

## Financial and Non-Financial Fraud Risk Assessment

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### 1. Introduction

Management and Boards of Directors should proactively undertake fraud risk assessment to gain a comprehensive understanding of the threats facing their organizations and then design programs to respond to those specific risks (McNeal 2019). Similarly, both active and passive investors should work with management and Boards of Directors' audit committees or risk committees (if so established) for the same purposes (Grove and Clouse 2019; Grove, Clouse and King 2020). A fraud risk assessment (FRA) team should be established by management and the Board of Directors' audit committee if there is no separate Board risk committee. In planning and preparing for a fraud risk assessment, this team should consider past instances of fraud both within their organization and significant (infamous) examples at other organizations. Academic literature has studied the organization and behavior of fraud risk teams but not linked them to specific forensic procedures for identifying and assessing the risk of fraudulent financial reporting. This study aims to fulfill that literature gap.

Howard Schilit, a forensic accountant and financial analyst, has observed: "I read recently that the one lesson we have learned from history is that we have learned nothing from history. Yet my mantra remains that in order to find fraud, we must study the history of fraud. A common element in major frauds is that their warning signs were not hard to find; in fact, they were hard to miss" (Schilit 2010). Such past internal and external fraud occurrences can help an FRA team understand the control environment and known fraud risks within the organization, such as separation of duties issues and cybersecurity issues. If there were actual past known fraud instances within the organization, the FRA team should understand how they were handled, as well as management and employees' perceptions of the overall control environment and the operating effectiveness of specific anti-fraud controls.

For example, cybersecurity may currently be the most important challenge to fraud risk assessment. A technology expert commented: "Once again in 2016, experience seemed to verify that there are only two kinds of companies—those that know they've been hacked and those that have been hacked but just don't know it" (Castelluccio 2017). Per the American Institute of CPAs, cybersecurity has become a top concern for Boards of Directors and executives of many entities, regardless of their size or their industry: "Almost every day a new cyberattack is announced in the media. Nations, independent hackers, organized crime, and malicious insiders are attacking entities because of who they are, what they do, or the information they possess" (AICPA 2017). Accordingly, the AICPA has created an attestation guide focusing upon cybersecurity description and control criteria to help assess cybersecurity risks (Grove, Schaffner and Clouse 2019).

Other key factors that could have a substantial effect on the fraud risks for a company include the merger with or acquisition (M&A) of competitors, recent software conversions, and new sales incentive programs which could motivate revenue frauds. M&As often result in trying to integrate different cultures and control systems into the existing company which could increase the risk of fraud. In addition to cybersecurity risks, recent software conversions often involve new processes, new access restrictions, and a steep learning curve—all of which can result in control gaps and deficiencies that might open up new fraud opportunities. Changes in incentive systems, especially for revenue growth, should be rigorously evaluated concerning how employees feel pressured to "make the numbers", even dishonestly.

The fraud team literature has several creative recommendations for forming and operating FRA teams, as subsequently discussed. On a micro-company level, to help gather information about such factors, the FRA team could use employee interviews, an anonymous survey, a focus group, and process walk-throughs, especially for a company's control activities. On a macro level, the FRA team should consider any changes in the company's economic, financing, or regulatory environments and how such changes might affect the likelihood and impact of potential fraud risks (McNeal 2019).

The research question and major purpose of this article is to analyze major types of fraud that occurred in the 21<sup>st</sup> Century to develop forensic procedures for FRA teams of management and Boards of Directors to use for fraud risk assessment. The remaining sections are fraud team effectiveness, fraud risk assessment and response, methodology, 21<sup>st</sup> Century major fraud types and forensic procedures, fraud analysis, and conclusions.

## **2. Fraud Team Effectiveness**

Concerning the composition and procedures for an FRA team, a survey of lending officers found that in-house internal auditing departments that report to senior management were perceived to be less able to provide protection against fraudulent financial reporting, compared to in-house departments that report solely to the Board of Directors' audit committee. Also, the study did not find any difference in users' perceptions of financial statement fraud prevention between outsourced internal audit teams and in-house internal audit departments when both reported to the Board of Directors' audit committee (James 2003). Another study of internal audit reporting interviewed financial analysts, audit committee members, internal auditors, and policymakers. It found that an internal audit report has the potential to complement existing corporate governance disclosures, increase stakeholder confidence in governance quality, and motivate internal audit diligence (Archambeault et. al 2008). Thus, there is potential for a combined FRA team of internal auditors and the Board of Directors' audit committee.

Another approach for an FRA team would be for the Board's audit committee to coordinate closely with the company's external auditors. Statement on Auditing Standards No. 99 (AICPA 2002) requires brainstorming on each audit to help external auditors detect fraud in financial statements. An empirical experiment suggested that brainstorming sessions result in an overall loss of ideas generated by individual auditors prior to the brainstorming session. However, while the overall number of ideas is reduced, brainstorming audit teams generate more quality fraud ideas than individual auditors generate before the brainstorming sessions. Audit teams' fraud risk assessments after the brainstorming session were significantly higher than those assessments given by individual auditors on the team prior to the brainstorming session, especially when fraud is present (Carpenter 2007). Furthermore, auditing standards recommend separate assessments of the likelihood (L) and magnitude (M) of risks (LM decomposition). An experiment with 101 experienced auditors showed a correlation between auditors' likelihood judgments and their overall fraud risk judgments and the coherence of their fraud risk judgments were higher for auditors who performed an LM decomposition (Simon et. al 2018). Thus, potential brainstorming sessions, including the external auditor team and the Board audit committee as an FRA team may have even more potential for identifying fraud.

Such brainstorming could be done virtually, especially relevant in this time of social distancing and work-at-home, due to the coronavirus. 60 global, virtual supply teams with 150 subjects from a large multi-national company were given a team task in virtual or non-virtual task solving meetings. The study's main finding indicated that while the virtual team members showed a high degree of compliance with the directive to distribute tasks among themselves and to appoint a chairperson, the non-virtual team members showed a low degree of compliance. It seems that the use of a formality variable explained the compliance of the virtual team members, as opposed to the lower level of compliance among members of the non-virtual teams. Members' percentage of time allocated to the team shifted from being a positive influence on preparation activities to a negative influence as team interdependence went from relatively high to relatively low levels (Maynard et.al 2012).

In another electronic brainstorming research study, 111 managers and seniors from two Big 4 accounting firms were used to compare fraud brainstorming outcomes between nominal and interacting teams for two tasks of varying complexity: a simpler task of fraud risk factor identification and a more complex task of fraud hypothesis generation. Nominal teams were found to generate a significantly larger number of unique fraud risk factors and higher-quality fraud hypotheses than interacting teams. Social loafing by less experienced auditors, who also had less developed mental simulations for frauds, in interactive teams drove the differences between nominal and interacting teams in the fraud hypothesis generation task (Chen et.al 2015). Overall, there is potential for an FRA team using electronic brainstorming sessions.

In a non-electronic brainstorming research study, participants viewed a video of a simulated brainstorming session in which psychological safety (P-S) was manipulated. In the more (less) P-S condition, the partner engendered a supportive (non-supportive), non-threatening (threatening) group dynamic and a style that encouraged (discouraged) idea sharing. The study found that less-knowledgeable auditors increased their willingness to share privately known, fraud-relevant information in a more P-S setting than in a less P-S setting. Thus, the criticality of encouraging team dynamics that engender

P-S for less-knowledgeable subordinates was implied (Gissel and Johnstone 2017). Such P-S support could be critical in discovering fraud since these less-knowledgeable auditors always do the detailed auditing procedures (grunt work), such as cash, accounts receivable/revenue, internal controls testing, and long-term asset capitalization versus expensing, which is often the initial red flag for uncovering fraud.

Another characteristic of an FRA team was explored in a study of the dynamics of conflict management as a team phenomenon. The input variable of task structure (task interdependence) was related to team conflict management style (cooperative versus competitive) and to team performance, and how team identity moderated these relationships. 77 intact work teams from high-technology companies participated in the study. Results revealed that at high levels of team identity, task interdependence was positively associated with the cooperative style of conflict management, which in turn fostered team performance. A negative association was found between competitive style and team performance (Somech et.al 2008). Thus, a cooperative style of conflict management would be useful for an FRA team.

The structure of audit teams is another relevant aspect of an FRA team. A study examined the relationship between the structure of audit teams and selected communication variables: information overload, boundary spanning, satisfaction with supervision, and accuracy of information. A national sample of 109 audit teams with three auditors from each team responding (i.e., n = 327), was used. Information overload, satisfaction with supervision, and accuracy of information were less in audit teams with greater structure. The implication was that the level of structure adopted by teams had both positive and negative effects on communication, with structured teams providing greater control over information overload but impairing satisfaction with supervision and the accuracy of information (Rudolph and Welker 1998). Thus, a more structured approach would be useful for an FRA team.

### **3. Fraud Risk Assessment and Response**

Fraud risk assessment has traditionally focused upon two factors: 1) the likelihood or the probability of the risk's occurrence and 2) the impact or significance of the total potential effect, including both direct and indirect costs, that the company would experience if the risk occurred. However, when assessing fraud risks, a third factor has emerged: risk velocity, primarily due to cybersecurity risks. It is defined as the speed with which a particular risk occurs or the time it would take for the risk to impact the company (i.e., how quickly the consequences of the risk are felt by the company). If the risk has a low velocity, FRA teams should recommend to management proactive measures and contingency plans to identify occurrences early and reduce the total risk impact. However, a high-velocity risk hits the company hard and fast, making prevention especially important. There is also a fourth fraud risk factor emerging, especially with 24/7 media and social networks: visibility. A fraud occurrence may be publicized even before a company has an opportunity to respond and correct the fraud problem and prevent damage to its reputation. Cybersecurity hacks are a good example (McNeal 2019).

When the company's risks have been identified and assessed by an FRA team, the risks should be prioritized so an FRA team can recommend to management the appropriate response to each risk. There are four major risk responses:

1. Avoid the risk: Management can decide to simply avoid a particular risk by eliminating an asset or exiting an activity. It is typically the preferred approach if the risk control measures are too expensive. For example, a multinational company might choose not to conduct business in a country with an extremely poor ranking on the Transparency International Corruption Perception Index.
2. Transfer the risk: Management can transfer some or all of a risk by purchasing fidelity insurance or a fidelity bond. The cost to the company is the premium paid for the insurance or bond, and the covered risk of loss is then transferred to the insurance company. For example, a company might require outside systems analysts to have third party fidelity coverage before doing any business with them.
3. Mitigate the risk: Management can mitigate a risk by implementing appropriate countermeasures, such as cybersecurity prevention and detection controls, to reduce the likelihood or potential impact of a risk. For example, a company might implement more frequent reconciliations, as well as more stringent access controls, to reduce the fraud risk associated with certain transactions.
4. Accept the risk: If management determines that the probability of occurrence and potential impact of loss are sufficiently low, it can decide that it is more cost-effective to accept the risk than to do any of the prior three risk responses. For example, a company might just accept or assume the risk of petty cash being stolen.

Knowledge of such best practices in assessing fraud risk will help FRA teams from management and Board of Directors' audit committees become aware of and be prepared to proactively protect against fraud risks. Such efforts will help identify, evaluate, and respond to fraud risks. Also, enhancing understanding of the factors that affect fraud risk, the methods used to assess them, and the most appropriate responses will increase Board of Directors' ability to protect organizations from the risk of fraud (McNeal 2019).

An early warning sign of such risks for fraudulent financial reporting can come from FRA teams analyzing the quality of earnings in corporate reports. Management has many reporting choices under generally accepted accounting principles. In a Research Foundation of the Chartered Financial Analysts (CFA) Institute monograph, Dechow and Schrand (2004) analyzed earnings quality. They wrote that understanding the quality of earnings was an essential part of processing and interpreting information. A high-quality earnings number has three prominent features: 1) it reflects current operating performance, 2) it is a good indicator of future operating performance, and 3) it fairly annuitizes the intrinsic value of a company. A low-quality earnings number has the opposite three features and is often a red flag for financial statement manipulation and fraud.

FRA teams could look at lessons learned in another CFA monograph. Tan and Robinson (2014) provided a framework for financial analysis that makes irregularities stand out. They studied many accounting scandals that occurred in Asia in recent years and concluded that it was necessary to first understand the framework underlying the financial statements and then develop a protocol for detecting irregularities which included these strategies:

- Detection of irregularities independent of particular accounting rules
- Identification of the most common irregularities in the Asian market
- Finding similarities and differences between U.S. and Asian accounting techniques
- Creation of an overarching framework for irregularity detection

#### **4. Methodology**

Fraudulent financial reporting often occurs because management is motivated to increase earnings for compensation and hubris, narcissistic purposes. Since the income statement has just two major categories, revenues and expenses, fraud often occurs there. The methodology of this article focuses upon analyzing major fraudulent financial reporting examples from revenue and expense abuses in order to identify lessons learned and forensic procedures from such frauds. Thus, the best known recent fraudulent financial reporting cases were selected to be studied in this research.

Prominent revenue recognition cases included Enron, Satyam, nicknamed "Asia's Enron," and Wells Fargo. Prominent expense cases included Qwest, WorldCom, and Health South. Additional well known financial fraud cases also are studied for more lessons learned for forensic procedures which were categorized as risky investments like Bear Stearns and Lehman Brothers, merger and acquisition abuses like AOL/Time Warner and Tyco, and competitive analysis red flags like the Chinese IPO scandal of Longtop Financial Technologies and Steinhoff International, nicknamed "Africa's Enron." Well known non-financial fraud cases also were studied for more forensic lessons learned which were categorized as poor internal controls like Enron and Equifax, risky products like Boeing and Johnson & Johnson, insider share selling like Enron and Equifax, unethical practices like Volkswagen and Exxon Mobil, and Ponzi schemes like Bernie Madoff and Steinhoff.

#### **5. 21<sup>st</sup> Century Major Fraud Types and Forensic Procedures**

Ten major types of fraud and procedures that occurred in the 21<sup>st</sup> Century are analyzed here to develop forensic procedures for FRA teams of management and Boards of Directors' audit committees to use for fraud risk assessment. These frauds by 21 companies were so significant that they caused \$1.58 trillion in market capitalization losses for investors, as summarized in Table 1. The first five types of fraud are financial reporting frauds where 16 companies destroyed \$1.23 trillion, and the last five are mainly non-financial fraud procedures where another five companies destroyed \$0.35 trillion. Thus, the financial frauds were much more destructive than the non-financial frauds and need more scrutiny by FRA teams.

Where were the Boards of Directors and management of these 21 companies to act as gatekeepers to protect the investors in their companies from major frauds and market capitalization destruction? As Warren Buffett, the Berkshire Hathaway CEO, has recommended, these investors should just have invested in an S&P 500 Index fund as the S&P 500 Index has increased from 1,469 on January 1, 2000 to 2,750 on April 8, 2020—an increase of 87% in the 21<sup>st</sup> Century, even with the coronavirus scare. These ten types of frauds are analyzed here to develop forensic procedures for assessing fraud

risk and identifying actual frauds. Reputational risk is also relevant here as Buffett warned: “It takes 20 years to build a reputation and five minutes to ruin it” (Buffett 2016).

## **Financial Reporting Frauds**

### **I. Revenue Recognition**

As a starting point for forensic procedures, an FRA team could calculate the Schilit (2010) Quality of Revenues ratio (Cash Collected/Revenues) since revenue recognition is the starting point for cash flow generation by business operations and is usually the foremost fraud type in fraudulent financial statements. For example, concerning Steinhoff International, this ratio showed red flags 100% of the time for its last four public reporting periods of 2013-2016, justifying the German government investigation into Steinhoff’s revenue reporting practices. The range for this ratio over the four years was from 0.96 to 0.99 with all values below the non-fraud cutoff of 1.0 (Grove, Clouse and Malan 2019). Enron had similar red flags from 0.91 to 0.98 in its last three years. Also, a thorough discussion on revenue recognition is found in the CFA monograph on earnings quality (Dechow and Schrand 2004).

Additional ratios to analyze revenue recognition practices come from the Beneish (1999) fraud prediction model. In addition to establishing a fraud prediction cutoff score for the overall model, he created fraud prediction cutoffs for the five model inputs. See the Appendix for details. Two of these inputs can be used here: Sales Growth Index or SGI (current year sales / prior year sales) to track sales growth and Days Sales Receivables Index or DSRI (current year % of accounts receivable in sales / prior year % of accounts receivable in sales) to track accounts receivable buildup. In prior research of 31 fraudulent financial reporting companies, many of which are listed in Table 1 (Grove et. al 2017), the SGI ratio and the DSRI ratio showed red flags for fraud predictions 83% and 54%, respectively, of the time in their 52 financial reports.

As shown in Table 1, five companies, Enron, Satyam, Wells Fargo, Valeant Pharmaceuticals, and Steinhoff International, had fraudulent revenues and caused \$223 billion of market capital losses. *Forbes* magazine rated the Enron scandal as the number 1 fraud of the 21<sup>st</sup> Century (*Forbes* 2013). It occurred at the beginning of this century and destroyed \$78 billion in market capital for investors. Enron declared bankruptcy in December 2001. Jim Chanos, the billionaire short seller, was the first short seller to question Enron. He noted that Enron was selling its traditional assets of pipelines and utilities and including such gains in regular revenues, as well as its equity investment earnings and mark-to-market holding gains. He said Enron was a “hedge fund in drag sitting on top of a pipeline”, as much of its revenue growth came from taking positions in the trading of energy contracts where it also recognized the entire amount of the contract as revenue, not just what it earned as commission fees (Chanos 2001).

Satyam, an Indian software company, nicknamed “Asia’s Enron,” created 7,500 fake invoices for revenue credits and hid the corresponding debits in cash, not accounts receivable, which would have been flagged by low accounts receivable turnover (you cannot collect phony receivables!). Concerning adequate disclosures of accounting methods, transparency around quarterly and annual financial statement results is important. Lack of such transparency has facilitated numerous financial reporting frauds. For example, the use of off-balance sheet entities hid liabilities of \$25 billion at Enron, \$20 billion at Parmalat, nicknamed “Europe’s Enron,” and \$10 billion at Satyam. Such accounting tricks destroyed market capitalization of \$13 billion at Satyam and \$5 billion at Parmalat (Grove et.al. 2012).

Wells Fargo had long suggested that it was the bank for Main, not Wall, Street and its entire ethos was one of trust and ethics. However, in causing great reputation harm to the company, its cross-selling fraud was breathtaking in reach as 5,300 employees bilked customers of over \$1.5 million in fees over five years, including the opening of 566,000 phantom credit card accounts, 1.5 million false bank accounts, and 800,000 car loan insurance policies---all unauthorized by Wells Fargo customers. \$185 million in penalties and fines have since been paid by Wells Fargo and 5,300 employees were fired. (Sorkin 2016; Cowley 2016).

Wells Fargo publicized the non-financial accounting metric, the number of accounts per customer, with its target slogan, “Eight is Great,” chosen because it rhymed! The Wells Fargo CEO emphasized this metric in quarterly conference calls with financial analysts in touting how the bank had increased this metric from under 6 to over 6 for each customer in just three years (Morgenson 2016). Both this CEO and the executive in charge of this cross-selling program subsequently resigned in 2016. The Board of Directors never questioned this cross-selling program (Pender 2017). The Wells Fargo market cap loss was \$24.3 billion, going from \$256.5 billion to \$232.2 billion in just two months after these rampant sham customer deals were exposed in early September 2016.

Valeant Pharmaceuticals International had a business model whereby it would buy small drug companies that had patents on drugs and then raise the prices on such drugs, sometimes up to 500%! Valeant used distributors which are often a high risk for channel stuffing which it took to an extreme. Instead of just shipping drug products to legitimate distributors before they were ordered, which is the typical channel stuffing procedure for early revenue recognition, Valeant created its own distributors to recognize revenue fraudulently. Such channel stuffing was subsequently admitted in Valeant's 2016 8-K report to the U.S. Securities and Exchange Commission (SEC) with restated financial statements. After Valeant's suspicious activities became public, its market cap destruction reached \$86 billion (Grove and Clouse 2018).

Andrew Left, a short seller, did an online investigation of Valeant Pharmaceuticals for revenue fraud with its key distributors, Philidor and R&O, which were supposedly independent customers of Valeant. He found that both distributors had the same patient privacy disclosure on their company websites, and both had the identical toll-free number to reach their Privacy Officer. When he dialed this number on the R&O website, it turned out to be Philidor and the R&O website referred to itself as Philidor. He found that Philidor's only customer was Valeant and stipulated that Valeant had created an entire network of phantom captive pharmacy distributors as the same privacy notice and toll-free number appeared on several other pharmacy website domains, all of which had been established on the same day. Left concluded that Valeant was a fraudulent company which created invoices to recognize revenue with phantom customers and called it the "Pharmaceutical Enron." His subsequent report issued on October 21, 2015 caused a one-day market cap destruction of \$10.8 billion for Valeant (Left, 2015).

The Steinhoff revenue analysis focused upon four years, 2013-2016, covering the investigation of accounting fraud by the Oldenburg, German state prosecutor. (Steinhoff stock was listed on both the German and South African stock exchanges.) These German prosecutors said that they were looking into overstated, possibly phony, revenues from contracts valued in triple-digit millions of euros that appeared to have been conducted with third parties but may have involved different units or subsidiaries of Steinhoff (Bowker, 2017). Steinhoff's stock price peaked at 84.54 Rand on June 30, 2016 and by December 18, 2018 had decreased to 1.70 Rand. This 98% decrease in the stock price caused a \$22 billion destruction in market capitalization, and the stock had a one-year return of negative 80% in 2018. One financial analyst said: "The Steinhoff Debacle is the biggest fraud in South African history" and another wrote: "Why South Africa's Steinhoff could be the next Enron" (Lungisa, 2017; Bowker et.al, 2018).

## II. Expense Deferral

As a forensic procedure to check on the accounting aggressiveness for both revenue and expense practices, the FRA team could calculate the Schilit (2010) Quality of Earnings ratio (Operating Cash Flows/Earnings) to determine if cash is being generated from business operations, as opposed to just creating net income from questionable accounting methods. Concerning Steinhoff (already listed under revenue recognition in Table 1), the range for this ratio was from 0.91 to 1.64 over the four years before fraud discovery in 2017. It was below the non-fraud cutoff of 1.0 only once at 0.91 in 2013, but close at 1.02 in 2016, and above the cutoff in 2014 and 2015 (Grove, Clouse and Malan 2019). Concerning Valeant Pharmaceuticals (already listed under revenue recognition in Table 1), due to its significant operating cash flow problems, the range for this ratio was negative with huge red flags in three of its four last years at -7.53, -1.20 and -5.66. Another well-established audit technique is to compare the change in both total and key individual expenses from year-to-year with possible red flags if such expenses decrease materially.

In the revenue recognition analysis, two of Beneish's five model inputs were used: SGI and DSRI. Two additional model inputs can be used to analyze expense deferral practices and related profitability: Asset Quality Index or AQI (current year % of intangible assets in total assets / prior year % of intangible assets in total assets) which tracks expense deferred into intangible assets and Gross Margin Index or GMI (prior year gross margin / current year gross margin) which tracks declining gross margins, which may motivate fraud to make expected performance numbers. In prior research of 31 fraudulent financial reporting companies, many of which are listed in the Table 1 (Grove et. al 2017), the AQI ratio and the GMI ratio showed red flags for fraud predictions 43% and 45% of the time, respectively, in their 52 financial reports.

As shown in Table 1, three companies, Qwest, WorldCom, and Health South, had fraudulent expense deferrals and caused \$295 billion of market capital losses. A favorite expense deferral method is to capitalize or hide regular operating expenses in both tangible and intangible asset accounts. Instead of recognizing 100% of an expense in the current year, a company could defer it as a tangible or intangible asset and depreciate or amortize it over say five years with only 20% in the current year. For example, Qwest deferred startup and other regular operating expenses into intangible assets which rose

to 52% of total assets in the last year before its demise. Similarly, WorldCom deferred \$2 billion of regular operating expenses into intangible assets which rose to 43% in the last year before bankruptcy. The Beneish AQI ratio showed red flags for fraud prediction in these last years for both Qwest and WorldCom.

Inappropriate deferrals and lack of related disclosures were some of the reasons the CEOs of Qwest (\$65 billion of market cap destruction until a bailout sale to another company), WorldCom (\$180 billion of market cap destruction until bankruptcy) and Health South (\$50 billion of market cap destruction until bankruptcy) were sent to jail. Joe Nacchio, the Qwest CEO, had a disclosure guideline to which the Board of Directors acquiesced: “Never disclose anything that would cause the stock price to go down.” Also, HealthSouth and its Board did not disclose the reductions in bad debt estimates which helped make its quarterly numbers. However, when such bad debt reductions were insufficient to make quarterly numbers, it resorted to just making up sales before it collapsed in 2005 (Grove and Cook 2005).

### III. Risky Investments

A forensic procedure is to check for risky investments by a company which may lead to possible financial fraud in order to cover up related investment losses. One method would be to do an online investigation of current news, social media, and websites for discussion and analysis of a company’s products and services, like Andrew Left’s online investigation of Valeant Pharmaceuticals. For example, the Financial Crisis Inquiry Commission (2011) was appointed by the U.S. government with the goal of investigating the causes of the financial crisis of 2008–2009. The Commission’s report concluded: “the greatest tragedy would be to accept the refrain that no one could have seen this coming and thus find nothing could have been done. If we accept this notion, it will happen again.” The Commission also concluded that the financial crisis was an “avoidable” disaster caused by widespread failures in government regulation, corporate mismanagement, and heedless risk-taking by Wall Street. This financial crisis eventually destroyed \$11 trillion of global market capitalization.

Citing dramatic breakdowns in corporate governance which included taking on too much risk, the Commission portrayed incompetence in these four companies: Bear Stearns, Lehman Brothers, Bank of America, and American International Group (AIG) which in total destroyed \$442 billion of market capitalization, as shown in Table 1. The Commission cited incompetent managers at these companies: Bank of America (market cap destruction of \$200 billion), Bear Stearns (market cap destruction of \$25 billion), and Lehman Brothers (market cap destruction of \$32 billion with its bankruptcy starting the financial crisis of 2008–2009). Bank managers were surprised when seemingly secure mortgage investments suddenly suffered huge losses. They had paid little attention to mortgage-related investment risks, and many thought they had transferred such risks to AIG and other insurance companies. However, AIG executives (market cap destruction of \$185 billion) were blind to their own \$79 billion exposure on mortgage credit-default swaps and inadequate shareholder capital to absorb such risky losses.

Wall Street banks hid their excessive leverage, which averaged 97% of their total capital, with derivatives, off-balance-sheet entities, and other accounting tricks. None of these banks had adequate shareholders equity, which averaged only 3% of their total capital, to absorb these risks. Their speculations were aided by a giant “shadow banking system” in which banks relied heavily on short-term debt. The Commission concluded: “when the housing and mortgage markets cratered, the lack of transparency, the extraordinary debt loads, the short-term loans, and the risky assets all came home to roost” (Chan 2011). However, all these banks and AIG got to transfer all these risks to U.S. taxpayers with the \$700 billion bailout by the U.S. government’s Troubled Asset Relief Program (TARP) and there were no consequential capital requirements for these banks until the U.S. Dodd-Frank Act was passed in 2010.

### IV. Merger and Acquisition Abuses

To prevent merger and acquisition (M&A) abuses, a forensic procedure is to have companies explain when and why they are undertaking significant merger or acquisition commitments. In Table 1, three companies, AOL/Time Warner, Tyco, and Steinhoff International, caused \$285 billion of market capital destruction. AOL publicized a revenue synergy strategy of cross-selling to each other’s customers to promote its \$110 billion acquisition of Time/Warner. When such revenue synergies never materialized, AOL had to impair its \$60 billion goodwill from this M&A by a U.S. record write-down of \$54 billion, reflecting a 90% stock price drop and market cap destruction of \$200 billion. The two companies have since separated. Also, Tyco (\$63 billion of market cap destruction) and its Board used improper M&A accounting practices to distort their financial statements (Badawi, 2008).

Another forensic procedure is to apply financial analysis for key trends and relationships in a company's financial statements. When Magda Wierzycka, the CEO of Sygnia Group, analyzed the Steinhoff financial statements, she concluded: "(not my day-job by the way), it took me exactly half an hour to figure out that the structure was obfuscated, that financial items made no sense, that the acquisition spree was not underpinned by any logic and too frenzied to be well thought out, and that debt levels were out of control" (Lungisa, 2017). Beneish's Sales Growth Index also could be applied here to track generic sales growth versus M&A company sales to cover up declining generic sales with new M&A company sales, similar to Steinhoff and Tyco strategies.

V. Competitive Analysis Red Flags

A related forensic financial procedure is to apply competitive analysis to the various preceding types of fraud, primarily revenue recognition, expense deferral, and M&As. Two companies listed in Table 1, Longtop Financial Technologies and Steinhoff International, caused \$24 billion in market capital destruction. Beneish's fifth input to his fraud prediction model also could be used here: current year Total Accruals / current year Total Assets or TATA to track the percentage of accruals used each year since accruals are a favorite earnings management technique. In prior research of 31 fraudulent financial reporting companies, many of which are listed in the Table 1 (Grove et. al 2017), the TATA ratio showed red flags for fraud predictions 39% of the time in 52 financial reports.

Andrew Left, a short seller, stated: "Is the story too good to be true? Do Longtop's margins truly pass the smell test in cost-competitive China? Longtop's margins are far in excess of competitors" (Left, 2011). Longtop Financial Technologies destroyed \$2.4 billion in market capitalization by 2010 after doing an IPO on the New York Stock Exchange (NYSE) in 2007, headed by Goldman Sachs and Deutsche Bank, plus a secondary issue in 2009, headed by Morgan Stanley. A comparison of Longtop's performance in its 2007 IPO year with the average of its ten largest competitors listed on Chinese stock exchanges showed the following results: profit margin 18.6% versus 3.1%; return on stockholders' equity 14.7% versus 1.5%; price earnings ratio 92.9 versus 48.5; and price revenue ratio 17.3 versus 3.0. Also, Longtop showed additional excessive profit margins in 2009 and 2010 of 41% and 35% before it was delisted in 2011 by the NYSE (Grove and Victoravich, 2014).

Steinhoff's biggest competitor is the Swedish company IKEA, which is a private company so limited financial data is available. IKEA data was found for revenues, net income, and total assets in 2016, the last year before the Steinhoff fraud was discovered and publicized. Thus, only IKEA's profit margin and return on assets could be computed and compared to Steinhoff and major competitors as follows:

<u>Competitor</u>	<u>Profit Margin</u>	<u>Return on Assets</u>
IKEA	12.2%	9.2%
Target	4.2%	8.0%
Macy's	6.7%	8.9%
Steinhoff	8.7%	4.5%

For these profitability comparisons, IKEA is by far the superior competitor. Its 2016 profit margin of 12.2% is almost 50% better than Steinhoff, almost triple that of Target, and almost double that of Macy's. Its 2016 return on assets of 9.2% is more than double that of Steinhoff, 15% higher than Target, and 3% higher than Macy's.

As one U.S. oil company executive observed: "Management can overcome every major business problem, except one: running out of cash." Consistent with creditor negotiations, Steinhoff has liquidity problems shown by its current ratio in relation to its competitors for 2016:

<u>Competitor</u>	<u>Current Ratio</u>	<u>Total Liabilities / Stockholder Equity</u>	<u>Book Value Per Share</u>
Target	0.82	1.94	0.08
Macy's	1.53	2.97	0.30
Steinhoff	1.33	1.02	0.17

Steinhoff's most recent current ratio of 1.33 is above Target's 0.82 but below Macy's 1.53. However, Steinhoff's current ratio reflected red flags for the last four years, 2013-2016, 1.24, 1.45, 1.68, and 1.33, respectively, all being below the customary 2.0 cutoff. Also, Steinhoff's mixed results versus competitors did not justify its claim that its low, problematic



current ratios were consistent with its major competitors' liquidity in the retail industry. Concerning solvency, Steinhoff's total liabilities to stockholder equity ratio is significantly below its competitors at 1.02 in 2016 only after a significant refinancing from a 10.2 ratio in 2015. Its potential to absorb future operating losses is low as its book value per share is only 0.17 as are its competitors at 0.08 and 0.30 (Grove, Clouse, and Malan 2019).

## **Non-Financial Fraud Procedures**

### **VI. Poor Controls**

In Table 1, two companies, Enron and Equifax, caused \$84 billion in market capital destruction. A fundamental forensic and audit procedure is to check a company's internal controls. For example, Enron had 3,500 subsidiaries and affiliate companies. It created revenue and earnings with transactions among these companies, which were mainly transactions within Enron itself. Jim Chanos and other financial analysts commented that no company in the world needs 3,500 subsidiaries and affiliates, and thus, they became a red flag for possible fraudulent transactions. Concerning Enron's related party transactions, Chanos (2001) said: "We read the disclosure over and over and over again, and we just didn't understand it—and we read footnotes for a living. Not only was it impossible to understand what it meant but also raised a conflict-of-interest issue."

Equifax, a U.S. credit-monitoring company, disclosed a hacking data breach of its customers' personal financial information on September 7, 2017. In one of the largest hacks ever, hackers stole such information from 147 million customers. In March 2017, Equifax had learned about cybersecurity risks in its customer personal data systems but had not fixed the problems. The company said that it had learned of the hacking on July 29 but did not disclose this hack publicly until September 7 (Riley et al. 2017). In the week following the public disclosure on September 7 through September 13, the Equifax stock fell by \$46.06 from \$142.72 to \$96.66, a 32% drop, which destroyed \$6 billion in market capitalization. Over twenty-five lawsuits have been filed against Equifax and forty U.S. states have joined a probe of its handling of the data breach. A U.S. Senate Democratic Leader, Chuck Schumer of New York, compared Equifax to Enron: "It's one of the most egregious examples of corporate malfeasances since Enron" and called Equifax's treatment of consumers afterward disgusting and its inability to protect data deeply troubling (Thomson/Reuters 2017).

### **VII. Risky Products**

In Table 1, two companies, Boeing and Johnson & Johnson, caused \$74 billion in market capital destruction. A forensic procedure is to check for risky products by a company and possible related fraud risk by again doing an online investigation of current news, social media, and websites for discussion and analysis of a company's products. Boeing is being investigated and sued for its Boeing 737 MAX 8 airplane deficiencies and the fatal Lion Air and Ethiopian Airline crashes. The U.S. Justice Department has started a criminal investigation into Boeing's Federal Aviation Administration (FAA) certificate, including how Boeing "self-inspected" its Boeing 737 MAX 8 airplanes to get FAA approval. The FAA and the European Union have grounded all Boeing 737 MAX 8 airplanes since March 2019. Thirty-five lawsuits have been filed, including victim families' lawsuits, a shareholder class-action lawsuit, and a Southwest Airline pilots' lawsuit (Keenan 2019). Since the two crashes and resulting investigations, Boeing has lost \$47 billion in market capitalization.

Johnson & Johnson, an opioid manufacturer, is facing multi-billion opioid lawsuits from over 2,000 state and local governments in the U.S. The initial lawsuit in Oklahoma stipulated that Johnson & Johnson's marketing strategies dangerously misrepresented the risk of opioid addiction to doctors, manipulated medical research, and helped drive this U.S. opioid epidemic that has claimed over 400,000 lives in the last two decades. Johnson & Johnson was described by one expert witness as a kingpin in the opioid crisis as it created a false narrative of an epidemic of untreated pain in the U.S. to which opioids were the solution (McGreal 2019). It has offered to settle all these lawsuits for \$4 billion (Loftus and Randazzo 2019). Since its role in this epidemic became public, Johnson & Johnson has lost \$27 billion in market capitalization.

### **VIII. Insider Share Selling and Senior Executive Resignations**

In Table 1, three companies, Enron, Equifax, and Steinhoff International, caused \$106 billion in market capital destruction. A well-established forensic procedure is to check for insider share selling and senior executive turnover by reading the required U.S. SEC reports for public company executive trading and 10-K annual reports. For example, top executives of Enron sold 30 million shares of Enron stock in the second half of 2000 and throughout 2001 before the December 2001 bankruptcy. Enron's CEO, Jeff Skilling, resigned in mid-2001 as did other top Enron executives to "spend

more time with their families.” Jim Chanos (2001) commented that he saw a reason not to trust management about its earnings since senior management was voting with their feet in resigning while also selling their shares. Chanos said that one of his firm’s “historical signposts of a company in trouble is when numbers of senior people leave over a short period of time” (Wang 2016). Similarly, the Volkswagen CEO resigned the same month the emissions cheating scandal was disclosed, and eight top Volkswagen managers soon thereafter either were suspended or resigned (Ewing et.al. 2015).

Another SEC report for public company executive trading showed that on August 1, 2017, three days after supposedly learning about the data hack but one month before public disclosure on September 1, Equifax’s CFO sold shares for \$946,374, the President of the Information Solutions division sold shares for \$584,099 and another divisional President sold shares for \$250,458, which was a total of \$1.8 million by these three executives (Riley et al 2017). A U.S. Justice Department criminal investigation, aided by the U.S. Federal Bureau of Investigation, found Equifax had learned about this major breach of its computer systems even sooner in early March 2017. On May 21 and 23, the CFO sold shares for \$6,455,346 and \$1,910,160, respectively. Also, before the public disclosure of the hacking on September 1, 2017, the CEO sold 74,346 shares for \$9,742,299 and six other executives sold 41,913 shares for \$6,424,595, which was a much larger additional total of \$24.5 million (MarketWatch 2017). None of these executives had pre-determined stock sale plans to mitigate insider trading allegations (Koren 2017). The Chief Information Officer and the Chief Security Officer both resigned on September 15, and the CEO resigned on September 26 but still received another \$18 million in retirement payouts (Surane and Melin 2017).

Christo Wiese, the Steinhoff Chairman of the Board (COB), bought 2 million shares of Steinhoff stock at 61.46 Rand per share on November 11, 2017 to support the stock price but then sold all of his 998 million shares on December 14, 2017 at 0.49 Rand per share for net proceeds of 370 million Rand. With widespread publicity about the Steinhoff fraud emerging in November 2017, this one-month crash in Steinhoff’s share price by December 2017 represented a 99.2% decline! Thus, Weise lost his billionaire status which went from \$5.8 billion down to \$728 million (Park, 2018). The former Chief Operating Officer became the acting CEO on December 19, 2017 after selling 1.6 million shares for 15 million Rand in early December 2017. Another Board Director sold 300,000 shares for 2.8 million Rand in October 2017 (Moneyweb 2018). Steinhoff’s CEO, Markus Jooste, resigned on December 6, 2017, and Steinhoff’s CFO resigned on January 4, 2018 (Park 2018). The CFO resigning is a major red flag for fraud since the CFO has major responsibility for financial statement reporting and typically knows how the financial statements have been manipulated.

#### IX. Unethical Practices

In Table 1, two companies, Exxon Mobil and Volkswagen, caused another \$106 billion in market capital destruction. An emerging forensic procedure is to check for unethical practices by again doing an online investigation of current news, social media, and websites for discussion and analysis of a company’s behavior. In November 2015, ExxonMobil was being investigated by the New York attorney general for lying about the risks of climate change. Exxon was aware in the 1970s that carbon dioxide from oil and gas burning could have dire impacts on the earth, and Exxon’s Board of Directors also had been fully briefed by Exxon’s own scientists decades ago on such risks. However, Exxon decided to “emphasize the uncertainty in scientific conclusions” and from 1998 to 2005, Exxon contributed almost \$16 million to organizations designed to muddy the scientific waters. However, in 2007 Exxon finally acknowledged that the earth’s warming was caused in large part by carbon dioxide and promised to no longer fund climate change deniers with their “junk science” (Egan 2015). There was market cap destruction of \$63 billion when this unethical practice became public in 2016.

Volkswagen rigged its sales growth and profits by designing software to defeat diesel engine emission requirements in order to make its short-term performance and executive compensation goals. After Volkswagen admitted to installing “defeat devices” in more than 11 million diesel engine vehicles worldwide in September 2015, it lost 1/3 of its market cap in one week. By July 2016, Volkswagen’s market cap was down 42%, or \$43 billion, which in just one year destroyed the prior three-year market capitalization increase of \$43.7 billion.

There was a June 2016 settlement by U.S. regulators with Volkswagen for U.S. Volkswagen car owners for \$14.7 billion: \$10 billion on 475,000 2.0-liter diesel vehicle buybacks and \$4.7 billion to mitigate pollution from such vehicles (Ewing 2016). Six VW executives were charged, and VW pled guilty in these emissions cases (Tabuchi et.al 2017). There are also many class action lawsuits against VW in the U.S. where one attorney general commented: “This is an example of a company that not only engaged in deception and fraud on a brazen scale but covered up that deception. The conduct

reflects a corporate culture that had no regard for the law, no respect for the American people, and no regard for the environment or people's health." A U.S. lawsuit criticized Volkswagen's Board of Directors for awarding about \$70 million in salary and bonuses to the CEO and other management board members in 2015 and said: "Recent actions demonstrate that the company's culture that incentivizes cheating and denies accountability comes from the very top and, even now, remains unchecked" (Ewing and Tabuchi 2016). One observer commented on Volkswagen's Board: "Outside views rarely penetrate. It's an echo chamber" and another observer said: "It should take years for the full Volkswagen emissions scandal to become apparent" (Stewart 2015; Medland 2016).

There were also ethical behavior issues for the top two Steinhoff executives as the fraudulent financial reporting became public in 2017. Christo Wiese, the COB, was caught entering the London Heathrow airport in 2017 with 674,920 euros in his luggage, trying to avoid South African currency controls. Markus Jooste, the CEO, had developed a toxic work culture as Steinhoff had an anachronistic "old boys club" where misogyny and racism were celebrated. Jooste's nickname was "the seagull" because he would fly in, drop excrement all over his executives, and then fly out! On January 31, 2018, the seagull had flown (he was missing) and was reported to the police by Steinhoff executives (Park 2018).

#### X. Ponzi Schemes

In Table 1, two organizations, Bernie Madoff and Steinhoff International, caused \$192 billion in market capital destruction. A Ponzi scheme is a form of fraud that lures investors and pays profits to earlier investors with funds from more recent investors. The scheme leads victims to believe that profits are coming from product or investment sales, and they remain unaware that other investors are the source of funds. The Madoff investment scandal was a major case of stock and securities fraud discovered in late 2008 although questions were raised as early as 1999. Bernie Madoff was arrested on December 11, 2008 and admitted that his wealth management business was an elaborate multi-billion-dollar Ponzi scheme. On March 12, 2009, he pleaded guilty to 11 federal crimes and admitted to operating the largest private Ponzi scheme in history. He was sentenced to 150 years in prison with required restitution of \$170 billion to his 4,800 clients (Wikipedia 2019).

A forensic procedure is to check for variations of the Ponzi scheme, especially for companies using mergers and acquisitions (M&As) to cover up declining sales and declining operating cash flows. Steinhoff and Tyco used new cash from their M&As to fund their own existing operations. A Steinhoff employee recounted how Steinhoff executives were able to acquire and continually consolidate businesses in order to obscure sales and operating cash flow problems (Park 2018). Tyco used similar strategies with its M&A schemes (Badawi 2008).

#### 6. **Fraud Analysis**

In analyzing 21<sup>st</sup> Century frauds, five risk assessment screening guidelines were applied, using well-known fraud prediction models and ratios. These guidelines were based upon an approach developed by the Chief Investment Officer of the billionaire John Malone's Private Investment Office for initial screening of potential investments, follow-up screening of actual investments, and possible short sales. The overall objective is to determine if cash is being generated by business operations and accumulated for business opportunities (Sierra 2014):

1. Apply the Dechow et. al. (2007) Fraud Model to ascertain if there are any predictions of fraudulent financial reporting. See the Appendix for details of this model. In prior research of 31 fraudulent financial reporting companies, many of which are listed in the Table 1 (Grove et. al 2017), the Dechow Fraud Model showed red flags for fraud predictions 90% of the time in 52 financial reports.
2. If fraud predictions are generated by the Dechow Fraud Model, then apply the Beneish (1999) Fraud Model to check for consistency in predictions. See the Appendix for details of this model. The Beneish Fraud Model showed red flags for fraud predictions 73% of the time in 52 financial reports.
3. Calculate the Schilit (2010) Quality of Revenues ratio (Cash Collected/Revenues) since revenue recognition is the starting point for cash flow generation by business operations and is often the foremost manipulator in fraudulent financial statements. This ratio showed red flags for fraud predictions 79% of the time in 52 financial reports.
4. Calculate the Schilit (2010) Quality of Earnings ratio (Operating Cash Flows/Earnings) to determine if cash is being generated from business operations. This ratio showed red flags for fraud predictions 50% of the time in 52 financial reports.

5. If there are red flags for quality of revenue, expand the revenue analysis with the calculation of both the Sales Growth Index (SGI) and the Days Sales Receivable Index (DSRI) from the Beneish Fraud Model. Both indexes compare the current year to the prior year. Per a public company Chief Financial Officer (CFO) who dealt with Wall Street on quarterly conference calls for over ten years: “Wall Street pays for two things: top line (sales) growth and operating leverage to get the top-line growth to the bottom line” (Coburn 2018). The SGI ratio showed red flags for fraud predictions 83% of the time in 52 financial reports. The DSRI ratio showed red flags for fraud predictions 54% of the time in 52 financial reports.

These five risk assessment screening guidelines are relevant in the appropriate order, as shown by the 21<sup>st</sup> Century fraudulent financial reporting results. The overall fraud prediction results for the six key screening models and ratios, Dechow Fraud Model, Beneish Fraud Model, Quality of Revenues, Quality of Earnings, Sales Growth Index, and Days Sales Receivable Index, were 90%, 73%, 79%, 50%, 83%, and 54%, respectively. When there are so many red flags for fraud prediction, professional skepticism and analysis need to be expanded with such specific screening red flags providing guidance for follow-up forensic procedures, as indicated by the ten types of fraud.

## **7. Conclusions**

The major purpose of this study was to analyze major types of financial and non-financial frauds that occurred in the 21<sup>st</sup> Century in order to develop forensic procedures for FRA teams from management and the Board of Directors’ audit committee to use for fraud risk assessment. Lessons learned from analyzing these frauds are to start with the six-fraud screening and prediction models and ratios. They appeared to have excellent potential in guiding FRA teams assessing the risk of financial and non-financial fraud. The Dechow Fraud Model, the Beneish Fraud Model, Quality of Revenues, Quality of Earnings, Sales Growth Index, and Days Sales Receivable Index, had timely fraud predictions of 90%, 73%, 79%, 50%, 83%, and 54%, respectively. The overall average of these six fraud predictors computes to 77%, reflecting good potential for fraud risk assessment and subsequent fraud discovery with the related forensic procedures.

There were lessons learned from fraud team research. Electronic fraud brainstorming sessions appeared to be as effective, or more effective in some situations, than face-to-face fraud teams. Potential fraud brainstorming sessions, including both the external auditor team and the board audit committee as an FRA team, had good potential for identifying fraud. A participation safety approach encouraged more interactions from the less experienced team members. A more structured approach for an FRA team reduced information overload and increased accuracy of information. All these research findings constitute a conceptual model for FRA teams. Based on such theoretical foundations of effective team performance, fraud deterrence by FRA teams would be enhanced, especially for the organizational failures discussed in these fraud cases. Since these cases represented evidence of why FRA teams are needed, these theoretical foundations of effective team performance should help mitigate the likelihood of fraudulent financial reporting, especially when a “black swan” event, like the coronavirus pandemic occurs, which may motivate management to manage earnings or even commit fraud to support its stock price.

FRA teams from management and the Board of Directors’ audit committee should proactively undertake fraud risk assessment to gain a comprehensive understanding of the threats facing their organizations and, then design programs to respond to those specific risks (McNeal 2019). In planning and preparing for the fraud risk assessment, this FRA team should consider past instances of fraud both within the organization and significant examples at other organizations. The boundaries and scope of this research are limited to the 21<sup>st</sup> Century frauds by 21 companies. However, since these frauds were so significant that they caused investors \$1.58 trillion in losses, as shown in Table 1, there were significant lessons learned for the deterrence of future frauds. Where were the Boards of Directors of these companies to act as gatekeepers to protect their investors from such frauds? Instead, as Warren Buffett, the Berkshire Hathaway CEO, has recommended, these investors should just have invested in an S&P 500 Index fund as the S&P 500 Index increased from 1,469 on January 1, 2000 to 3,427 on September 5, 2020—an increase of 133%.

To help avoid such investment losses in the 21<sup>st</sup> Century, FRA teams should use the forensic procedures related to these ten types of fraud to assess the risk and possibility of fraud. Furthermore, as a summary check of such fraud risk analysis and the possibility of management involvement, FRA teams could use Jim Chanos’ five step approach. Chanos was among the first to short both Enron (\$78 billion market cap destruction in 2001) and Valeant Pharmaceuticals (\$86 billion market cap destruction in 2017). Chanos (2017) has five key steps for analyzing a company’s performance and then shorting the company’s stock if it fails these five steps:

1. Return on Invested Capital is Less than Weighted Average Cost of Capital (the company is self-liquidating)
2. Negative Cash Flow
3. Highly Levered Versus Adequacy of Shareholder Capital
4. Many Senior Executives Leave the Company over a Short Period of Time
5. Opaque and Inadequate Financial Disclosures

These five steps are primarily financial procedures, except for the fourth one which is a non-financial procedure. For example, when the CEO of Enron, Jeff Skilling, un-expectedly resigned, Chanos indicated a non-financial red flag for possible fraud, observing that Skilling's resignation was like a "rat leaving a sinking ship." The same red flag happened at Valeant Pharmaceuticals as its CEO and the entire Board of Directors un-expectedly resigned. For an example from applying these fraud assessment procedures, just four companies that violated all five of Chanos' steps destroyed an aggregate \$218 billion in market capitalization from the Table 1 data: Enron \$78 billion in 2001, Lehman Brothers \$32 billion in 2008, Valeant \$86 billion in 2017 and Steinhoff \$22 billion in 2018 (Grove and Clouse 2018).

Emphasizing the importance of due diligence by the Board of Directors and its need for an FRA team, a Steinhoff case study noted that a lack of Board independence seemed to have been celebrated along with a possible duality problem as the CEO stated that the COB was the "anchor shareholder" in a "club of friendship and trust" along with two other directors (Naude et.al, 2018). A global fund manager said that Steinhoff had a confused board and a typical, regal, overpaid CEO and summarized Steinhoff's corporate governance problems: "We find it to be unbelievable that the Board and particularly the chairman didn't know a thing about this fraudulent situation. Our position is that the whole board is tainted either for complicity or incompetence and should accordingly be forced to resign." In March 2018, Steinhoff stated that its essential working capital had "largely dried up as the access of our operating businesses to their banking facilities and other credit lines was severely constrained." In December 2018, Steinhoff announced that voluntary financing arrangements had been approved by approximately 94% of its creditors and lenders (Park 2018).

Shareholders deceived by the \$2.4 billion Longtop Financial Technologies fraud were awarded \$882 million in a U.S. class action lawsuit settlement. Unfortunately, Longtop went bankrupt and its CEO/founder did not even show up in court to defend himself from these lawsuits but just scurried back to China with no subsequent legal actions in China. Apparently, Chinese authorities only act when their own citizens suffer losses, like the 57,000 investors who lost \$200 million from "China's Bernie Madoff," who was then executed (Lu 2013). Maybe it was a good strategy for the former Steinhoff CEO to disappear!

13 prominent U.S. CEOs from industry, asset management firms, and an activist investment firm secretly worked for one year to develop corporate governance principles and published eight Commonsense Principles of Corporate Governance in 2016 (Thakker 2016). These eight principles, which are all elaborated with subcategories, are:

1. Board of Directors Composition and Internal Governance
2. Board of Directors' Responsibilities
3. Shareholders Rights
4. Public Reporting
5. Board Leadership
6. Management Succession Planning
7. Compensation of Management
8. Asset Managers' Role in Corporate Governance

These eight commonsense principles of corporate governance have been matched to these types of 21<sup>st</sup> Century frauds (Grove and Clouse 2017). Concerning future research, updates from future frauds could be matched to either the ten major types of fraud or to the eight commonsense principles of corporate governance. As an update in October 2018, CEOs of 21 leading public companies, pension funds, and investment firms, including all 13 original sponsors, signed the Commonsense Principles of Corporate Governance, Version 2.0 and committed to using these standards to inform the corporate governance practices within their own organizations. These same eight principles are intended to provide a basic framework for sound, long-term-oriented governance. Given differences among public companies, not every principle will be applied in the same fashion by every company, board of directors, shareholder, or stakeholder (Business Wire 2018). Such differences might be explained in future research analyzing future financial reporting frauds.

**Table1**  
**21st Century Frauds for Risk Assessment**  
**2001-2020**

Type of Fraud	Investor		Company
	Losses	Year	
<b>FINANCIAL</b>	(billions)		
<b>I. Revenue Recognition</b>			
Number 1 fraud of the 21st Century per <i>Forbes</i>	\$78	2001	Enron
7,500 fake invoices and fake cash accounts	\$13	2009	Satyam
Customer cross-selling: "8 is Great"	\$24	2016	Wells Fargo
Channel stuffing with distributors	\$86	2017	Valeant Pharmaceuticals
Channel stuffing with affiliates	<u>\$22</u>	2018	Steinhoff International
	\$223		
<b>II. Expense Deferral</b>			
\$1 billion operating expenses deferred as assets	\$65	2001	Qwest
\$4 billion operating expenses deferred as assets	\$180	2002	WorldCom
\$1 billion operating expenses deferred as assets	<u>\$50</u>	2005	Health South
	\$295		
<b>III. Risky Investments</b>			
Mortgage-backed securities and derivatives	\$25	2008	Bear Stearns
Mortgage-backed securities and derivatives	\$32	2008	Lehman Brothers
Mortgage-backed securities and derivatives	\$200	2009	Bank of America
Mortgage-backed securities and derivatives	<u>\$185</u>	2009	American International Gr.
	\$442		
<b>IV. Merger &amp; Acquisition Abuses</b>			
Poor fit of companies: culture and operations	\$200	2005	AOL/Time Warner
Poor fit of companies: culture and operations	\$63	2006	Tyco
Poor fit of companies: culture and operations	<u>\$22</u>	2018	Steinhoff International
	\$285		
<b>V. Competitive Analysis Red Flags</b>			
Very poor performance versus competitors	\$2	2010	Longtop Financial Tech.
Very poor performance versus competitors	<u>\$22</u>	2018	Steinhoff International

<b>NONFINANCIAL</b>	\$24		
<b>VI. Poor Control</b>			
3,500 subsidiaries and affiliates	\$78	2001	Enron
147 million customers hacked	<u>\$6</u>	2017	Equifax
	\$84		
<b>VII. Risky Products</b>			
Boeing airplane 737 MAX	\$47	2020	Boeing
Opioid manufacturing	<u>\$27</u>	2020	Johnson & Johnson
	\$74		
<b>VIII. Insider Share Selling &amp; CEO Resignation</b>			
30 million shares sold and CEO resigned	\$78	2001	Enron
4 million shares sold	\$6	2017	Equifax
103 million shares sold and CEO resigned	<u>\$22</u>	2018	Steinhoff International
	\$106		
<b>IX. Unethical Practices</b>			
Funded junk science denying global warming	\$63	2016	Exxon Mobil
Created fraudulent diesel emission testing	<u>\$43</u>	2016	Volkswagen
	\$106		
<b>X. Ponzi Schemes</b>			
Madoff defrauding his own investors	\$170	2008	Bernie Madoff
New cash from M&As used to fund operations	<u>\$22</u>	2018	Steinhoff International
	\$192		
<b>21st Century Market Capital Destruction</b>	<u><u>\$1,581</u></u>	<b>21</b>	Companies

**Footnotes:**

- Investor losses were calculated from the stock price high before the fraud was publicized to the low stock price thereafter.
- The total market capitalization destruction does not double-count the companies listed above more than once.

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## **Appendix: Red Flag Ratios and Models**

These models and ratios have been used to develop a red flag approach in screening for and assessing the risk of fraudulent financial reporting and earnings management in publicly held companies. They are listed in the order that the Chief Investment Officer of John Malone’s Private Investment Office applies them.

### **1. F-Score (Dechow Fraud Model)**

This F-Score statistical model (Dechow, Ge, Larson, and Sloan 2007) can be used as a test for determining the likelihood of financial reporting manipulation or fraud prediction. Like the other fraud models and ratios, a fraudulent score for this model does not necessarily predict fraud or manipulation but it serves as a red flag for further analysis. The model contains measures or inputs to identify problems in accruals, receivables, inventory, cash sales, earnings and stock issuances. There is also a constant value of -6.753 in the model. The resulting predicted value (PV) is used in an exponential equation:  $e^{PV} / 1+e^{PV}$  to get a company fraud probability. This probability is divided by the unconditional (and constant) fraud probability of all the sample companies’ financial years:  $494 / (143,452 + 494) = 0.0034$ . Thus, this fraud model is based on detecting 434 fraudulent reporting years out of 143,946 reporting years. The F-Score result is a red flag for fraud prediction if greater than 1.0. For example, Enron had a fraud prediction with an F-Score of 1.85 in its last year. The research for this Dechow model is the more extensive of the two fraud prediction models since it was based upon an examination of all Accounting and Auditing Enforcement Releases (AAERs) issued by the SEC from 1982–2005 while the Beneish study was based only on AAERs issued from 1982–1992.

### **2. Z-Score (Beneish Fraud Model)**

Beneish (1999) developed a statistical model used to predict financial statement fraud and earnings management through a variety of metrics. There are five model inputs or ratios, which are the Sales Growth Index (SGI), Gross Margin Index (GMI), Asset Quality Index (AQI), Days Sales in Receivables Index (DSRI), and Total Assets to Total Accruals (TATA). There is also a constant value in the model of -4.840. The red flag for fraud prediction is a Z-Score greater than a negative 1.99 (i.e., a smaller negative number or a positive number indicates possible financial reporting problems). For example, Enron had a fraud prediction with a Z-Score of a positive 0.045 in its last year. Each of these five model inputs or ratios has its own fraud prediction score and range as follows:

	Non-Fraud Mean Index	Fraud Mean Index
DSRI	1.031	1.465
GMI	1.014	1.193
AQI	1.039	1.254
SGI	1.134	1.607
TATA	0.018	0.031

### **3. Quality of Revenues**

The quality of revenues ratio emphasizes cash collected from customers (revenues plus or minus the change in accounts receivable) versus the company’s revenue. The red flag for fraud prediction is a ratio of less than 1.0 (Schilit 2003, 2010). For example, Enron’s quality of revenues went down from 0.98 to 0.92 in its last year. Since manipulation of revenue recognition is a common method for covering up poor financial results, this simple metric can help uncover schemes used to inflate revenues without the corresponding cash collection. Common methods include extending increased credit terms to spur revenues but with slow collections, shifting future revenues into the current period, booking asset sales as revenue, or just fraudulently making up sales.

### **4. Quality of Earnings**

The quality of earnings ratio is a quick and simple way to judge the quality of a company’s reported net income. The ratio is operating cash flow for the period divided by net income for the period. The red flag for fraud prediction is a ratio of less than 1.0 (Schilit 2003, 2010). Also, large fluctuations in this ratio over time may be indicative of financial reporting problems (i.e., Enron’s quality of earnings ratios were 4.9, 1.4, and 2.3 over its last three years of operation). In its last year of operation, Enron forced its electricity customers to prepay in order to receive any electricity which dramatically increased its operating cash flows and quality of earnings ratio. Quality of earnings also is meant to measure whether a company is artificially inflating earnings, possibly to cover up operating problems. This ratio may indicate that a

company has earnings which are not actually being converted into operating cash. Methods for inflating earnings (but not operating cash flows) include early booking of revenue, recognizing phony revenues, or deferring expenses into long-term assets.