. Her findings suggest that the behavior of failing firms that do not appear distressed on the basis of accrual data, but nonetheless show significant decreased cash flows, is consistent with material earnings overstatements in non-going-concern years that are followed by overstatement reversals in going-concern years. The accrual behavior of these firms resembles that of firms sanctioned by the Securities and Exchange Commission (SEC) for fraud.

Opportunities

Statement on Auditing Standards No. 99 (AU Section 316) provides examples of risk factors that may increase the opportunity to commit financial statement fraud (AICPA 2002). These risk factors include the nature of the industry or the entity's operations such as significant complex or related party transactions, ineffective monitoring of management, a complex organizational structure such as one that involves several legal entities, and ineffective controls due to a lack of monitoring of controls or circumvention of controls. Albrecht and Albrecht (2003) also discuss factors increasing the opportunity to commit fraud and note that having an effective control structure is probably the single most important step to eliminate (or minimize) opportunity to commit fraudulent acts.

Several studies have shown that ineffective monitoring of management in the form of weak corporate governance is associated with a higher likelihood of fraud. Dechow et al. (1996) find that firms manipulating earnings are more likely to have less independent boards, more likely to have a unitary structure for chairman and CEO, more likely to have a CEO who is also the firm's founder, less likely to have an audit committee and less likely to have an outside blockholder. Beasley (1996) also finds that the proportion of independent members on the board of directors is lower for firms experiencing financial fraud compared to no-fraud firms. Similarly, Farber (2005) finds that fraud firms have poor governance relative to no-fraud firms (fewer independent board members, fewer audit committee meetings, fewer financial experts on the audit committee, a smaller percentage of Big 4 auditing firms, and a higher percentage of CEOs who are also chairman of the board). The results are consistent with independent corporate governance mechanisms being more effective in the monitoring function.

Abbott et al. (2004) address the impact of audit committee characteristics (independence, activity level, and financial expertise) on the likelihood of financial statements being restated (and also fraud). The authors examine two different groups of firms: 88 firms that restated their financial statements (from 1991–1999) as well as 44 firms reporting fraudulently, both with matched samples. The independence and activity level of the audit committee are negatively associated with the occurrence of restatement. There is also a negative association between an audit committee that includes at least one member with financial expertise and the occurrence of restatement. The results are similar for the fraud sample in that companies having an audit committee with at least one member with financial expertise are less likely to file fraudulent financial statements. McMullen and Raghunandan (1996) also document that companies with financial reporting problems are less likely to have an audit committee composed of independent directors. Additional research suggests that financial and auditing literacy of audit committee members improves the quality of financial reports.[3]

Loebbecke et al. (1989) survey audit partners that have had experience with financial fraud and find that dominated decisions by management and weak internal controls are the primary conditions that increase the opportunity for fraud. Smith et al. (2000) examine a model where the strength of internal controls is inversely related to the propensity of a manager to commit fraud. In their model, the auditor's assessment of the control system affects their allocation of effort between control testing and substantive testing, but the likelihood of detecting the fraud does not increase when the auditor exerts effort to assess controls. In summary, academic research has documented that firms with a weak corporate governance structure are more likely to report fraudulent financial information. The higher incidence of fraud among these firms is at least in part

[3] See McDaniel et al. (2002), Bedard et al. (2004), and Carcello et al. (2006) for a discussion of audit committee financial experts and audit committee financial literates; and DeZoort (1998) for a discussion of audit committee members with auditing or internal control assessment experience.

due to the greater opportunities associated with a poor governance structure, where corporate governance is one of the controls recognized to address the risk of management override.

The Role of the Auditor in Reducing Opportunity

Because of their ability to detect and, in some cases, investigate fraudulent financial reporting, external auditors also act as a significant deterrent by reducing the opportunity to commit fraud. Most of the studies examining the auditor's role in constraining managers' attempts to manage earnings examine discretionary accruals. High discretionary accruals are not necessarily indicative of fraud, but possibly are indicative of aggressive and opportunistic reporting.

Researchers have argued that Big N auditors constrain managers' attempts to manage earnings through accruals and document evidence consistent with higher discretionary accruals for firms audited by non-Big N auditors (Becker et al. 1998; Francis et al. 1999). Carcello and Nagy (2002) examine the relation between auditor industry specialization and financial fraud and find a negative relation. Knapp and Knapp (2001) examine the effects of audit experience on the effectiveness of analytical procedures in detecting financial statement fraud and find that audit managers are more effective than audit seniors in assessing the risk of fraud with analytical procedures. Similarly, Bernardi (1994) finds that managers outperform seniors in a fraud detection case when they are exposed to an initial evaluation of client integrity and competence; however, this finding is attributable to managers with a high level of moral development.

Academic studies have also investigated whether the length of the client-auditor relationship is likely to impact the quality of the audit. Findings generally suggest that longer auditor tenure is associated with greater earnings quality (Iyer and Rama 2004; Myers et al. 2003). Specifically related to the frequency of financial statement fraud, Carcello and Nagy (2004) compare firms cited for fraudulent financial reporting from 1990 through 2001 to a set of control firms and other nonfraud firms and find that fraudulent financial reporting is more likely to occur in the first three years of the auditor-client relationship.[4]

The audit engagement environment has also been shown to affect fraud risk assessments. Time budget pressure can decrease auditor attention to the task of detecting fraud (Braun 2000). Auditors suffer from a "dilution effect" when given both relevant and irrelevant information in assessing the risk of fraud, and holding auditors accountable to superiors results in more conservative fraud risk assessments (Hoffman and Patton 1997; Hackenbrack 1992).

In summary, several factors that affect the quality of audits have been found to be associated with the likelihood of client firms reporting fraudulent financial information. Specifically, these are audit firm size, the level of auditor industry specialization, the length of auditor tenure, and the experience of the auditor. Engagement factors such as time budget pressure and accountability to superiors can also impact an auditor's ability to assess aspects of information indicative of fraud.

Attitudes/Rationalizations

Accounting standards can contribute to reducing both the opportunity and attitude toward fraudulent financial reporting. Nelson et al. (2002) find that the precision of accounting standards influences managers' attempts to manage earnings. They find that when accounting standards are precise, managers are more likely to attempt earnings management with transaction structuring (such as structuring a lease in a particular way to avoid a capital lease classification or by opportunistically timing sales of available-for-sale securities), and auditors are less likely to adjust those attempts. Managers were more likely to make attempts that decrease income with

[4] On the other hand, some studies have documented a negative relation between auditor tenure and audit quality (e.g., Casterella et al. 2002; Davis et al. 2003; Copley and Doucet 1993).

unstructured transactions (such as increasing or decreasing estimates involving judgment) when standards were imprecise. Managers are more likely to make attempts to increase earnings, but auditors are more likely to require adjustment in those cases, particularly if the amount is material.

Hernandez and Groot (2007a) use a sample of audit partner risk assessments made as part of client acceptance or continuance decisions for a Big 4 audit firm in the Netherlands and find that manager integrity, honesty, and ethics are considered to be the most important factors in fraud risk assessments, followed by concerns about aggressive revenue recognition and accounting estimates. Gillett and Uddin (2005) find the attitude of the CFO toward the behavior of fraudulent reporting to be a major influence on intention to misreport; however, compensation structure was not found to be a good indicator of intentions to report fraudulently.

In summary, academic research documents evidence of a relation between many of the incentives, opportunities, and attitudes identified in the auditing standards and the existence of fraud. This would suggest that the use of checklists identifying the existence or absence of these incentives and/or opportunities for particular clients would be helpful in an auditing setting. As discussed in the next section, however, the findings on the benefits of checklists in identifying fraud are mixed.

PROCEDURES AND ABILITY OF AUDITORS TO DETECT FRAUD

Current professional standards and authoritative guidance require auditors to provide reasonable assurance that financial statements are free from material misstatements, whether caused by errors or fraud. What constitutes "reasonable assurance" has been extensively and inconclusively debated in the literature and within the accounting profession (PCAOB 2005; Rezaee 2004; Harrington 2003).[5] The lack of a commonly accepted definition of reasonable assurance coupled with limitations of audit methods in identifying fraud, cost constraints of audits, and high expectations by investors have widened the expectation gap regarding auditor responsibility for detecting financial statement fraud. The CEOs of the six largest International Audit Networks believe that there should be a constructive dialog among investors of global companies and capital markets, auditors, and regulators to narrow the "expectation gap" (International Audit Networks 2006).

In an effort to provide guidance to auditors in fulfilling their requirements as related to detecting financial statement fraud, the AICPA issued SAS No. 82 in 1997 and subsequently SAS No. 99 in 2002, entitled *Auditors' Consideration of Fraud in a Financial Statement Audit*. Among other things, these standards provide auditors with a checklist of risk factors to consider when making a fraud risk assessment. In this section, we first discuss research related to the usefulness of checklists in general, and then we discuss the findings of research specifically related to SAS No. 82 and SAS No. 99. We conclude this section with a discussion of research related to other fraud detection decision aids such as regression and analytical procedures.

Symptoms of fraud are often referred to as "red flags." SAS No. 99 identifies "red flags" as risk factors and further categorizes those risk factors in the three areas included in the fraud triangle: pressures/incentive, opportunity, and attitudes/rationalizations. Albrecht and Albrecht (2003) categorize the symptoms of fraud into six types: (1) accounting anomalies; (2) internal control weaknesses; (3) analytical anomalies; (4) extravagant lifestyles; (5) unusual behaviors; and (6) tips and complaints. One of the major challenges in identifying fraud is that while symptoms of fraud ("red flags") are observed frequently, the presence of such issues is not necessarily indicative of fraud (Albrecht and Romney 1986) and investigation of such anomalies usually results in a conclusion that fraud was not the underlying cause. It is also difficult to combine and

[5] The position of the International Auditing Standards Board and the PCAOB, as articulated in PCAOB Auditing Standard No. 2, is that "reasonable assurance" means a high level of assurance.

weight fraud risk factors to assess overall fraud risk and formulate an audit plan (Patterson and Noel 2003). Further, due to attempts by perpetrators to conceal their acts, "red flags" may be relatively few in frequency and minor in amount, at least in the early stages of fraudulent financial reporting.

Studies examining the use of questionnaires or checklists in assessing fraud risk have found mixed results. In one of the first studies in this area, Pincus (1989) examines the efficacy of a "red flags" questionnaire for assessing the risk of material fraud of a client using 137 auditors as subjects. Her findings suggest that the use of a questionnaire was dysfunctional for the fraud case, i.e., questionnaire users assessed the risk of fraud to be lower than nonusers. Similarly, Asare and Wright (2004) study the impact of alternative risk assessment methods (risk checklist versus no checklist) and audit program development (standard program versus no program) on the quality of audit procedures chosen and the propensity to consult fraud experts, with data based on a case from an SEC Accounting and Auditing Enforcement Release (AAER). The authors find that auditors given the standard audit program designed a relatively less effective audit program than those without the standard program (relative to a benchmark program from a panel of experts), and auditors using a standard checklist made lower risk assessments than those without a checklist. However, they did find a higher fraud risk assessment was associated with a propensity to seek consultation of fraud experts.

Relative Impact of Fraud Audit Standards (SAS Nos. 82 and 99)

Academic studies have also attempted to identify the impact of fraud auditing standards on audit practice. Shelton et al. (2001) analyze audit manuals and practice aids and find that, although all of the firms studied include all of the SAS No. 82 factors in their audit practice aids, certain other fraud risk factors identified in academic research are not included in firm practice aids, such as (1) whether fraud risk assessments are separate or integrated with other risk assessment practices; (2) the timing of fraud risk assessment; and (3) the method of assessing fraud risk. These findings suggest that auditors limit their consideration of red flags to those included in the questionnaire.

Glover et al. (2003) find support for the use of questionnaires by comparing pre- and post-SAS No. 82 planning judgments. The authors find that post-SAS No. 82 judgments are more sensitive to fraud risk factors. For instance, post-SAS No. 82 participants are more aware of the need to modify audit plans and are more likely to increase the *extent* of their audit tests in response to increased fraud risk, as compared with the pre-SAS No. 82 participants. Glover et al. (2003), however, do not find evidence that auditors modify the *nature* of their planned tests in response to fraud risk either before or after SAS No. 82. These findings are consistent with Zimbelman (1997), who examines whether SAS No. 82 caused auditors to spend more time reviewing fraud cues and designing audit plans that are more sensitive to fraud risk. The results suggest that separately assessing fraud risk will influence auditors' attention to fraud cues and audit planning decisions and lead to overall increases in budgeted hours, but the nature of audit plans may not be affected.

Apostolou et al. (2001) examine how auditors evaluate the relative importance of 25 management fraud risk factors ("red flags") in the fraud risk assessment required by SAS No. 82. They find management characteristics and influence over the control environment red flags were approximately twice as important as operating and financial stability characteristics red flags, and about four times as important as industry conditions red flags. Furthermore, these three characteristics account for almost 40 percent of the decision weight.

Using an experimental approach with 52 audit managers as subjects, Wilks and Zimbelman (2004a) examine the use of the fraud triangle decomposition in SAS No. 99. Specifically, they investigate whether separate assessments of attitude, opportunity, and incentive risks prior to

assessing overall fraud risk improves an auditor's sensitivity to high levels of incentive or opportunity risks. The authors find that auditors that decompose fraud risk assessments are more sensitive to opportunity and incentive cues when making their overall assessments than auditors that simply make an overall fraud risk assessment. The increased sensitivity to opportunity and incentive cues, however, appears to happen only when those cues suggest low fraud risk. When opportunity and incentive cues suggest high fraud risk, auditors are equally sensitive to those cues whether they use a decomposition or a holistic approach.

In another study, Wilks and Zimbelman (2004b) recommend that, because of the strategic nature of fraud, policymakers should replace standards that inhibit auditors' strategic reasoning with standards that encourage such reasoning. Specific findings include: (1) auditors who use long checklists tend to be inaccurate in assessing fraud risk; (2) auditors generally overweigh clues about management's character, which are likely to be wrong; (3) auditors are often insensitive to new evidence regarding fraud risk; and (4) when auditors use procedures based on prior audits, they become predictable and less effective. Wilks and Zimbelman (2004b) suggest that (1) audit standards should be designed to consider how management might manipulate fraud cues; (2) standards should encourage auditors to gather new, unusual, or random audit evidence; and (3) auditors should develop audit strategies that are unpredictable.

Carpenter (2008) examines brainstorming sessions (as required by SAS No. 99) and resulting auditor fraud judgments. Interestingly, the results of brainstorming were an overall loss in the number of ideas but the generation of more quality fraud risk assessment ideas. The improvement in effectiveness from her experimental research is especially evident in senior and manager auditors' final fraud risk assessments. Carpenter et al. (2006) find that when fraud is present, a group that interactively brainstorms outperforms auditors brainstorming individually and those that do not brainstorm, providing further evidence of the benefit of interactive brainstorming sessions. The results of this research are particularly relevant given the findings from PCAOB inspection teams of instances where audit teams did not hold or document a brainstorming session, held the brainstorming session after substantive testing had already begun, or did not have all key members of the audit team present at the session (PCAOB 2007b).

Hackenbrack (1993) investigates the effect of auditor experience with different-sized clients on auditor evaluations of fraudulent financial reporting indicators using two experiments. He finds that auditors assigned primarily to audits of large companies placed more emphasis on the opportunities to commit fraud than auditors assigned to small companies. Reasons for this difference relate to differences in control structures between large and small firms and the effect of such differences on auditor perceptions of the importance of opportunities. One suggestion is that "red flag" lists need to take into account the effect of client size on different fraud risk factors.

Regression Models and Other Decision Aids

Several studies have examined whether the use of models, such as regression models, improves upon auditors' ability to detect fraud. Bell and Carcello (2000) investigate whether a logistic regression model including significant risk factors performs well in predicting fraud using 77 fraudulent engagements and 305 nonfraud engagements with various risk factors included as explanatory variables. A main finding is that a simple logistic model outperforms auditors in fraud risk assessment. Eining et al. (1997) also find that supplementing a checklist with a model or expert system aids auditors in assessing fraud risk and determining appropriate audit procedures.

To summarize the findings on the use of decision aids as a tool for detecting fraud, there is very limited evidence that the use of checklists improves an auditor's ability to assess fraud risk. Much of the research suggests that the use of checklists and questionnaires may actually restrict

the auditor's generation of ideas, and Wilks and Zimbelman (2004b) provide suggestions for improving the audit approach. Research also supports the use of regression models or the use of expert system aids to improve the assessment of fraud risk.

An additional area that requires attention is the ability of executive-level management to override internal controls. This significant issue was a prevalent cause of many of the late 1990 and early 2000 financial scandals (e.g., Tyco, Enron, WorldCom, Adelphia). In response, the AICPA issued *Management Override of Internal Controls: The Achilles' Heel of Fraud Prevention—The Audit Committee and Oversight of Financial Reporting* (AICPA 2005). One impact of this white paper is that the evaluation of internal controls should also address controls to monitor and restrict management override (e.g., review of journal entries and diligent audit committee). The possibility of management override is discussed throughout PCAOB Auditing Standard No. 2 and PCAOB Auditing Standard No. 5 (PCAOB 2004c; PCAOB 2007a); however, the PCAOB inspections have still noted instances where audit teams have failed to consider the risk of management override, particularly with respect to journal entries and accounting estimates (PCAOB 2007b).

Analytical Procedures

Analytical procedures involve forming expectations and determining whether account balances and other data appear reasonable and are often used as additional inputs into fraud risk assessment. One of the first steps in forming expectations is understanding the client's business, which Erickson et al. (2000) argue is a basic audit procedure that may have aided auditors in detecting fraud in the audit of Lincoln Savings and Loan. Analytical procedures range from basic scanning to using multifactor regression models (Green and Choi 1997). Researchers have examined the performance of different methods and techniques and their success in detecting fraud. The following are broad categories of techniques examined in the literature.

Traditional analytical review, which involves ratio analysis, has yielded limited success in identifying fraud. One of the problems with using ratio analysis is the subjectivity involved in identifying the ratios that are likely to indicate fraud. Kaminski et al. (2004) use a matched sample design and investigate the predictive ability of 21 financial ratios for a seven-year period. Of the 21 ratios examined, none were consistently significant throughout the sample period examined. Furthermore, discriminant analysis resulted in misclassifications for fraud firms ranging from 58–98 percent, leading the authors to conclude that ratio analysis has limited ability in detecting fraud. Kaminski and Wetzel (2004) conduct a longitudinal examination of ten financial ratios on 30 matched-pair firms using chaos theory. They find that none of the ratios exhibited stable or periodic behavior and do not find any difference among the dynamics of these ratios for fraudulent and nonfraudulent firms. Their study thus provides additional evidence on the limited usefulness of financial ratios alone to detect fraud.

Alternatively, Beneish (1999b, 1997) uses a sample of GAAP violators to determine whether financial statement information is useful in identifying potential earnings manipulation. He finds that financial statement information, particularly information related to receivables and sales growth, has predictive ability in a model of the probability of GAAP violations. However, Beneish (1999b) notes that while his predictive model is more cost-effective than assuming all firms are nonviolators, there is a high rate of misclassification.

Calderon and Green (1994) argue that although analytical review is typically performed on an account level, conditioning the priors on exogenous information could provide more accurate signals. They investigate whether analysts' forecasts are useful in signaling the existence of fraud and find that analysts' forecasts provide an accurate signal of the presence of fraud when financial reporting is fraudulent. In the absence of fraudulent reporting, however, the signal performs poorly at indicating the absence of fraud.

Brazel et al. (2006) examine whether the relation between financial measures and nonfinancial measures can be used to assess fraud risk. They posit that because fraud firms are unlikely to misstate both financial statements and nonfinancial measures concurrently, examining the difference between the two should help decision makers in fraud risk assessment. Brazel et al. (2006) find that fraud firms have greater differences between changes in financial measures and changes in nonfinancial measures, suggesting the importance of considering nonfinancial measures when assessing fraud risk.

Another approach to identifying potential financial fraud is the application of Benford's Law, which involves digital analysis. Using Benford's Law, one can compare the actual frequency of the digits in a data set with the expected frequency and investigate any deviations. Nigrini (1999) provides a discussion of the theory and examples of applications in an auditing setting. Nigrini and Mittermaier (1997) discuss different analytical procedures auditors can perform during the planning stage using Benford's Law and illustrate a case study. Durtschi et al. (2004) also suggest that Benford's analysis can be useful as a preliminary fraud detection tool to identify accounts with irregularities, especially on large data sets and sets of numbers that result from mathematical combinations such as accounts receivable, and also when the mean of a set of numbers is greater than the median and the skewness is positive. They caution, however, that Benford's analysis is not likely to be fruitful in certain cases such as transactions that are not recorded or accounts that have a built-in threshold to be included. Cleary and Thibodeau (2005) also examine whether digital analysis using Benford's Law has merit as a fraud detection tool, and find that using a "digit-by-digit" approach increases the chance of a Type I error, but also increases the chance of finding fraud. Benford's Law has also been used to assess trends in earnings management by examining patterns in reported numbers, similar to looking for discontinuities in earnings (Nigrini 2005).

Artificial Neural Networks (ANNs) have also been suggested as a tool for creating expectations for account balances (Koskivaara 2004) that can be compared with actual balances. Noting the benefit of neural networks, Green and Choi (1997) state that neural networks "simultaneously evaluate all data input," which is in contrast with traditional analytical procedures that require the auditors to aggregate their findings. Researchers have explored whether fraud can be identified more efficiently with the help of neural network models as compared to traditional statistical models. Both Fanning et al. (1995) and Green and Choi (1997) find neural network fraud classification models to be promising in detecting fraud. Lin et al. (2003) develop a fuzzy neural network model and find it to be generally superior to the traditional models in assessing the risk of fraud.

In summary, the traditional analytical procedures have yielded limited success in identifying fraud. One of the reasons, perhaps, is that management is in a position to hide account irregularities and/or explain away any unusual deviations in accounts. Because of this limitation, as suggested by Calderon and Green (1994), auditors should also consider other exogenous factors. In addition, two potential approaches include applying Benford's Law, or using neural network systems, during analytical review.

FRAUD RISK ASSESSMENT IMPACT ON AUDIT PLANNING AND TESTING

Once auditors have made an assessment of fraud risk, there is an additional concern regarding how this assessment affects audit planning and testing. The evidence in the literature is mixed as to whether auditors actually adjust their audit plans as a result of increased risk of fraud. For example, Johnstone and Bedard (2001) examine the effects that client risk factors have on engagement planning and pricing. The authors examine a set of initial engagement proposals that a single firm submitted to its prospective clients in 1997–1998. Their findings suggest that (1) error

risk factors have a small effect on engagement effort, but fraud risk factors have no effect on effort; (2) engagement teams more often plan to use high-risk specialist personnel for clients with fraud and error risk factors, and more often plan additional review for clients with fraud risk factors; (3) the firm plans intensive testing more frequently for clients with error risk factors, but not for clients with fraud risk factors; (4) both fraud and error risk factors are associated with risk premia in the set of submitted bids, after controlling for effort. In an experimental setting, Kaplan and Reckers (1995) find that auditors take observed red flags related to management intentions (lifestyle and bonus opportunity) into their decision-making process; however, those red flags were not associated with the auditors' materiality assessments.

Consistent with these research findings, the PCAOB also noted in their summary of observations from the inspection process related to auditors' detection of fraud instances where auditors seem to be simply checking off items on a checklist but then not expanding audit procedures to address the identified fraud risk factors (PCAOB 2007b).

HIGH-RISK AREAS

The PCAOB has identified several high-risk areas in which fraud either begins or is more common and in which the auditors may need to perform additional audit procedures to identify and document fraud risk (PCAOB 2004b). The areas identified by the PCAOB are revenue recognition, significant or unusual accruals, related party transactions, estimates of fair value, quarterly financial information, and significant or unusual journal entries. We discuss the relevant research in each of these areas.

Revenue Recognition

The Committee of Sponsoring Organizations Report (COSO 1999) reveals that about 50 percent of frauds involve overstated revenues either by reporting revenues prematurely or by creating fictitious revenue transactions. A study by the General Accounting Office (GAO 2002) found that out of 919 financial statement restatements over the time period January 1997–June 2002, 38 percent were due to revenue recognition issues. Rezaee (2005) also reports that about 38 percent of financial statement fraud is committed by using improper revenue recognition. Beasley et al. (2000) report that common revenue fraud techniques include sham sales, false confirmations, premature revenue recognition before the terms of the sale are completed, modified terms through side letters, improper cutoff, unauthorized shipments, and consignment sales.

While there is an extensive amount of literature related to earnings management in general (see Healy and Wahlen (1999) for a summary), there is surprisingly little research related to revenue recognition practices. There does seem to be support, however, for identifying revenue recognition as a high-risk area. In a recent working paper, Caylor (2006) finds evidence consistent with companies managing earnings around various benchmarks through the timing of revenue recognition: either accelerating revenue recognition by increasing credit sales and accounts receivable or delaying revenue recognition through the use of deferred revenues.

Additional research examining changes in the timeliness and value relevance of revenue surrounding the release of revenue recognition guidance, more specifically AICPA Statement of Position 91-1 (AICPA 1991, hereafter SOP 91-1) related to software revenue recognition and SEC Staff Accounting Bulletin 101 (SEC 1999, hereafter SAB 101), provides evidence that managers use discretion available in recognizing revenue. Zhang (2005), in a study related to SOP 91-1, and Altamuro et al. (2005), in a study related to SAB 101, both find that recognizing revenue before all terms of the sale have been completed provides more timely and value-relevant information;

however, it also reduces the reliability of revenue information. These studies suggest that managers use discretion in revenue recognition policies to achieve desired results; however, there are both positive and negative aspects associated with the discretion.

Marquardt and Wiedman (2004) examine three earnings management contexts: equity offerings where incentives are to increase reported earnings, management buyouts where incentives are to decrease reported earnings, and firms attempting to avoid earnings decreases. The results suggest that firms issuing equity tend to manage earnings upward by accelerating revenue recognition (with related accounts receivable being unexpectedly high), management buyout firms have unexpectedly low accounts receivables, and firms trying to avoid earnings decreases use more transitory, less costly items such as special items (one time accruals). These results are consistent with a need by auditors to match management incentives to the types of risks that should be evaluated as high.

Significant or Unusual Accruals

The issue of significant or unusual accruals relates primarily to the intentional overstatement of accruals in one period so that earnings can be managed in subsequent periods through the reversal of those accruals, and also failing to recognize losses due to asset impairments. These accruals include allowances for bad debts, loan loss reserves, merger-related expenses, and restructuring reserves, among others. Nelson et al. (2002), in a questionnaire where audit partners and managers recalled specific experiences they had with clients they believed were attempting to manage earnings, find cookie jar reserves (i.e., intentional overstatement of accruals) to be the most common earnings management technique. The General Accounting Office study (GAO 2002) on financial statement restatements found that cost- or expense-related restatements were the second most common, with 16 percent of all restatements identified being related to cost or expense recognition.

Moehrle (2002) finds evidence consistent with the use of restructuring charges as a cookie jar reserve. Moehrle (2002) examines restructuring charge reversals and finds that managers are more likely to reverse restructuring charges when pre-reversal earnings fall short of analysts' forecasts or when pre-reversal net income is negative. Beatty et al. (2002) examine efforts by private versus public banks to manage earnings when threatened by the possibility of an earnings decline. The authors find that public banks report fewer small earnings declines, are more likely to use loan loss reserves and security gain realizations to eliminate small earnings declines, and report longer strings of consecutive earnings increases. Similarly, Kanagaretnam et al. (2004) find that banks use loan loss reserves as an earnings management vehicle to reduce earnings variability, while Kanagaretnam et al. (2003) examine incentives and find that bank managers save earnings through loan loss reserves in good times and borrow earnings using loan loss reserves during bad times.

While these studies focus on earnings management and not necessarily financial statement fraud, they do imply that earnings management occurs in places where management has discretionary choices. The results support the identification of significant or unusual accruals as a high-risk area.

Related Parties

Gordon et al. (2007) provide a summary of research on related party transactions and find that the mere presence of related party transactions does not appear to increase auditor risk assessments; however, the research also suggests that related party transactions is one of the top reasons cited for audit failure when a fraud does occur. Bonner et al. (1998) examine a sample of 261 firms that were subject to SEC enforcement actions between 1982 and 1995 and document that

20 percent of their sample had fraud issues that pertained to related party transactions. Most of these cases relate to disclosure problems (17 percent), while 2 percent of the sample firms reported fictitious related party sales.

Beasley et al. (2001) investigate 56 firms whose auditors were subject to actions by the SEC, for their association with fraudulent financial statements. They find that 27 percent of their sample firms had instances where the auditor had either failed to recognize or disclose related party transactions, which, in turn, translated into the reporting of inflated asset values. Gordon and Henry (2005) examine a sample of 331 firms and investigate whether related party transactions are associated with earnings management. They find earnings management to be prevalent only when companies have certain types of related party transactions. Specifically, they find companies that obtain fixed-rate financing from related parties are more likely to manage earnings. In addition, they find earnings management to be less prevalent in companies that have related party transactions with executive chairmen or the principal owner.

Fair Value Estimates

Auditing fair value estimates is the topic of one of the other groups assembled by the Auditing Section of the American Accounting Association to provide a summary of research to the PCAOB (Martin et al. 2006). Martin et al. (2006) discuss the recent FASB exposure draft titled *Fair Value Measurements* (FASB 2004), and Statement on Auditing Standards No. 101, *Auditing Fair Value Measures and Disclosures* (AICPA 2003). To date, there has been limited academic research in the areas of estimating and/or measuring fair value. We are not aware of any research specifically related to fraudulent financial reporting through intentionally misstated fair value measurements. However, Martin et al. (2006) cite research suggesting management opportunistically uses the discretion inherent in fair value measurements. For example, research in the area of valuing employee stock options suggests that management uses allowable discretion in estimated model inputs to bias option fair values downward (Aboody et al. 2006; Balsam et al. 2003; Bartov et al. 2007). We refer the reader to Martin et al. (2006) for a complete discussion of the relevant issues in estimating and auditing fair value measurements, including a discussion of the potential biases and errors of both the preparers and auditors.

Quarterly Financial Information and Unusual Journal Entries

We were unable to find any research that directly addresses quarterly financial reporting and fraud or the use of unusual or top-level journal entries and financial statement fraud. Academic research suggests that the fourth quarter is used more frequently to manage earnings and settle-up (Jacob and Jorgensen 2007), and there is also a greater occurrence of write-offs and asset sales in the fourth quarter (Elliott and Shaw 1988), which contributes to the increased volatility of fourth quarter earnings relative to other quarters as documented by Collins et al. (1984). In addition, there is anecdotal evidence that management uses top-level journal entries to commit fraud (e.g., WorldCom). Additional research is needed, however, both in the area of quarterly financial statements and fraudulent activity and in understanding the process of journal entry review to detect and prevent fraud.

PCAOB CONCERNS IN OTHER AREAS RELATED TO FINANCIAL FRAUD

Additional questions raised by the Standing Advisory Group relate to auditor discussions with the audit committee, the detection of illegal acts, the use of forensic specialists in an audit, and the mindset of the auditor. The SAG questions in the audit committee area relate to whether auditors should inquire of the audit committee about concerns that have been raised (e.g., through the whistle-blowing process), and whether those inquiries should be made quarterly or annually.

Cohen et al. (2007) review literature related to audit committees and financial reporting integrity and issues relating to auditor communication with the audit committee. While several academic studies examine the association between audit committee independence and audit committee effectiveness (these studies were discussed earlier in the section on the characteristics of fraud firms, in the subsection on opportunities to commit fraud), there is a dearth of evidence on communication between the external auditors and the audit committee.[6] In a more general experiment, however, Schultz and Hooks (1998) find the stronger the relationship between the auditor and client personnel, the greater the likelihood the client personnel will report wrongdoing to the auditor. With the passage of SOX, the audit committee now has elevated and direct responsibility for overseeing the financial reporting process, monitoring choices of accounting policies and principles, monitoring internal control processes, and overseeing the hiring and performance of the external auditors. Thus, it seems likely that external auditors will increase the frequency and level of communication with the audit committee as the role of the audit committee expands. Future research in this area is needed to identify the impact of the expanded role of the audit committee and the effectiveness of whistle-blowing policies and procedures.[7]

The PCAOB is interested in whether a new standard related to the auditor's responsibility to detect illegal acts should be considered, how and when should forensic specialists be used in an audit and what professional standards should apply, and whether the mindset of a forensic accountant differs from an auditor's mindset. No research specifically related to these issues was noted. Two studies examining auditor risk management strategies and/or auditors' assessments of fraud risk briefly discuss the propensity to use specialists. Johnstone and Bedard (2003) use actual decisions made by a large professional services firm to examine whether risk management strategies—specifically, the use of specialist personnel and higher billing rates—moderate the effect of risk on client acceptance decisions. They find that the intent to use specialist personnel moderates the negative relationship between audit risk (i.e., fraud and error risk) and client acceptance likelihood. Johnstone and Bedard (2003) infer that firms assign specialist personnel to alter the risk-return balance to an extent sufficient to warrant acceptance of some clients that would otherwise be unacceptable. Asare and Wright (2004) find that a higher fraud risk assessment by auditors was associated with a greater propensity to seek consultation of fraud experts.

The CEOs of the six largest International Audit Networks believe that auditors' ability to detect fraud is limited by the cost constraints of the audit and methods used by auditors to detect fraud. They suggest that to improve fraud detection, either (1) all public companies should be subject to a forensic audit on a regular basis (every three or five years); (2) all companies should be subject to a forensic audit on a random basis; or (3) the board of directors or the audit committee chooses the fraud detective level and the extent of the forensic audit conducted solely for the benefit of investors (International Audit Networks 2006). The extent, nature, feasibility, and effectiveness of forensic audits, either on a regular basis or a random basis, or choice-based options in deterring, preventing, detecting, and correcting fraud are not adequately addressed by academic research and thus should be further studied.

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[6] One study was noted that provides a description and a discussion of the advantages and disadvantages of whistle-blowing rules in the U.S., Germany and Europe (Schmidt 2003); however, this paper does not discuss communication between the audit committee and the external auditor.

[7] See Hooks et al. (1994) for an earlier discussion of research on whistle-blowing systems as an internal control mechanism.

CONCLUSIONS AND SUGGESTIONS

A large body of academic research sheds light on many aspects of fraudulent financial reporting. In this paper, we synthesize existing research and identify areas for future research. Our primary conclusions from our review of the literature on fraudulent financial reporting are as follows.

1. There is a significant amount of literature on the characteristics of fraud firms, providing support for the fraud triangle classifications and the list of "red flags" used in both SAS No. 82 and SAS No. 99.

   a. Pressures to meet analysts' forecasts, rapid growth, compensation incentives, stock options, the need for financing, and poor performance increase the likelihood of fraudulent financial reporting.
   b. Effective corporate governance, including the board of directors, audit committee, and internal controls, and also the external auditor, play key roles in reducing the opportunity to commit fraud.
   c. Research is limited in the attitudes and rationalizations area.

   Based on the research, the focus areas of SAS No. 99 (incentives, opportunity, and rationalization) are grounded in empirical evidence. In that regard, the efforts of the profession to emphasize management override are warranted.

2. Evidence on the usefulness of checklists as a fraud detection tool is mixed. While there is some research that supports the use of checklists as a decision tool, there is more evidence that suggests the use of checklists is dysfunctional in that auditors fail to expand their thinking beyond the checklist.
3. Research supports a need by auditors to align management incentives to the types of risks that should be evaluated as high (i.e., high incentives to manage earnings upwards as a result of a need for capital versus incentives to manage earnings downward and establish cookie jar reserves).
4. There is evidence that suggests auditors do not make significant adjustments to audit plans as a result of higher fraud risk assessments.
5. Research supports further exploration into the use of additional fraud detection tools such as regression analysis, the use of nonfinancial information, digital analysis, and neural network models. Such research would need to consider the necessary resources, such as expertise, that would be required to effectively and efficiently incorporate more sophisticated tools into the continuous audit.
6. Research supports the identification of revenue recognition, significant or unusual accruals, and related parties as areas with increased risk of fraudulent financial reporting activity. However, further research is needed in the "high risk" areas to determine whether adding specific audit procedures related to these areas (beyond those already included in the auditing standards) would improve fraud detection.[8]

The research summarized above will provide valuable input to the accounting profession and standard-setters, and there are several areas in which additional research is needed. Despite existing auditing standards and authoritative guidance on an auditor's responsibility for discovering and reporting financial statement fraud, there remains an expectation gap between what investors

[8] The high-risk areas include the following: revenue recognition, significant or unusual accruals, related parties, fair-value estimates, fraudulent quarterly financial information, and journal entries.

believe the auditor's responsibility should be in detecting financial fraud and what auditors are willing to assume as responsibility in this area. The notion of reasonable assurance has been extensively debated yet not clearly defined or commonly accepted. The American Institute of Certified Public Accountants' Auditing Standards Board, the American Accounting Association, and the International Auditing and Assurance Standards Board recently issued a "request for proposal" soliciting research to identify and explain how users of financial statements perceive audits and audit reports, in an attempt to determine whether the auditor's report should be revised.

As discussed above, existing research provides insights into the components of the fraud triangle (with the exception being limited evidence on attitudes and rationalizations); however, much of the research focuses on only one aspect of the fraud triangle. Researchers could design studies in which all elements of the fraud triangle are examined. With respect to auditing standards, most of the research is oriented around SAS No. 82, leaving significant research on SAS No. 99 to be completed, particularly in the area of management override of internal controls.

A fruitful area of prior research has been related to tools and techniques to improve fraud detection such as analytical procedures, ratio analysis, regression analysis, and checklists. With the introduction of new technology-based tools in auditing, such as data-mining software, continuous auditing, and pattern-recognition software, this area would require constant examination to test the efficiency and effectiveness of new tools to detect fraud. Researchers could also identify tools that are efficient and effective at different stages, such as the use of digital analysis at initial planning stages.

There is little or no research in the potential high-risk areas of auditing fair value estimates, quarterly financial information, and top-level journal entries. In addition, further research is necessary in the areas of auditor communication with audit committees, the detection of illegal acts, the mindset of the auditor, and the use of fraud examiners and forensic accountants. Research comparing the mindset of auditors versus forensic accountants, and the role of auditor experience (e.g., the importance of partner and manager involvement), would provide insight into the importance of mindset in assessing fraud risk. Research that considers and evaluates the relative costs and benefits of including fraud and forensic accounting expertise as part of the traditional audit is also needed.

Additional areas in which research is needed include the importance of a risk-based and top-down approach in detecting fraud and investigating the effectiveness of entity-level controls (setting an appropriate tone at the top) in discovering fraudulent financial reporting. Future research should also examine the role of the auditor in identifying and possibly mitigating incentives and opportunities for management to engage in financial statement fraud (e.g., management override). Finally, investigations of fraud are oriented around the "elements of fraud:" the act, the concealment, and the conversion (benefit[s] to the perpetrator). Yet, no research into fraud *investigation* tools and techniques used by auditors, fraud examiners, and forensic accountants was observed, nor do prior auditing standards provide guidance, once initial identification and evaluation of "red flags" suggest that financial statements may be materially misstated. All of these areas of research are important as regulators consider the role of auditors in detecting, and even reducing the opportunities for, financial statement fraud.

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