

Re-examining the Causes of Corporate Securities Fraud:

A Criminological Approach

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A dissertation submitted to the Graduate School-Newark

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

for the degree of Doctor of Philosophy

Graduate Program in Criminal Justice

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Newark, New Jersey

May, 2009

ABSTRACT OF THE DISSERTATION
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The stock market provides investors with opportunities for wealth creation, but also allows corporations and brokers to commit securities fraud. To date, criminologists have paid little attention to corporate securities fraud and this dissertation is designed to shed light on the problem from a criminological perspective. It compares the extent to which the rational choice perspective and corporate structure theory can help explain corporate crime.

Using a case-control design, this research compares two groups of companies, litigated and non-litigated by the Securities and Exchange Commission (SEC). The comparison was made in terms of size, financial performance, top management, and board structure, while controlling for industry and geographic location. The case group

consists of 188 companies litigated by the SEC for securities fraud between 1999 and 2003. Another 188 companies which never have been litigated by the SEC served as the control group. The data were drawn from the COMPUSTAT North America database and the companies' annual reports and proxy statements which are available from the SEC website.

A Chi-Square analysis was used to analyze the relationship between firm size (independent variable) and litigation status (dependent variable), which was found to be statistically significant. Given that firm size might well affect the relationship between litigation status and other independent variables, a second group of control companies was selected while controlling for one more variable, firm size. Logistic regression was conducted to compare proposed causal variables and predict litigation status between litigated group and non-litigated group. The results found that small companies are more likely to be litigated. In addition, while average age of top management and financial performance are not significantly related to litigation status, length of service for top management and board structure are strongly associated with a company's litigation status. These results provided support for the rational choice theory-related hypotheses. In particular, although firm size is significantly related to litigation status, the direction of the relationship is not consistent with the hypothesis based on the corporate structure theory.

Acknowledgements

In early 2006, I recognized a research opportunity in the Securities and Exchange Commission's litigation database. After discussing the possibility of drawing on the data to conduct a secondary analysis on corporate securities fraud with few faculty members, I officially started designing my dissertation in the middle of 2006. Afterwards, I spent days and nights coding data from the corporate annual reports (10-K) and proxy statements (DEF-14A). Honestly, the data collection for this dissertation was the most tedious work I have ever done. Looking through the Appendices will give one a rough idea how time-consuming the work was. There were several times the idea of quitting this topic and changing to another really crossed my mind. Thanks to Dr. Clarke, who noticed my concerns and talked me out of a passive attitude, I eventually realized the meaning of life and became motivated in chasing my goal. Dr Clarke, who chairs my dissertation committee, has been an excellent mentor to me. He has always encouraged and inspired me to take on corporate crime, a neglected field in criminology and has never shown impatience to my ignorance.

Even though I know it is hard to find a way to fully express my gratitude, herein I would like to present my appreciation to those who have been offering generous assistance to me. My dissertation committee, which consists of Dr. Clarke, Dr. Veysey, Dr. Maxfield, and Dr. Warren, has contributed valuable comments and suggestions helping me revise the dissertation and reach the final stage of PhD program. Their kindness is highly appreciated and will be remembered forever. Dr. Veysey, with whom I

took statistics classes, has been very supportive and offered a great deal of assistance, particularly in the statistical analysis of my study; Dr. Maxfield, a highly demanding and responsible professor who taught me research methodology, provided me with very precious suggestions on research design; and Dr. Warren, has always been there for me, and I will never forget that she showed up my prospectus defense two weeks after giving birth to her baby.

Certainly, I should also thank my family. I knew that I have been indebted to them. An old Chinese saying states that one should not go far away while his parents are still alive. Taking care of parents has long been a good tradition in China. But as the first son of my family, I did not fulfill my duty. I left too many responsibilities to my younger brothers. I did not visit my mother as often as I am supposed to. However, they did not complain at all. In order for me to finish my PhD program, they have sacrificed more than I can imagine.

Our librarian, Phyllis Schultze, an extremely helpful person, should also be thanked. I will never forget the days I spent in the library browsing literature and collecting data under her assistance. There are also other friends and colleagues who prefer not to be named but have played an important part in the formation of this dissertation. My thanks go to all of them.

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Chapter 1

Overview and Background

1. Overview

Before 1949, when Sutherland coined the term “white-collar crime,” there was little interest among criminologists in studying “crime in the suites,” even though it was far from uncommon. Fortunately, the nature of democratic society and the Constitution have made the general public aware of their rights and encouraged their struggle for fair treatment and justice. As public awareness of rights and freedom has increased, criminologists and sociologists have started to pay attention to the previously neglected field of white-collar crime.

Although there has been little agreement among researchers in defining white-collar crime and sentencing offenders (Frederichs, 2007), a variety of crimes such as embezzlement, financial fraud, environment pollution, and insider trading have been brought to the research agenda. Recently, there has been increasing academic and governmental attention dedicated to corporate crime, which is one of two major kinds of white-collar crime (the other being occupational crime). In this dissertation, corporate crime is defined as violations committed by a corporation or individual(s) on behalf of the corporation for corporate gains. The violations include civil, administrative, and criminal offenses.

So far, criminological researchers have begun to explore the causes and consequences of corporate crime. Many antecedents have been identified but few criminological theories have been applied. Among the theoretical frameworks applied to corporate crime, rational choice theory and corporate structure theory are probably the most applicable. A debate over the applicability of these two theories has been ongoing.

However, corporate securities fraud, as one type of corporate crime, has received little attention from either law enforcement or academia, even though accounting and finance researchers have conducted many studies. The lack of empirical studies and literature on the securities fraud from a criminological perspective indicates this lack of attention.

This study explores some causal factors in corporate securities fraud and subsequently develops a theoretical framework. Chapter 1 reviews the historical development, functions, and structure of securities markets and market participants; presents the causes, consequences, and significance of several infamous cases of securities fraud; describes the types of securities fraud; and explains the significance of the current study.

Chapter 2 introduces the Securities and Exchange Commission (SEC). Its history, mission, organizational structure, and resources are discussed. Chapter 2 explains the literature of corporate securities fraud from both criminological and non-criminological perspectives and presents the contributions and limitations of previous studies.

Chapter 3 introduces the process and models of organizational decision making, provides current theoretical frameworks on corporate crime, and explains the rationale for theory application.

Chapter 4 explains the research methodology. This study uses a case-control design to compare companies litigated by the SEC with non-litigated companies in terms of their size, financial performance, top management, and structure of boardroom. Based on the litigation release and the general company list from the SEC website, the samples of litigated companies and control companies are collected and their annual reports (10-K) and proxy statement (DEF-14A) are used to code the proposed variables.

Chapter 5 includes descriptive, bivariate, and multivariate statistical analyses conducted to explore the relationships between the litigation status (dependent variable) and proposed variables (independent variables).

Finally, in chapter 6, the meaning and significance of research findings are discussed, a preliminary effort on testing the applicability of rational choice theory and corporate structure theory is fulfilled, the direction of future study is proposed, and policy implications for controlling corporate securities fraud are suggested.

2. Introduction

In this study, “corporate securities fraud” refers to securities-related fraud committed by corporations or individuals on behalf of corporations for the purpose of corporate gains. Due to several factors such as complexity of the crime and special identity of the offender, corporate securities fraud has not been widely studied by criminologists. This study will shed some light on securities fraud and inspire more research in the future.

This dissertation serves two purposes. The first is to re-examine some of the proposed factors of corporate securities fraud. For instance, some researchers have emphasized firm size (Baucus, 1987; Stanwick and Stanwick, 1998). However, these variables were tested in manufacturing-related corporate crime rather than in corporate securities fraud. Because of the special social contexts, functions, and structures of securities market, it will be necessary to test the external validity of these proposed causal factors, namely the validity of the causal factors in the particular context of corporate securities fraud.

The second purpose is to preliminarily test the applicability of two models of corporate crime: rational choice and corporate structure. These two models are the most common theoretical frameworks that criminologists and sociologists have developed to explain corporate crime. Each framework has strengths and limitations. Most of the proposed causal factors can be categorized into one of these two frameworks. Thus, by re-examining the causal factors, this study will tentatively support or challenge these models.

Before reviewing the literature on the corporate securities fraud and theoretical background of corporate crime, it is necessary to introduce their social contexts. Therefore, this chapter presents the historical development and structure of the securities markets, the functions and types of market participants, and the forms and consequences of securities fraud. Several notorious cases of corporate securities fraud will be described to understand the nature of the offense and the significance of this research.

3. Historical Development of Stocks and Markets

Securities are fungible financial instruments that can take the form of bonds or stocks. Bonds are debts that the issuer -- which can be a government, corporation, or any social entity -- owes to the buyers. Stocks are the equity of a corporation, which entitles the holders to a proportion of control of the corporation. Since the 1990s, quite a few complicated financial derivative securities such as options and futures have been created and traded. Regardless of their format, however, these derivatives still have the basic features of traditional stocks and bonds: equity and debts.

3.1 Origin of the stocks and markets.

The earliest form of securities can be tracked back to the Renaissance, around A.D. 1100, when Italian businessmen were active in trade with the Middle East (Sobel, 1968). In order to share the risks and rewards of trade, Renaissance merchants built on

joint-stock associations. Later, as the trading market grew, with strong demand for capital, and the emergence of brokerage, these joint-stock associations started to work with brokers to form a primitive stock market. In this market, brokers “bring together parties interested in a business transaction” (Sobel, 1968) and these parties used the “sea loan – a fixed payment loan with the particular feature that the investor took the risk of loss at sea or at the hands of hostile people – and the commenda – a partnership agreement through which an investor supplied funds on which he both accepted the risk and received a share on profits – to securitize the marine risk” (Gonzalez de Lara, 2001). The sea loan and commenda agreement is also considered the birth of insurance contracts (Gonzalez de Lara, 2001).

By the 13th century, the Venetian government was issuing bonds in which bankers began to trade. The Venetian governmental bond was quite different from most of other types. It was not the 10- or 20-year bond that is popular today. Nor was it the 50- or 100-year bond that was common in the 1800s. Instead, the Venetian governmental bond was one that never paid off the principal but was intended to pay the interest only forever (Wild, 2007). The Venetian government stopped payment in the 16th century after the war against Turkey (Wild, 2007).

Fast growth of trade led to the formation of national joint-stock companies such as East India Company of English and the Dutch East India Company (Sobel, 1968). The formation of these companies facilitated the development of stock market. The Netherland took a leading role in this development. The establishment of Dutch East

India Company in 1602 has long been recognized as the “origin of modern stock exchanges that specialize in creating and sustaining secondary markets in the securities issued by corporations” (Neal, 2005).

Because the United Netherlands government chartered the Dutch East India Company, the issuance of the corporate transferrable stocks was “a political decision designed to aid the finances of the Netherlands in the midst of what turned out to be the Eighty Years War against Spain” (Neal, 2005). Another significant feature of the first corporate stock was that the shareholders did not have authority over the management. The control of the company was taken away from average shareholders and “the direction of the enterprise was confided to the chief stockholders, *the bewindhebbers*” (Neal, 2005). Average shareholders became no influence over the decision-making authority of the directors.

During the first two decades, the Dutch East India Company’s operation brought about a remarkable success and its share subscription increased significantly. And Amsterdam merchant community grew from 500 people to 1500 (Gelderblom and Jonker, 2004). The need for a secondary market for the company’s stocks soon became apparent (Neal, 2005). Therefore, the Amsterdam Stock Exchange was established, which is regarded as the first stock exchange. Afterwards, the Dutch Model of financial practices were adopted by England and France

3.2 Wall Street’s Past and Present.

In the early history of America colonies, the immigrants were relying keenly on land and agriculture. “What little business existed was handled by a struggling group of traveling merchants” (Sobel, 1968). The merchandise traded included wheat, tobacco, and even slaves. Due to the small number of companies and the low profits, securities did not take an important position in the early colonial market.

In 1653, the Dutch’s East Indian Company’s representative Peter Stuyvesant built a 1,340-foot long wooden wall to keep the city from the attack of pirates, Native Americans, and British. Later in the early eighteenth century, the name Wall Street was given and the place became a meeting place of merchants and dealers, who came to meet each noon at 22 Wall Street (Teweles and Bradley, 1998). Auctions of merchandise and securities were held and items were sold to the highest bidder. By the end of the eighteenth century, a chartered business, Bank of New York, which has been closely related to securities industry was established. At that time, the city has only 35,000 residents.

In March 1792, a group of New York merchants met secretly in Corre’s Hotel to discuss the securities business and circumvent auctioneers who were competing against merchants and brokers. The meeting generated relevant rules and standards for doing business, which were later called Buttonwood Tree Agreement named after the meeting place. According to the Agreement, “1. The brokers were to deal only with each other, thereby eliminating the auctioneers; and 2. The commissions were to be 0.25%” (Teweles

and Bradley, 1998). It was this group and this Agreement that founded what now is called New York Stock Exchange (NYSE).

Even though the Buttonwood Tree Agreement set up the rules and standards and after the agreement the first indoor exchange place, Tontine Coffee House, was erected, the early market of New York securities was not as prosperous as that of Philadelphia. The trading volume and the number of listed companies were small. After 1817, the New York brokers adopted Philadelphia Exchange model, establishing a formal organization called New York Stock and Exchange Board and clearly defined trading procedure. During the period 1817 to the Civil War, the New York stock market gained steady and fast improvement despite the fire disaster in 1835 and the first crash in 1853.

The NYSE experienced a rapid expansion after the Civil War (Teweles and Bradley, 1998). Notably, the fast development of railroads introduced quite a few important railroad companies that were important to the stock exchange. The exchange-related business activities became diverse and complicated. Correspondingly, the NYSE changed its form of administration and introduced a number of much-needed regulations in 1869. “Among them were certain listing rules. Listed companies were required to maintain both transfer agents and registrars as a safeguard to prevent overissue of stocks.” (Teweles and Bradley, 1998).

By the time of 1929, when the Great Depression started, the NYSE had experienced another panic (1873) and another expansions (1900s, 1920s). The annual

stock volume rose from only 57 million shares in 1896 to 265 million in 1901; and the number of stock listed in the NYSE rose from 145 stocks to 500 (Teweles and Bradley, 1998). After the First World War, while the world was recovering from the war, the United States had become a political and economic power. The stock market in the U.S. gained another strong impetus to move forward until the 1929 crash.

Coming with the Great Depression was “the most exhaustive investigation ever made by the federal government of the securities market and the Exchange was that of the Committee on Banking and Currency of the Senate in 1933 and early 1934.” (Teweles and Bradley, 1998). The outcomes of the investigation were the birth of a series of the most significant laws in securities regulation: the Securities Act of 1933, the Securities Exchange Act of 1934, and the Banking Act of 1933, as well as the establishment of the federal regulatory agency: Securities and Exchange Commission.

In 1972, a significant reorganization occurred in the NYSE, making the Exchange more centralized and regulation-friendly. “The 33-member Board of Governors was replaced by a Board of Directors consisting of 10 public directors, 10 securities industry directors, and a full-time salaried chairperson....a Central Market System was implemented to provide investors with the fairest possible price through the bid-and-ask quotations” (Teweles and Bradley, 1998).

As the computer and other high technology were invented, today’s stock market has been equipped with many electronic and automatic trading systems such as Electronic

Communication Network (ECN), and the market time has also been extended to 7:00am--8:00pm on all weekdays except holidays. Also, with the emergence of complicated financial derivatives, a variety of markets such as options and futures have been created for investors and speculators. Hundreds of Thousands financial engineers work on their financial models to conduct trade. All these developments have created many opportunities for investors to diversify their portfolio and investment choice. Not surprisingly, these developments also create strong challenges to regulations.

Today the Wall Street has become the most famous financial center in the world. After several centuries of development, securities have so far become a very common and popular investment instrument for many people. The following statement by SEC Chairman Christopher Cox clearly demonstrates the popularity and commonality of securities to today's society:

The prosperity of 300 million Americans and six billion people around the world relies on trustworthy U.S. capital markets. If you're a working American adult today, the odds are your savings are directly or indirectly invested in securities. Back in Joseph P. Kennedy's day, our first SEC Chairman could marvel that "one person in every ten" owned equities. But today, our financial markets encompass the investments, the hopes, and the dreams of half of all households. Some 57 million Americans now own stocks – and the median income for shareholders is a very middle-class \$65,000 (Cox , 2006:2).

Securities have also become an important part of the dynamics of economic activity. Millions of transactions take place each day at stock markets all over the world. According to the NYSE fact books, by the time of 2005, the NYSE has the total of securities issuer 2,767, including 453 non-U.S. issuers; the average daily volume was 1,602 million shares and the percent turnover was 103%.

3.3 Functions and Types of Market and Participants.

There are a few ways to divide the securities markets. First, in terms of the traded products, there are stock markets, bonds markets, and futures and options markets. Second, based on the nature of trading behavior, markets can be classified into primary markets, in which corporations issue securities to investors, and secondary markets, in which all issued securities are traded among investors, brokers, and funds. This dissertation is focused on the corporate behavior in the secondary markets. In the United States, the major securities markets are listed as follows:

1. New York Stock Exchange
2. NASDAQ
3. American Stock Exchange (New York)
4. Chicago Stock Exchange
5. Pacific Exchange (San Francisco and Los Angeles)
6. Philadelphia Stock Exchange
7. Boston Stock Exchange

Among these markets, the NYSE is the largest one in terms of stock list and trading volume and NASDAQ is the youngest one famous for listing technology stocks and the over-the-counter trading in which buyers and sellers are linked through an electronic network and the prices are bilateral customized ones.

All these markets have certain criteria in order for companies to be listed. These criteria include the company's financial profitability and position in the industry. While

the Over-The-Counter is becoming more and more popular with these markets, NYSE and AMEX are the ones still having floor trading system, through which various brokers conduct trades on the floor for their investors.

Unlike stocks, bonds represent the debt the issuer owned to the holder and are featured with fixed income. Thus, bonds are relatively less risky than stocks. In addition, bonds can be issued by governments and corporations but stocks can only be issued by corporations. However, bonds can be traded on the secondary markets.

Other than stock and bond markets, financial derivatives such as futures and options have their position in today's capital markets. The volatility of traded stocks, bonds, and other merchandise creates good opportunity for speculators and investors and thus financial derivatives were developed in the early 1970s. In short, these derivatives are "standardized contracts that commit parties to buy or sell goods of a specific quality at a specific price, for delivery at a specific point in the future" (Millman, 2008). Since the first future contract was traded at the Chicago Mercantile Exchange in 1972, the financial derivative markets have become well established and these derivatives highly traded in all of the world's major capital markets.

There are three categories of participants in securities markets: can be simply divided into three categories buyers, sellers, and dealers. In the primary market, buyers are investors, sellers are companies, and dealers are underwriters such as investment banks. In the secondary market, no clear line distinguished buyers from sellers. Every

participant can be a buyer or a seller; dealers are brokers trading for their clients. Some participants are institutional investors, hedge funds, or investor groups ---sometimes they are called market makers. These market makers usually possess a huge amount of cash and buy or sell large volumes of shares. They therefore have a strong influence on the stock price due to their power to change the supply or demand for the shares.

4. History of Securities Fraud

The securities market provides investors with opportunities for wealth creation; not surprisingly, it also creates opportunities for corporations and brokers to commit securities fraud. What is more, as a result of new technology such as the Internet, the opportunity for committing securities fraud has greatly increased while the costs of committing that fraud and the chances of being caught have been reduced.

According to Sobel (1968), the buying or selling of securities represents a speculation as to the shape of the future. Due to the nature of speculation, information and inference are always needed to make a speculative decision. This need encourages some market participants to defraud by offering misleading information and misrepresentation. Today the term “securities fraud” is certainly well known, especially in the wake of the Enron and WorldCom scandals. To many people, however, the definition and significance of securities fraud remain obscure. Simply speaking, fraud is “the acquisition of the property of another person through cheating or deception” (Adler, Muller, and Laufer, 2007). Fraud Law Description defines securities fraud as any

deceptive practice in the stock and commodity markets. It is a criminal offense in which securities investing or trading laws have been violated. This type of crime could be committed by an individual or social entity by deliberately concealing or falsifying information needed to make purchase or sale decisions.

The earliest known fraud dated back to 1636. The “tulips mania” was a fraud involving tulips, not securities such as stocks or bonds, but its nature was not really different from that of most other securities frauds. Even though four centuries passed and no clear data and records illustrating the involvement of criminal intent, people still remember the case by telling the story from one generation to the next.

4.1 Tulip Mania.

The wild tulip is a beautiful flower grows in a few mountainous areas of Asia. The tulip propagates from seeds or bulbs and matures in 7-12 years. Because the bulbs were beautiful difficult to obtain, they became a status symbol in Western Europe. In Paris “ladies of the court wore them as a fashion item in their cleavage, doubtless to help display other assets” (Sykes, 2003). In the early stage of the tulip mania, the bulbs were bought by wealthy people and were traded among professionals in the Amsterdam Exchange. Tulip bulbs quickly became popular. Eventually, they became a form of currency. Houses changed hands in the form of tulip bulbs. Rumors about price increase spread fast. Buyers and speculators from the middle and upper classes entered the market.

Contracts to buy or sell tulip bulbs in future also were negotiated and traded. This mania inflated the price of the bulbs.

At the peak of the mania (November-December 1636), the average price for a single tulip bulb rose 1000%. A bulb purchased for 15 guilders in October 1636 was resold for 175 in November or “resold for the following items:

- four tons of wheat,
- eight tons of rye,
- one bed,
- four oxen,
- eight pigs,
- 12 sheep,
- one suit of clothes,
- two casks of wine,
- four tons of beer,
- two tons of butter,
- 1000 pounds of cheese,
- and one silver drinking cup” (Mackay, 1841).

In early 1637, a sailor visiting the Amsterdam Bourse ate a tulip bulb thinking that it was an onion.. At that point, people started to wonder about the real value of the tulip bulbs (Sobel, 1965). Some speculators started to sell the contracts for tulip bulbs and panic ensued. Within two weeks, the price of tulip bulbs had dropped more than 90%.

Finally, the Dutch government had to intervene. It “declared null and void all contracts that were made at the height of the mania, meaning prior to November 1636. Tulip contracts made subsequent to that date were settled if buyers paid merely 10% of the prices to which they had earlier agreed”(cite). However, this intervention did nothing to stop the panic. By May of 1637, the tulip bulbs were worthless, and most investors lost everything, including their houses and properties. Many lawsuits pertaining to tulip

contracts were filed. In order to break the backlog, the Dutch parliament had to pass a decree that contracts could be voided for only 3.5% of the contract value (Sykes, 2003). It took almost a century for the Amsterdam Exchange to recover and restore the public confidence.

Because of lack of written records about this case, it is not possible to prove that fraud actually took place. However, the case shows that when social and economic conditions allow, people act rashly. This feature of human nature is the weakness of many financial systems and has been exploited by many unscrupulous people or companies.

4.2 The First Securities Bubble – Mississippi Scheme

In the early 18th century, France was in dire financial straits because of a series of prolonged foreign wars. The Duke of Orleans, the Regent for King Louis XV, met with John Law and decided to rely on this financial genius to enrich the nation. Law's proposal was to establish

“an institution which would act as a depository, a central bank, and the prime investing medium of the nation. It would be so strong and respected that none would question the backing of its notes, thus enabling and almost unlimited expansion of the gold deposits. In this way, the money supply of the country could be expanded, invested wisely, and used in the interests of the state and depositors” (Sobel, 1968).

Law gained control of several French companies, including the Louisiana Company that had extensive powers in the Mississippi region. In order to attract

investors, Law described the region as a place full of goldmines and “paraded a few thousand criminals through the streets of Paris, which picks and shovels in their hands, and then announced that they were about to leave for New Orleans to mine gold” (Sobel, 1968).

The Louisiana Company’s share price rose rapidly, sometimes soared 10 or 20% in matter of hours. In 1719, it rose from 500 livres to 10000 livres and in 1720 to 18000 (Mackay, 1841). But after the speculators took their profits and investors realized that Law’s promises were not true, the panic spread and Law fled from France and the scheme collapsed.

To understand this kind of criminality, a review of the South Sea scandal is illustrative.

4.3 South Sea Scandal.

Like the Mississippi Scheme, the South Sea Scandal was a case in which investors were misled by companies and the government. The South Sea Company was a British company chartered in 1711. The British government gave the company a monopoly to trade with South America in exchange for the company assuming the government’s public debt. The holders of the debt were allowed to use it to trade the company’s stock. With the company’s false financial statement and the bribed Parliament’s support for the company, the public was defrauded and the price of the company’s stock soared.

The company's share price rose from 130 pounds at the time of issuance, January of 1720, to 1000 pound at the peak of the scandal in June of 1720 (Sobel, 1968). The surge of the stock price encouraged investors to look into other similar companies and to invest heavily into the company without knowing what it was doing (Sobel, 1968). Like other bubbles, the South Sea bubble soon burst. The share price fell to where it had been two months earlier. One quarter of the population of London ended up bankrupt and many foreign investors lost their life savings (Rose, 2008). Even worse, the scandal "handicapped for years the movement toward incorporation and, most particularly, the development of satisfactory mechanisms to control corporate enterprise" (Geis, 1993).

In both the Mississippi Scheme and the South Sea Scandal, there was a kind of partnership between the company and the government and the consequences were disastrous. This partnership told later researchers that a full understanding to the governmental role in corporate crime is necessary in order to understand the criminality of corporations.

In both cases, if the government stakes in the companies were not so high, could the company and its directors have committed fraud so easily? When the bubble burst, why did the directors and corrupt parliamentarians escape punishment? From these two cases, an complicated relationship between the company and government has been present in countering corporate crime, particularly between the top management of the company and senior public officials. Not until the case of Enron, sanctions targeting top

management seemed to be slap on wrist and many top managers could get some kind of immunity from punishment.

4.4 Enron.

In 1985, Enron was formed as a merger of two gas pipeline companies. In its first years, Enron was financially performing well. It succeeded in its struggle for resources and gained significant development. In the late 1980s, as deregulation gained popularity, the financial markets, utility markets, and natural gas markets were deregulated. Enron started to transform from a company focusing on natural gas delivery to a company with diverse businesses, including energy trading —matching supply and demand and making profits from the price differences. By 2001, Enron was a conglomerate that owned and operated gas pipelines, electricity plants, pulp and paper plants, broadband assets and water plants internationally and traded extensively in financial markets for the same products and services (Healy and Palepu, 2003). Its stock price had soared nearly 200 percent within two years, peaking at \$90 per share.

Thanks to its innovation in business strategy and management, Enron enjoyed a spectacular success in the early years after transformation. However, at the same time, other factors such as the limits of the market, high caused problems for Enron's business. As Sims and Brinkmann stated (2003), Enron's executives understood that in order to avoid a negative rating from financial analysts and keep investors' and trading partners'

confidence, the company had to keep reporting significant revenues even when they did not exist.

Under these circumstances, Enron created partnerships called Special Purpose Entities (SPEs) to raise revenue. To distract the SEC from the SPEs, Enron enlisted help from outside accounting firm Arthur Anderson and law firm Attorney Vinson & Elkins to declare that these SPEs were not Enron's subsidiaries. With a series of deceitful practices and false reports, these SPEs kept claiming fantastic revenues and hiding huge debts. Investors were deceived by the company's fraudulent financial reports. In 2001, when the company was required to restate its financial reporting from back to 1997, its revenue in these years was reduced by \$591 million and its debt rose by \$658 million (Healy and Palepu, 2003).

There have been many studies of the collapse of Enron. It has been attributed to unethical corporate culture, accounting and management fraud, and the failure of corporate governance and regulation. For instance, the perspective of corporate culture claimed that management's eagerness for innovation and its position as a role model for employees created an unethical company culture (Sims and Brinkmann, 2003). The corporate governance perspective pointed out the inability of the company's board to monitor the activities of its managers, and blame conflicts of interest for the failure of the company (Deakin and Konzelmann, 2004). Regardless of the emphases, corporate fraud was intentionally and purposely committed by the company's management and the consequences to the financial market and for the national economy were devastating.

5. Forms and Consequences of Securities Fraud

Securities fraud can take a variety of forms, such as pump and dump, Ponzi scheme, and churning. Before introducing these strategies, it is necessary to review the context and instruments that make these strategies possible.

5.1 Internet and High Technology.

The history of securities fraud through technology could be dated to 1834. “Two French bankers bribed optical telegraph operators (the optical telegraph was the predecessor to the modern telegraph machine) to transmit false information about stocks, allowing them to profit at the expense of unwitting investors” (Perlman, 2000 from TMF securities fraud). As the science and technology continue to advance, today’s financial markets have become dependent on high technology. For instance, all of the world’s major markets have strong electronic communication networks through which investors buy and sell stocks. Almost all securities transactions are conducted electronically.

The Internet gives investors direct and immediate contact with companies, financial analysts, and other market participants, to collect needed information and conduct research on stocks, and to share information and discuss investment decisions. Unfortunately, at the same time the Internet has created greater opportunities for securities fraud because offenders can access information and anonymously spread

rumors. The anonymity of the Internet makes it difficult for law enforcement to trace the source of the misinformation.

In 1998, the SEC conducted a nation-wide sweep and filed enforcement action against 44 people and companies for using spam emails, online newsletters, and bulletin board postings to commit fraud. These strategies are still widely used because of their high efficiency and low costs.

At the same time, the development of Internet-based companies can create possibilities for securities fraud. The rapid development of the Internet has prompted communication between supply and demand and facilitated efficient electronic commerce (E-commerce). Many E-commerce companies have been established, such as Ebay.com. According to some analysts, few of these companies have economic substance and generate profits (Baker, 1999). However, many of these companies issued stocks and rode the public hype on E-commerce. In order to survive, many of them committed securities fraud. The high number of lawsuits against E-commerce companies after the burst of the technology bubble in the late 1990s proved this point.

5.2 Insider Trading.

One of the most common types of securities fraud is insider trading. In this form of fraud, the offender takes advantage of his fiduciary position or his connection to the person who undertakes fiduciary position to gain non-public information and conducts

securities trading to make profits. The market is highly sensitive to news and information, especially when it is related to financial performance. A company's stock price can be immediately affected by the release of the news and information. Thus, the possession of the news and information can be very advantageous.

Given the conflict of interests in the financial market, regulations prohibit corporate managers from trading the company's stock without disclosing nonpublic information. However, these regulations have loopholes that cannot prevent insider trading. Many inside traders are prosecuted in the federal court system each year. These offenders can be divided into three groups: company employees; friends or relatives of these company employees; and brokers and market participants who are liaisons between the company and the investor (Friedrichs, 2007). The company itself is rarely implicated in insider trading.

5.3 Fraud by Broker.

A brokerage firm is a very important participant in the securities market. It is a channel between securities issuers and investors or between securities buyers and sellers. The broker, or dealer, received a commission by selling or buying securities for his clients (investors). The nature of brokerage provides the broker with easy access to important financial news and market information and also to investors' accounts. Meanwhile, some brokers have taken advantage of their profession to commit securities fraud. The most common type of fraud committed by the broker is *churning*, in which

the broker “performs multiple trades in a client’s account not for the advantage of the client, but only to generate additional sales commissions” (Walsh, 2005).

Since few investors have adequate knowledge of the financial market and analysis experience, they must depend on the broker’s advice and give the broker great discretion to trade on their behalf. Thus, many unnecessary trades could be performed and many investors become subject to short-term trading tax. However, regardless of how much investors gain or lose, the broker takes commissions based on the number of transactions.

In *unauthorized trading*, the broker misappropriates the client’s money. For instance, a broker may conduct an unauthorized trade to conceal a loss in another client’s account or to simply to answer a margin call in the brokerage’s portfolio (Walsh, 2005).

5.4 Fraud by Individuals or Funds.

Common types of securities fraud committed by people or trust funds are bogus offerings, Ponzi schemes, and pumps and dumps. In a bogus offering, the offender offers non-existent securities to investors and promises very high return. Many investors do not conduct due diligence when they are solicited to invest in unusual high return stocks, debts, or funds. Some offenders target specific group of investors, such as churches, the disabled, or women. The offender promises that the return will be used in social welfare projects or as donations.

The ponzi scheme is named after Charles Ponzi, who defrauded thousands of investors to invest in his postage business. He used the money that he received from later investors to pay the promised high rate of return to prior investors. This scheme has been commonly adopted in financial market. The Madoff case is a typical Ponzi scheme. Its belated discovery indicates the complexity of the strategy and the difficulty of detection. The more investment money the offender gets, the sooner the scheme will be exposed because there is no way for the offender to keep paying the returns as he gets more investors. Therefore, many offenders simply steal, their investors' money and disappear before the scheme is exposed.

The Internet has facilitated the commission of securities fraud. Investors use been bulletin boards, chat rooms, or message boards to share information and discuss investments. These virtual spaces have also become places for offenders to pump and dump. In these cases, the offender artificially inflates the stock price. To do so, the offender must be backed up with capital that enables him to buy blocks of the stock and pump up the price. At the same time, the offender uses the bulletin board or the chat room to spread rumors that the stock price will keep rising, in the hope of gaining investors. After the investor purchases the stock and the price peaks, the offender starts selling, or dumping the shares. This strategy is very easy because regulating stock transactions difficult hard and most investors are not capable of valuing equities.

According to the SEC, individuals, funds, and companies pump and dump. The major beneficiaries are the ones dumping the stock and the promoters, some of whom are company insiders.

5.5 Fraud by Corporations.

For corporations, the forms of securities fraud are simpler. Corporate securities fraud is usually committed by management, with or without the assistance of internal or external auditors. The management is responsible for the company's performance, so it makes decision about the company's daily operation and has access to its books. As a result, management is in a position to manipulate the company's financial information and violate regulatory rules. Since the 1990s, there has been an uptrend of corporate securities fraud and the number of prosecution on corporate securities fraud has been growing. Quite a few corporate giants have been involved, such as Enron, WorldCom, and Tyco, each costing investors billions of dollars.

The most common forms of corporate securities fraud are:

Accounting fraud. A corporation provides false records or manipulated books to investors and regulatory agencies

Misrepresentation, A corporation presents false, misleading statements or information to the public.

These two forms usually occur together, as they did in the Enron case. Normally, the information on which investors rely is the corporation's annual report or financial statement. It is not possible for investors to know everything that is going on inside the corporation or to review its books. So, any misleading or manipulated information presented by the corporation can cause investors to lose their money. For corporations, losing investors means a decrease in their business; worse still, they may lose customers and eventually go bankrupt. They will therefore try all means to keep and gain investors. Therefore, accounting fraud and false statements become a strategy for some corporations, especially poorly performing ones such as Enron.

Enron perpetrated the largest corporate securities fraud in history. After several years of international and domestic expansion involving complicated deals and contracts, Enron was billions of dollars in debt. Enron concealed all of this debt from shareholders through partnerships with other companies, fraudulent accounting, and illegal loans. Although senior executives at Enron were probably aware of the debt and the illegal practices, the fraud was not revealed until October, 2001, when Enron announced that the company was worth \$1.2 billion less than it had previously reported.

6. Significance of the research

After the Enron collapse, the U.S. Department of Justice established an inter-agency Corporate Fraud Task Force. In its annual report in July of 2004, Task Force

Chairman James Comey revealed the seriousness of corporate fraud in the United States by presenting the achievements of the Task Force in the previous two years:

On the criminal front, since the inception of the Task Force through May 31st of this year, Justice Department prosecutors, working hand-in-hand with regulatory Task Force members, and investigators from the Federal Bureau of Investigation, the Internal Revenue Service's Criminal Investigation division, and the U.S. Postal Inspection Service, have: (1) obtained over 500 corporate fraud convictions or guilty pleas – up from 250 at this time last year; (2) charged over 900 defendants and over 60 corporate CEOs and presidents with some type of corporate fraud crime in connection with over 400 charged cases. In (the) Enron matter alone, hard working members of the Enron Task Force secured charges against 31 Enron defendants, including 21 former Enron executives. We also seized more than \$161 million for the benefit of victims of the frauds at Enron.

On the civil front, the SEC continued to aggressively combat financial fraud. Since July 1, 2003, the SEC filed 614 civil enforcement actions, 143 of which involved financial fraud and issuer reporting actions. The Commodity Futures Trading Commission has instituted 68 enforcement actions since July 1, 2003 – a 17% increase over the prior year. FERC's numerous investigations into the manipulation of the energy markets, including anomalous bidding practices, physical withholding of capacity, gaming practices, and violations of standards of conduct resulted in settlements valued at more than \$500 million. The Department of Labor's Employee Benefits Security Administration continued to aggressively protect employee benefit plans from the effects of corporate fraud, as we saw in the Global Crossing, WorldCom, ULLICO, and Rite Aid cases. Finally, the Department of Housing and Urban Development's Office of Federal Housing Enterprise Oversight brought civil actions against Freddie Mac executives and negotiated with Freddie Mac a record civil money penalty for a safety and soundness violation – \$125 million (Comey, 2004:iii).

Several sources supply evidence that the magnitude of corporate securities fraud is much greater than most people believe. For example, in its 2001 report, the FBI estimated that the nation's total loss from robbery, burglary, larceny-theft, and motor vehicle theft in 2001 was \$17.2 billion – less than a third of what Enron alone cost investors, pensioners, and employees that year. Table 1.1 shows that the penalties imposed in the last three years from the SEC lawsuits are on average close to one-tenth of the total loss from robbery, burglary, larceny-theft, and motor vehicle theft in 2001. It

should be noted that the SEC only targeted securities fraud and a significant portion of loss associated with such fraud cannot be recovered for complicated reasons.

Table 1.1 : Monetary Penalties Ordered and the Amounts and Percentage Collected by the SEC

	FY03	FY04	FY05	FY06
Penalty Ordered	\$.35 billion	\$1.7billion	\$1.9billion	\$1.2billion
Amount Collected	\$.141	\$1.4	\$1.8	\$.991
Percentage	40%	86%	96%	82%

Data source: the SEC annual report 2006

In 2002, Congress passed the Sarbanes-Oxley Act. This law marked a milestone in controlling corporate crime because of its role in requiring Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) to provide accurate financial statement reports. To some degree, the Sarbanes-Oxley Act has improved the transparency of corporate activities and restored investor faith in corporate financial reports.

An unhealthy stock market and illegal behavior in the market can harm the nation's economy. The unhealthy stock market may create an untrue false impression of prosperity, siphon off more investment, and cost investors their money. It can destroy the credit system, which is very hard to rebuild. Even worse, it may lead to a stock market crash similar to that of 1929. Studying securities fraud is significant because understanding the factors that lead to the fraud can very likely help policymakers and law enforcement departments prevent and control its occurrence.

In addition to public policy and investment, a good understanding of corporate securities fraud will help corporations. As Kenneth Merchant (1987) stated: “corporate managers can be misled when numbers in the corporation’s information system are distorted. When that happens, they make bad decisions; for example, flawed allocation of resources and incentive compensation awards to the undeserving.” In addition, the “use of illegal or unethical practices can harm a corporation’s reputation.” In today’s business world, reputation is very important to a corporation’s development. A negative reputation may directly impact the company’s consumer patronage and encourage an unethical corporate culture.

Although many case studies have been conducted, very few researchers have used empirical and quantitative methods to analyze corporate securities fraud. Furthermore, most of the previous research was not conducted from a criminological perspective. For instance, Shapiro’s *Wayward Capitalists* (1984) drew on data from the SEC enforcement records. Shapiro conducted a series of case studies regarding the forms and detection of securities fraud from the perspective of a regulatory agency. Dechow, Sloan, and Sweeney (1996) adopted an economic approach to investigate firms that were subject to accounting enforcement actions by the SEC for alleged earnings manipulation. Rezaee, et al. (2005) conducted a comprehensive examination of corporate financial statement fraud. Through a critical perspective on accounting, they profiled financial statement fraud by reviewing a sample of alleged financial statement fraud cases. Their study proposed fraud prevention and detection strategies in order to reduce incidents of fraudulent financial statements.

Considering the critical role of the stock market in economic and social development, there is an urgent need to identify the causes of securities fraud. This is one of the objectives of this dissertation. Drawing on official data from the SEC website and two popular criminological theories, this research explores the antecedents of corporate securities fraud, and tests the applicability of two popular theories. This research is expected to provide meaningful guidance for administrative agencies to identify the corporations that are at high risk of securities fraud so that the agencies may take preventive measures.

7. Summary

This chapter provided a structural overview and background information on securities fraud. It reviewed the historical development of securities and markets from the formation of the joint-stock association built by Renaissance merchants to the establishment of East India Company of English and Dutch East India Company in the 1600s. This chapter also described Wall Street from the Buttonwood Tree Agreement signed by a group of New York merchants to the expansion and reorganization of the New York Stock Exchange.

Through a descriptive analysis, this chapter reviewed three cases of securities fraud that took place in the early stage of securities market development and the recent Enron case. Each of these cases has contributed to the understanding of criminality of

corporate securities fraud. In the tulip mania case, greed and fear were two features of investment behavior and the causes of mania and collapse in securities markets. The Mississippi Scheme and the South Sea Scandal were illustrative examples of lenient punishment for perpetrators of securities fraud. The Enron case implicated high-ranking corporate executive officers who created an unethical corporate culture.

In addition, this chapter described the forms of securities fraud. There are several types of market participants who are able to commit fraud. This dissertation identified brokers, individual investors, and corporations as perpetrators of fraud. Fraud can take the form of insider trading, bogus offering, ponzi schemes, churning, or pumping and dumping. The chapter concluded by examining the disastrous consequences of securities fraud and reiterating the contribution of the present research.

Chapter 2. Literature Review on Corporate Securities Fraud

1. Introduction

The Securities and Exchange Commission (SEC) is responsible for investigating securities fraud. Since its foundation after the stock market crash in 1929, the SEC has been viewed by the investing public as the gatekeeper against securities fraud and other illegal financial behavior. As time progresses and markets develop, the SEC continues to set standards and rules for corporate financial behavior. Scholarly research has provided a valuable foundation for these administrative efforts. Therefore, a review of the history, organizational structure, and functions of the SEC is necessary to fully understand the implications provided by empirical studies conducted by researchers.

Most of the scholarship on corporate securities fraud has been conducted by researchers from the accounting and finance disciplines. Conversely, criminologists have published few studies on the subject. One possible explanation for the lack of criminological research could be that this type of crime is too complex to be studied by qualitative-oriented researchers without a strong quantitative background. In addition, corporate securities fraud is usually treated as a civil rather than a criminal offense. An examination of the SEC litigation releases reveals that only a few cases are criminally prosecuted in federal court annually. Consequently, white-collar crime does not attract much attention in the criminological field.

2. SEC and Litigation

2.1 History and Organization of the SEC.

After World War I, the U.S. economy grew quickly. Many companies went public because investors were confident in the national economy. By the time of the market crash, \$40 billion worth of securities had been traded in the market. By 1932, half of those securities were worthless (Karmel, 1982). The 1929 market crash led to the Great Depression and the end of economic development. “The large losses to the investing public and the damage to the U.S. economy led to a Congressional investigation of the securities industry. Complaints of fraudulent and deceptive practices in the securities markets were widespread. Price manipulation by brokers and dealers, insider trading abuses, and inadequate disclosure were blamed for the collapse of the markets” (Mock, Holder, and Pincus, 1986, p.12).

Having realized the consequences of illegal behaviors in the unhealthy securities market and the necessity of federal regulation, Congress passed a law against fraudulent financial behavior. The SEC was established in 1934. The most important laws governing corporate behaviors and the securities market were, respectively, the Securities Act of 1933 and the Securities Exchange Act of 1934.

The SEC has asserted its authority to control securities-related fraud. After seven decades, the SEC has become the most important federal agency in controlling securities

fraud. The SEC has a clear organizational structure and is led by five Commissioners who are appointed by the President. The Commissioners are responsible for setting standards and monitoring the operation of the agency. According to the SEC's website, there are four divisions and nineteen offices under the Commissioners, and eleven regional offices:

1. *Division of Corporation Finance*. This division's responsibilities include, but are not limited to, overseeing the registered corporations' financial disclosures to the investing public, annual reports filings, and the filings about merger and acquisition.
2. *Division of Trading and Markets*. This division is in charge of overseeing the market participants' practices to ensure the efficiency and order of the market.
3. *Division of Investment Management*. This division monitors the investment management industry, such as mutual funds and investment banks, and reviews analysts' research filings and recommendations.
4. *Division of Law Enforcement*. This division carries out the first and most important responsibility of the SEC: enforcing the securities laws. It conducts investigations, obtains evidence, and prosecutes alleged law-breakers and/or corporations on behalf of the Commission.

The responsibilities of the nineteen offices are very diverse, including all securities- and markets-related matters, such as accounting and auditing matters, public affairs, and international affairs.

2.2 Mission and Law Enforcement.

The mission of the SEC is to protect investors' interests, to maintain the fairness and order of the securities market, and to facilitate capital formation (cite). In reality, many factors may cause can disrupt the securities market, such as stock manipulation, corporate accounting fraud, and barriers to information flow among market participants. As the securities market has played a very important role in economic development and investment has become an important economic dependence for many people to support their retirement, the consequence of disruption can be disastrous.

The SEC is actively and diligently engaged in countering fraud besides facilitating the efficiency of the market.

First, the SEC establishes requirements that companies disclose certain information to investors and works to ensure compliance with those disclosure requirements by reviewing the public filings companies submit. In doing so, the SEC both directly discourages shady accounting practices and, by ensuring that material, comprehensible information is publicly available, empowers the entire marketplace—stock analysts and credit raters, individual shareholders and institutional investors—to evaluate the information provided. This is particularly true after the SEC implemented electronic filing and on-line availability of company filings through its EDGAR (Electronic Data Gathering And Retrieval) System. Second, when preventive measures fail, the SEC has the authority to enforce the law and bring legal action against those who have committed fraud. (Committee Report, 2002, p.9)

As technology is incorporated into the market and as the complexity of the market structure creates more opportunities than ever for fraud, the litigation rate has been rising.

According to PricewaterhouseCoopers' 2004 securities litigation study:

The number of private securities class actions filed against companies and their directors and officers was 203 in fiscal year 2004. This was up from 2003 by 16 percent, and the "pipeline" for future securities litigation case settlements (or trials) appears to be full. On average, the number of private securities class actions filed in the U.S. was 188 per year from 1996 through 2003; in 2004 the private securities litigation cases increased by 16 percent over 2003 and 7 percent over the eight-year average. In 2004, other private securities class actions filed against analysts (1 case) and mutual funds (19 cases) brought the total number of cases 223. (2005, p.15)

2.3 Litigation Sources.

Like all other law enforcement departments, the SEC depends on proactive and reactive sources of intelligence (Shapiro, 1984).

Proactive sources

Intelligence is collected through market surveillance and incursive investigation (Shapiro, 1984). The SEC's Division of Corporate Finance is the main enforcer of these strategies. The Division selectively reviews corporate filings to ensure their compliance with securities laws. There are three levels of review: 1. a full cover-to-cover review in which the Division reviews the entire corporate report; 2. a financial statement review in which only financial statements and financial-related disclosure will be reviewed; and 3. a targeted issue review in which the Division reviews one or more specific items of disclosure.

Recently, the nature of selective review has been changed by the newly passed Sarbanes-Oxley Act, which required the Division to undertake some level of review of each reporting company at least once every three years.

Reactive sources

The intelligence in this group of sources may come from one of the following four categories:

1. insiders, including participating insiders and accomplices, corporate representatives, and corporate employees
2. investors, including individual and corporate investors
3. members of the securities community, such as New York Stock Exchange and Chicago Board Options Exchange
4. other social control agencies, such as FBI and FDIC (Shapiro, 1984)

Reactive sources of information suffer from several serious problems. For instance, the possibility and reliability of disclosure are, particularly to the insiders, subject to the incentives of reporting any wrongdoing. In addition, the investors' capability of recognizing the fraud and awareness of victimization present other barriers to reporting.

It is difficult to assess the contribution of these two sources to the litigation cases, given the lack of data. Even the SEC annual report does not provide relevant information. However, Shapiro (1984) made a comparison of the sources of investigation based on a review of the SEC records. According to the comparison, incursive investigation accounted for 38% of a random sample of 522 cases investigated between 1948 and 1972. Other social control agencies' referral accounted for 30%; and next is investors' reports of wrongdoing, which accounted for 29%; and the last is the insiders' reports, which accounted for only 9%.

Additional strategies are used by SEC employees and their focus or preference varies from one regional office to another. Shapiro (1984) noted that several SEC regional offices have undertaken special intelligence efforts.

Regardless of the litigation sources, there are two major limitations to the SEC's law enforcement functions.

First, though it may punish wrongdoers and deter others, it generally comes after the damage has been done and so can do little to make whole those shareholders and employees who have seen the value of their holdings substantially diminished as a result of others' financial fraud. Second, by its nature, it can only be undertaken where there is already some reason to believe that fraud has been committed. Thus, it is impossible to know how many cases of fraud—cases where no tip has been received or the fraud has not yet snowballed to the point of inevitable discovery—are not being found and therefore not being brought and the wrongdoers not being punished. (Committee Report, 2002, p.15)

In addition, it is possible that, like criminal prosecution, the SEC's civil litigation may reflect political priorities. For instance, if the accountability of top management on the financial statement is important at a certain period of time, then the litigation to the

top management may account for a significant portion. However, as far as the rule of litigation and selection of cases, the SEC is still focused on the strength of evidence and significance of the violation (Pincus, Holder, and Mock, 1986).

3. Studies of Corporate Securities Fraud

Corporate securities fraud is less complicated than individual securities fraud. Corporations can be implicated in two forms of securities fraud: accounting fraud and misrepresentation. Accounting fraud could take place as the form of earning manipulation or cost/expense manipulation, by which the corporation overstates its value. Misrepresentation is fraudulent financial reporting or misleading statements. Accounting fraud usually overlaps with misrepresentation. For instance, falsified transaction records or inventory will generate fraudulent financial statements.

3.1 Studies from Non-Criminological Perspectives.

The first known cases of securities fraud date to 17th-century Europe. The records of these frauds, however, are not very informative. Charles Mackay's *Extraordinary Popular Delusions and The Madness of Crowds* (1841) could be considered the earliest comprehensive account of securities fraud. The book described several highly publicized fraud cases, including the Tulip Mania, the Mississippi Scheme, and the South Sea Bubble.

Since the savings and loan scandal of the 1980s, there have been many empirical studies of corporate fraud. However, since the public's perception of corporate fraud is not much crime-oriented, most of these efforts were undertaken by scholars from accounting and finance. A few factors considered related to the fraud have received these scholars' serious attention, such as financial performance and features of management, even though their tests indicated inconsistent results.

Researchers identified some common characteristics of securities fraud in previous studies. For example, top management is always involved, because it has direct access to corporate accounting. It is almost impossible for top management not to know that the books are not accurate. In their research report on the SEC's Accounting and Auditing Enforcement Release (AAER) issued during the period 1987-1997, Beasley et al. stated that:

In 72 percent of the cases, the AAERs named the chief executive officer (CEO), and in 43 percent the chief financial officer (CFO) was associated with the financial statement fraud. When considered together, in 83 percent of the cases, the AAERs named either or both the CEO or CFO as being associated with the financial statement fraud. Other individuals named in several AAERs include controllers, chief operating officers, other senior vice presidents, and board members. (1999: 5).

The CEOs and CFOs of Enron and WorldCom were both actively involved in their respective frauds.

In addition, firms that engage in securities fraud overstate their revenues and assets or understate their costs and expenses (Beasley, et al.1999). A high stock price is usually desirable for corporations. However, investors are not willing to pay a high price

to buy a corporation's stock if the corporation is not doing well and making profits. The simplest way for a corporation to keep or inflate its stock price may be to exaggerate its financial performance.

In 1991, DeFond and Jiambalvo investigated 38 public companies that overstated their earnings. They found that the overstatements are negatively correlated with the growth in earnings and earnings overstatements are more likely when firms have diffuse ownership, lower growth in earnings, and fewer income-increasing GAAP (Generally Accepted Accounting Principles) alternatives available. They also found that overstatements are less likely among firms that have audit committees. They claimed that these results are consistent with the view that overstatement errors are the result of managers' responses to economic incentives.

Adopting an accounting approach, Dechow, Sloan, and Sweeney (1996) examined the causes and consequences of earnings manipulation based on firms that were subject to enforcement action by the SEC. They examined "the extent to which the alleged earnings manipulations can be explained by extant earnings management hypotheses; the relationship between earnings manipulations and weaknesses in firm's internal governance structures; and the capital market consequences experienced by firms when the alleged earnings manipulations are made public."

They found that "an important motivation for earnings manipulation is the desire to attract external financing at low cost." They also found that "firms manipulating

earnings are (i) more likely to have boards of directors dominated by management; (ii) more likely to have a Chief Executive Officer who simultaneously serves as Chairman of the Board; (iii) more likely to have a Chief Executive Officer who is also the firm's founder; (iv) less likely to have an audit committee; and (v) less likely to have an outside stockholder."

Wang (2004) analyzed a firm's propensity to commit securities fraud and its consequences. She claimed that "the firm's fraud propensity and the magnitude of fraud are shown to depend on the nature of the firm's assets, growth potential, and the quality of corporate governance." Burns and Kedia (2006) found that firms that had financial restatements are somewhat larger and have higher leverage than other firms in the S&P 1500.

From an economic perspective, Gerety and Lehn (1997) studied the causes of accounting fraud. Their findings supported a rational choice: "the decision to commit fraud is governed by the expected costs and benefits of this behavior" (1997: 588). They also found that

. . . several classic corporate governance variables do not differ significantly across the sample of offenders and a sample of control firms in the same industries. For example, none of the following variables differ significantly across the two samples: the mix of outside and inside directors, the presence or absence of audit committees, or the presence or absence of classified boards (1997: 588).

However, they did find a weak but statistically significant influence of stock ownership by board members over the probability of fraud, which suggests that in a statistical sense stock ownership significantly reduced the probability of fraud.

Rezaee (2005) conducted research on the causes and consequences of fraudulent financial statements. He analyzed the fraud from five aspects, which “can be equated to the term CRIME when “C” stands for Cooks, “R” for Recipes, “I” for Incentives, “M” for Monitoring or lack of it, and “E” for End Results.” He found that corporations engage in fraud in order to:

- (1) avoid reporting a pretax loss and to exaggerate financial performance; (2) meet or exceed security analysts’ expectation of earnings’ growth; (3) increase the stock price and create demand for issuing new shares; (4) obtain national stock exchange listing status or meet minimum exchange listing requirements to prevent being delisted; (5) cover up assets misappropriated for personal use; and (6) conceal deficiencies in performance (2005: 284).

Elitzur and Yaari (1995) used a management perspective to explore the relationship between corporate owners and managers and the effect of an executive incentive compensation plan on the reporting strategy of the manager under different degrees of market efficiency. They concluded that “owners can actively influence the information content of the financial report by selection of a compensation scheme for the manager. Consequently, timely disclosure on trading by managers and the executive compensation plan is important as it provides information on the owner’s intents with respect to earnings management.”

Burns and Kedia (2003) studied 224 firms that revised their financial statements from January 1997 to June 2002 due to accounting irregularities and a control group of all non-restating firms with data on ExecuComp to examine the effect of managerial pay for performance incentives on the incentives for earnings management. Her results were consistent with the perception that to maximize their gains, managers would have a strong incentive to manage earnings if their pay-for-performance incentives were connected to stock options. “High pay-for-performance incentives arising from stock options significantly increase the probability of restatement.”

Chen et al. (2006) drew on the Chinese Securities Regulatory Commission’s corporate fraud data to examine whether the ownership and governance characteristics of firms play a role in the propensity to commit fraud. They found that “boardroom characteristics are a factor in explaining fraud while ownership patterns appear to be unimportant. Increasing the proportion of outsiders on the board is one way to reduce fraud. Outsiders monitor management (including the executive directors) and help deter fraud. The fact that firms that commit fraud have more board meetings suggests the directors realize some acts or decisions are borderline legal and so there is more debate about them resulting in more meetings. Chairmen with shorter tenure appear less able to deter fraud.” In addition, they found that the type of owner (legal entity, individual, foreign) has little impact on a firm’s propensity to commit fraud. The social status of auditors does not affect the possibility of corporate fraud.

3.2 Studies from A Criminological Perspective.

It is just slightly more than half a century that the effort to study white-collar crime has been taken by social scientists. Corporate crime was very much neglected before the 1980s, not to mention corporate securities fraud. Because corporate securities fraud became a research topic for criminologists much later than it did for researchers in other disciplines, there have not had been many empirical studies of this topic in the field of criminology.

Most criminologists have focused their study on the case of corporations convicted of securities fraud. For instance, drawing on SEC records, Susan Shapiro (1984) conducted a series of case studies on the randomly sampled securities-related fraud cases from 1948 to 1972. She concluded that most of the offending organizations were relatively small and new; a majority of cases involved the upper tiers of organizational hierarchies, and the fraud benefited those who owned more than 10% of the stock of the corporation.

In addition to the features and characteristics of the offending organizations, Shapiro studied the intelligence sources and the strategies of SEC investigation. She identified three types of intelligence sources: 1) reactive sources, including insiders, investors, and securities community members such as trading associations; 2) proactive sources, including the SEC surveillance systems and investigation spin-offs (the detection of illegality by making incursions into the securities world); 3) multiple sources, which combine reactive and proactive sources.

She also alleged that the social organization of the illicit activities determines the way they are detected by the SEC. Therefore, the choice of detection strategy used by the SEC makes a considerable difference in whether the offender pool is primarily composed of stock issuers, brokers, or a combination of both, and each intelligence strategy, including surveillance, inspections, and informants, among others, nets different types of offenses and offenders. Among the sampled cases, Shapiro found that technical violations such as disclosure problems, boiler rooms, and improper books or records were the most frequently caught offenses and most of offenders (83%) were from corporate top management, holding positions as officers, directors, sole proprietors, or controllers.

Shapiro then described the law enforcement process of the SEC, from detection to prosecution. She concluded that “rather than opting for indiscriminate prosecution as a knee-jerk response to illegality, SEC enforcers exercise considerable discretion in selecting legal responses to wayward capitalism. Indeed, what is distinctive about the SEC is not its overreliance on prosecution to discharge its regulatory responsibilities, but rather its prosecutorial restraint” (1984, p.165).

This prosecutorial restraint is consistent with the philosophy of self-regulation, which was quite popular in the financial industry in the 1980s. Deregulation, however, is a controversial issue among scholars and policymakers. Many criminologists cited the savings and loan scandal of the 1980s as an argument against deregulation.

The savings and loan scandal was one of the most serious financial disasters in the United States during the 20th century. Calavita and Pontell's (1990, 1994, 1997) research introduced a series of fraud strategies adopted by the offending corporations and their senior managers to cheat and steal: "hot deals," "looting," and "covering-up." These fraudulent behaviors can be called "collective embezzlement," and it became a common type of corporate fraud in the late 20th century.

Calavita, Pontell and Tillman (1997) claimed that deregulation allowed offenders in the thrift industry to defraud investors and government at very little risk. In the worst situation, after the crime was committed, the government was complicit in shielding offenders from detection. Therefore, breaking the law seemed to be a very rational choice to the offenders.

Glasberg and Skidmore (1998) agreed that the government's deregulation made fraud in the financial industry possible. They pointed to the case of Columbia Savings Bank to view savings and loan frauds from a structuralist perspective. The frauds had been enabled by state policy; deregulation relaxed the standards of acceptable behavior so that frauds were assumed to be acceptable.

The debate between rational choice perspective and structuralism perspective has become a hot topic in today's theoretical frameworks of corporate crime.

By focusing on the strains and pressures facing top management and corporations,

Passas introduced Merton's theory of anomie into the literature on corporate accounting fraud. Passas (2001) summarized the Gokal/BCCI fraud and offered "insights into the motives and *modi operandi* of accounting fraud." In his case study, Passas proposed few excuses used by the offenders to rationalize their offenses, such as "my boss asked me to do it" and "no one was going to be harmed." He pointed out that such thoughts can effectively put one's conscience to sleep, at least for a while.

Passas agreed with Beasley et al.'s study that the picture of organizational factors contributing to deceptive reporting are lack of leadership and moral guidance; complexity of rules and regulations; unrealistic budget targets; high incentives for financial performance; inadequate internal controls; high divisional autonomy; inadequate internal audit function; and ineffective board of directors and audit committee.

Passas concluded that the vast majority of perpetrators of accounting fraud are the top management, including CEOs, CFOs, and operating controllers. Their motive is usually to maintain the high stock price. The consequences were long prison sentences (Passas, 2001).

In his third version of *Trusted Criminals* (2007), Friedrichs analyzed Enron and WorldCom. First, like Sloan (2001), he attributed the collapse of Enron and WorldCom, at least in part to taking on massive debt and issuing misleading reports about its profits and finances, in order to conceal the companies' poor financial performance. "Much of the debt had been shifted into secret partnerships, which had the effect of grossly

distorting the relationship between Enron's assets and profits, and its losses and debts" (Friedrichs, 2007, p.78).

Friedrichs also pointed out that many of Enron's stakeholders were involved, including the board of directors, the auditing firm, and many stock analysts. These parties either assisted or abetted the fraud.

In his account of Adelphia, Friedrichs agreed with the prosecutors' claim that the managers betrayed the philosophy of management, violated the business rules, and used their publicly traded company like a personal piggy bank, particularly when the interests of these managers clashed with those of shareholders. Many top managers who are the key decision makers are compensated with shares, options, and other financial incentives. Many studies have associated this form of compensation with managers' inflation of stock prices (Barton, 2001; Zahra et al. 2005).

Friedrichs concluded that:

In each of these cases CEOs from humble origins built up multi-billion dollar corporations, received massive compensation, and sold tens or hundreds of millions of dollars of their corporation's stock for great profit but also actively directed or participated in gross misrepresentations of corporate finances, with multi-billion dollar losses to investors and huge costs to many other parties (2007: 83).

From these case studies, one may note that because of the complexity of corporate securities-related fraud or because of the economic nature of the fraud itself, criminologists did not start paying attention to corporate securities fraud until recently. In

the past two decades, some criminological efforts have been taken to address the issue, but there have not been enough empirical studies conducted from criminological perspective and the research findings were quite inconsistent. Even for the studies from other disciplines' perspectives, several suggested causal factors were still not conclusive.

For instance, financial performance is one of the causes in the Gokal/BCCI, Enron and WorldCom cases. Shapiro (1984) claimed that these corporations were small, but the later case studies focused on larger companies in terms of both assets and the number of employees. Only the top management seemed to play an important role in most of those cases. These inconclusive findings suggest the need for further study of corporate securities fraud.

4. Contributions and Limitations

Like all the empirical studies in other fields, research in corporate securities fraud has made many contributions with certain limitations. So far, the major contributions can be concluded as follows.

The previous literature on securities fraud can be considered comprehensive (Jiambalvo, 1996). Prior studies have examined the variables that pertain to corporate fraud. For instance, factors that are closely related to decision makers in the context of corporation, such as the characteristics of managers and directors, were examined (Dechow et al., 1996; Beasley, 1996; Passas, 2001; Burns and Kedia, 2006). Other

factors related to the process of decision making such as the features of corporate structures were also studied (Shapiro, 1984; Calavita et al., 1997). Many studies examined both the possible causes and consequences of corporate securities fraud (Dechow et al., 1996; Gerety and Lehn, 1997; Wang, 2004; Rezaee, 2005; Chen et al., 2006). These analyses have greatly raised public awareness of the seriousness of corporate securities fraud and called for increased attention by policy makers and researchers.

Second, many factors that were hypothesized as key causes of corporate crime were examined and tentative results were presented. For instance, corporate financial performance or financial incentives for individual managers has long been considered a strong motivation for managers to falsify their reports (Defond and Jiambalvo, 1991; Wang, 2004; Elitzur and Yaari, 1995; Passas, 2001; Burns and Kedia, 2003). Almost all previous studies included financial performance or incentives as an independent variable, even though the results were not conclusive. However, some variables that were previously regarded as important causal factors, such as manager's perception of violation and peer influence, failed to demonstrate a causal relationship (Zey-Ferrell and Ferrell, 1982).

Finally, the previous literature has inspired an increase in research interest among criminologists. As criminologists and policy-makers have dedicated more attention to corporate securities fraud, this type of offense has no longer been considered a mere violation of accounting standards and rules. Instead, corporate securities fraud has

become a prosecutable and punishable crime. Based on previous research, stricter laws and policies have been passed to strengthen governmental regulation and to protect investors.

The previous studies were not perfect. Although they made important contributions to academia and policy, these studies contain limitations. The first limitation is that there are no consensus definitions for some independent variables. This inconsistency may explain the variations in the results. For instance, financial performance has been defined and measured in many different ways. Some studies (DeFond and Jambalvo, 1991; Chen et al., 2006) have measured debt to total assets as financial performance, while other studies used stock return to measure management efficiency and corporate profitability (Dechow et al, 1996; Burns and Kedia, 2003), and still (Beasley, 1996) other used the average percentage change in total assets for two years ending before the year of the financial statement fraud to measure the growth potential. All of these variables were attempts to measure the same concept – financial performance, however they were operationalized in different ways.

The second limitation is that a vast majority of studies were conducted from non-criminological perspectives. The implications from studies conducted outside a criminological framework are unlikely to have a substantial impact on policy-making and regulations. For instance, the findings of accounting research were reported to accounting associations in order to update generally accepted accounting principles. The research results became standard-setting references. Eventually, the offenders escaped

serious punishment. The implications of criminological studies would be different, because they carry strong recommendations and demand effective policies to deter future offense including appropriate punishment for offenders.

Another significant limitation of the previous studies is the lack of a theoretical framework or model. Regardless of the discipline or perspective, none of the previous studies utilized a strong and comprehensive theoretical framework. The only criminological study based in theory was conducted by Passas (2001) who used Merton's anomie/strain theory to study Gokal/BCCI. Other criminological studies (Shapiro, 1984; Calavita et al. 1997; Glasberg and Skidmore, 1998; Friedrichs, 2007) based on case studies or personal interviews did not apply a theoretical framework. This dissertation addresses this gap in research by testing two popular criminological theories.

5. Summary

Given the role of the SEC in countering corporate securities fraud, this chapter reviewed the SEC's history, structure, and the functions of each division. The review explained the SEC's operational procedure on litigation and the reference empirical studies provided to the SEC's rule-setting. Furthermore, the proactive and reactive sources of detection and litigation indicated the SEC's law enforcement strategy and decision-making on litigation.

Several classical studies were reviewed in this chapter and their consistent, as well as inconsistent, results were presented. For instance, Beasley et al. (year), Defond and Jiambalvo (year), and Dechow et al. (year) all found that the top management team participated in overstating a corporation's financial performance. The structure of the boardroom (i.e., ownership and composition) plays an important role in deterring fraud. Some studies found that a corporation's compensation plan may serve as a strong incentive for earnings manipulation (Elitzur and Yaari, 1995; Burns and Kedia, 2003). However, Gerety and Lehn (1997) did not find that board composition affected the possibility of fraud.

Despite the small number of criminological studies, some qualitative case studies have presented consistent results with those of quantitative non-criminological studies. For instance, Passas (2001) analyzed the British Gokal/BCCI case and proposed that financial performance is an important causal factor in corporate fraud as shown in many accounting studies. Like many studies from non-criminological perspectives, Shapiro's study (1984) of a large number of SEC cases indicated that most of the offending corporations were small.

As far as the theoretical framework is concerned, both the rational choice and standard operating procedure models received support from both criminological and non-criminological studies. Although the support from some studies is not strong, it indicated the potential applicability of the models.

These studies improved the understanding of the causes and consequences of corporate securities fraud. Although many findings were inconclusive on certain variables, rules and standards have been implemented based on the implications of research findings. In the last section of this chapter, these contributions and limitations were addressed. On the one hand, the contributions of comprehensive efforts to identify causal factors of corporate securities fraud and theorize the motive and control in the fraud are affirmative. On the other hand, the lack of consensus in defining and theorizing the proposed causal variables from diverse perspectives is an important limitation.

Chapter 3 Theoretical Background and Application

1. Introduction

Even though there had been no systematic effort by criminologists to examine corporate securities fraud, an increasing interest in corporate crime in general has been occurring since Edwin Sutherland's presidential address to the American Sociological Society in 1939. Clinard and Yeager (1980) interviewed more than a hundred of retired mid-level managers to understand their perspectives on corporate crime. Vaughan (1996, 1998, 1999) conducted a series of studies on the relationship between corporate structure and corporate crime. She ascribed corporate wrongdoings to the complexity and diversification of corporate structures. Simpson (2002) and Braithwaite and Geis (1982) focused on ways to use a compliance strategy to curtail corporate crime.

All of these research studies produced informative and enlightening results. The public is now more aware of corporate crime than ever before. These studies also provided valuable references for policy making and direction for further studies. More importantly, the results identified the causes and consequences of corporate crime allowing theoretical advances.

Among the theories applied, rational choice and corporate structure have received the most attention. Basically, both theories emphasize the business decision-making process. The main difference between the two theories is whether rationality exists in

corporate decision-making. Furthermore, there is a question regarding the strength of this rationality. While rational choice theory assumes the existence of rationality, corporate structure theory supports the idea of bounded rationality. The proponents of corporate structure theory posit that the complexity of corporate structure and other structural variables impede information flow causing irrationality in the decision-making process.

Despite these differences, both theories agree that, regardless of the existence of rationality in the decision-making process, corporate crime, like any other corporate behavior, is the result of a corporate business decision (Baucus, 1987). Therefore, it is necessary to understand corporate decision-making before conducting a thorough study of corporate crime.

2. Corporate Decision Making

In a capitalist society, the ownership and management of a corporation are separate, and decisions about the corporation's strategic planning or daily operations are made by top-, middle-, and low-level management. Corporate decisions are affected by corporate culture, quality of management, and external environments that include, but are not limited to, social control, resource availability, and competition. Therefore, the research on corporate decision making is a cognitive exploration of organizations, how they make decisions, and handle questions of information, control, choice, and management (March and Shapiro, 1982).

Following Simon (1947), March and Simon (1958), and Cyert and March (1963), three popular perspectives examine the organizational decision-making process. In one perspective, decisions are seen as rational choices made by corporate management; in another, decisions are viewed as rule-following behaviors by all decision makers; in the third perspective, a corporate business decision is a search for a solution to a problem.

2.1 Rational choices perspective.

Like individual behavioral decision making, organizational and corporate decision making has been considered by social scientists a rational reasoning of a variety of costs and benefits, input and output, alternatives and collateral consequences. Although corporations cannot be easily personalized, all of the social psychological factors that affect individual decision makers influence corporations. Within the corporate decision making framework, all decision makers will be influenced by their personal characteristics and by the corporate culture and social control.

The rational choice perspective assumes that corporate decision makers make their business decision out of risk-reward and cost-benefit analysis under the influences of personal and social factors. The decision-making processes are consequential and preference-based (March, 1994). The decision makers base their choice upon their answers to four questions:

1. The question of alternatives: What actions are possible?
2. The question of expectations: What future consequences might follow from each alternative? How likely is each possible consequence, assuming that

alternative is chosen?

3. The question of preferences: How valuable (to the decision maker) are the consequences associated with each of the alternatives?
 4. The question of the decision rule: How is a choice to be made among the alternatives in terms of the values of their consequences?
- (March, 1994, p. 2)

The rational choice perspective recognizes the ever-present uncertainty associated with the decisions. Decision makers are assumed to choose among a series of alternatives on the basis of their expected consequences (March, 1994). These uncertainties do not hamper the enthusiasm of rational choice proponents, although they form another important perspective in corporate decision making: bounded/limited rationality. The proponents see bounded rationality as “a modest, natural extension of theories of pure rationality” (March, 1994).

Rational choice perspective has been used to develop several other theories, including game theory, statistical decision theory, and utility theory. Game theory is an economic theory. It addresses a speculative situation, in which one decision maker considers the possible reactions to his own decision (Simon, 1979). In game theory, uncertainties surrounding the consequences of chosen actions are recognized and the decision maker would take all uncertainties into consideration.

Statistical decision theory posits that corporations encounter uncertainties in their business operations. These uncertainties include market risks, credits risks, and operation risks. Corporate managers are required to incorporate all possible risks into their decision-making. In other words, they need to collect as much information as possible

and then perform a mathematical calculation of the probability distributions of the variables that are relevant to the decision (Simon, 1979).

The reasoning in the utility theory of organizational decision-making is not different from that of individual decision-making. They both were based on rational choice perspective and draw on Jeremy Bentham's theory of utilitarianism and the economic principle of establishing a guideline of reasoning in which people make decisions with the purpose of achieving the maximum benefit at the minimum cost.

2.2 Rule-following perspective.

This perspective emphasizes that the rationale of organizational decision-making is limited by the information processing capability of managers and the rigidity of the standardized operating procedure. Simon (1957) stated that the intended rationality of a manager requires him to establish a simplified model and use the model to deal with real situations, but the construction of the model is greatly affected by the manager's psychological properties as a perceiving, thinking, and learning animal, so such behavior is not even approximately optimal with respect to the real world. Cyert and March (1992) claimed that the organization avoids uncertainty by following procedures and using standard operating procedures and rules of thumb to make and implement choices.

The researchers argue that corporations consist of different units and divisions, each of which represents its own interests (Cyert and March, 1963). "Decision-making

procedures were constrained by limited search and information-processing capabilities and were guided by the need to reduce the organizational conflict resulting from the different interests in the organization” (Pfeffer, Salancik, and Leblebici, 1976, p.229).

March (1994) claimed that organizational decision makers encounter at least four information constraints :

1. Problems of attention. Time and capabilities for attention are limited;
2. Problems of memory. The capabilities of individuals and organizations to store information is limited;
3. Problems of comprehension. Decision makers have limited capacities for comprehension;
4. Problems of communication. There are limited capacities for communicating information. (1994, p.10)

Corporate decision makers follow standard operating procedures and rely on precedent; decisions are made as rule following (Cyert and March, 1963).

The reasoning of decision making in this perspective is not focused on the future consequences of current choice of alternatives but rather on the appropriateness of following the rules, standard operating procedures, or precedents (Shapira, 1997).

Rather than evaluating alternatives in terms of the values of their consequences, it matches situations and identities. Thus, it includes the following factors:

Situation. Decision makers classify situations into distinct categories that are associated with identities or rules.

Identity. Decision makers have a conception of their personal, professional, and official identities and evoke particular identities in particular situations.

Matching. Decision makers do what they see as appropriate to their identity in the situation in which they find themselves. (March, 1997, p.17)

Under this matching, corporate decisions are made without consideration for preferences and risks. Decision makers follow traditions, hunches, cultural norms, and the advice or action of others (March, 1997). These traditions and norms are developed

through years of experiences on business operation, interactions among employees or between managers and employees, and exchanges of corporate cultures and local social culture.

There are also situations in which rules are violated because of rule-following rather than rational choice. For instance, ignorance of a rule may lead to unintentional violation; inconsistencies among the rules could also result in rule-breaking; and when rules are imposed by legitimate but independent authorities, they may be incompatible with the corporate cultures or policies. That conflict leads to violation (March, 1994).

2.3 Garbage-Can theory.

In this perspective, an organization "is a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work" (Cohen, March, and Olsen 1972). Corporate business decisions are seen as trial acts and corporations operate by a trial-and-error model.

The garbage can theory has also been considered an important step in a developing critique of rational choice model of corporate decision making. The model

goes beyond Simon's analysis by focusing on the ambiguity and loosely coupled nature of individual and organizational decision making. Whereas Simon's model of bounded rationality emphasizes cognitive limits on evaluating alternative courses of action, the Garbage-can model argues that the ambiguity of decision making stems from the ill-defined and inconsistent nature of individual and organizational goals (problematic preferences), and the indeterminacy of

knowledge and of techniques for achieving goals (unclear technologies).
(Ansell, 2001, p.5884)

The other important contribution the garbage-can model made to the literature is that it “disconnects problems, solutions and decision makers from each other, unlike traditional decision theory. Specific decisions do not follow an orderly process from problem to solution, but are outcomes of several relatively independent stream of events within the organization.” (Daft, 1982, p.139). Problems, solutions, participants, and choice opportunities flow in and out of a garbage can, and which problems get attached to solutions is largely depending on chance (Cohen, March, and Olsen 1972).

In short, corporate business decisions that bear short-run goals or long-run strategies are either made by individual managers or a group of managers or board members. Even though the corporation cannot be personalized, the decision making process in the context of corporation is not much different from that of individuals. All the decisions reflect certain individual reasoning to the problems/situations presented and the lines of these individual reasoning are in turn affected by the organizational context (March and Shapira, 1982).

Therefore, the best way to understand the interaction of corporate decision-making would integrate the corporation standard operating procedure, the decision-making process, and decision makers. In fact, the academic investigation in corporate decision-making has long included the combination of individual behavior decision theory and organizational decision theory (March and Shapira, 1982).

3. Theoretical Explanations of Corporate Crime

As far as theorizing corporate crime, many criminologists have tried to develop a model based on corporate decision making procedures and corporate behaviors. Passas (1990) and Waring et al. (1995) have put much effort in linking corporate crime to anomie theory. They posit that corporate managers are faced with a variety of pressures from shareholders, boards of directors, and other stakeholders. Corporate crime is just one of the means, probably the cheapest, for those managers to meet assigned goals.

Mathews (1988), Albanese (1984), Szwajowski (1985), Zey-Ferrell and Ferrell (1982), and more recently Piquero et al. (2005) have tried to use differential association/social learning theory to explain the cause of corporate crime. In their opinion, reference group and top management serve as good role models for many corporate managers in neutralizing illegal corporate behavior. Erman and Lundman (1978) and Vaughan (1998) held a structural perspective. They do not think corporate managers are accountable for many corporate crimes. Those crimes are only unexpected results of business behavior when the managers were trying to follow the standard operating procedures (SOP).

Shover and Bryant (1993) and Simpson and Paternoster (1996) are proponents of rational choice theory. Corporate crimes are understood by them as any other normal and

legal business behaviors, which are the consequences of careful calculation of costs and benefits associated with the behaviors. In this view, the only reason for corporate crimes to take place is that managers weigh a lot more benefits than costs associated with those behaviors.

After arduous work, criminologists and interested researchers eventually came down to two popular but contrasting perspectives which are similar to two competing perspectives (rational choice vs. rule-following) in corporate decision making study: the rational actor model and corporate structure model.

3.1 Rational actor model

Criminologists in this group believe that to understand corporate crime, it is necessary to figure out the reasoning process of the decision-making. So, the rational actor perspective would be especially useful in doing so (Block, Nold, and Sidak 1981; Braithwaite and Makkai, 1991; Simpson and Koper, 1992; Jamieson, 1994; Paternoster, and Simpson, 1996; Piquero, Exum and Simpson, 2005). They claimed that corporate crime results from the business decision-making process as a legal business behavior does and corporations act as single entities that consciously examine and choose among different courses of action (Cochran and Nigh, 1987).

This model suggests that decision makers (usually top management) choose an action only after a careful calculation of costs and benefits associated with the action. In

other words, a crime will occur only when the anticipated benefits of committing the crime outweigh the perceived costs (Zimring and Hawkins, 1973; Clarke and Cornish, 1986). The benefits could be a variety of profits such as revenue increase or escaping a depressive financial situation; the costs could be monetary (fine, compensation, disgorgement) or non-monetary (community service, on probation, suspension of business), legal (i.e. imprisonment for responsible individual managers, monetary fine for corporations) or non-legal (i.e. loss of corporate reputation or consumer patronage). This group has applied rational choice to explain corporate crime.

Rational choice theory. Corporations and their top management are profit-oriented. All business decisions serve a single purpose: to maximize profit even if they have to commit illegal behaviors. Under these assumptions, rational choice theory is a applicable to understand the rationale for corporate crime.

Rational choice theory asserts that offenders commit crimes after weighing the associated costs and benefits (Becker, 1968; Cornish and Clarke, 1986, 1987, 2000). This perspective has been extended to the *subjective utility model* that Simpson and Paternoster (1996) proposed to explain corporate crime. In the model, Simpson and Paternoster suggested that the costs affecting criminal decision-making by individuals or corporations include legal costs and non-legal costs such as perceived loss of reputation and possible damage to self-concept.

Thus far, rational choice theory has been applied by different theorists with their

different understandings in both corporate crime and street crime; a few elements are widely agreed (Simpson, Piquero, and Paternoster, 2002). First, the decision to commit a crime is (at least minimally) rational. Second, because decisions to engage in behavior are believed to be informed decisions, the information needed to make these decisions varies by specific crime types (Cornish and Clarke, 1986). Finally, the decision to offend will be affected by the immediate contextual characteristics of the crime (Cornish and Clarke, 1987).

Variables. When applying rational choice perspective to empirically test corporate crime, theorists focused on three categories of variable: top management characteristics, corporate financial performance, and sanction deterrence.

Characteristics of Top Management. The first two variables rational choice theorists tested are the characteristics of top management and board structure. Top management and board structure are key factors in explaining corporate crime due to their roles in the corporate control and decision-making process (Daboub, 1991; Daboub, et al. 1995; Simpson and Koper, 1997). According to rational choice theorists, the board of directors makes corporate policies and top management sets the tone for the corporate culture based on a series of rational decisions, and so those groups are seen as the source or guides of a variety of corporate behaviors. Becker (1968) implies that the decision to violate the law is influenced by the CEO's assessment of the expected benefits less the costs. This point can be best illustrated by Beasley, Carcello, and Hermanson's 1999 study of 300 companies involved in alleged instances of fraudulent financial reporting

during the 11-year period. In 72% of the cases, the CEO, and in 43% of the cases the CFO were associated with falsifying financial statements. Taken together, in 83% of the cases, either or both the CEO or CFO were associated with the fraud. Other top managers associated with fraudulent behavior were controllers, chief operating officers, other senior vice presidents, and board members.

Hence, the characteristics of top management exert a great influence on corporate behavior. Several studies have revealed the relationship between top management characteristics and outcomes. For example, the average age of the top management was found to influence corporate performance more than prior decision-making experience (Taylor, 1975); youthful management appears advantageous for achieving high rates of growth (Child, 1974). Top managers' educational background was found to be related to receptivity to innovation (Kimberly and Evanisko, 1981); long-tenured managerial teams tend to have strategies that conformed to central tendencies of the industry, and to exhibit performance that adhered to industry averages (Finkelstein and Hambrick, 1990).

The characteristics of top management have similarly been found to play an important role in corporate crime. For instance, Daboub (1991) examined a variety of demographic characteristics such as age, tenure, functional background, MBA education, and military experience and found that most of these variables (i.e., tenure, functional background, and age) influence top management decision-making in corporate crime. Simpson and Koper's (1997) research showed that companies headed by finance and

administrative CEOs are more likely to offend than are firms headed by CEOs with other backgrounds.

Of course, there were also inconsistent findings about the effects of age, length of service, and educational background on corporate behavior. For instance, while Finkelstein and Hambrick (1990) found that top management with longer company service have been found to generate less strategic change, and Daboub (1991) found that firms whose top management teams have more years of inside service will be less likely to engage in illegal behaviors, Simpson and Koper(1997) found no relationship between the length of service and corporate crime. Daboub (1991) and Williams, Barrett, and Brabston (2000) found no support for the relationship between top managers' business school education and corporate crime, yet Simpson and Koper (1997) indicate that companies headed by finance and administrative CEOs, most of whom have MBAs, have higher offending levels than do firms headed by CEOs from other backgrounds.

Ownership and Board Structure. In addition to top management demographic characteristics, many researchers also proposed that the board structure may be an important influence on corporate crime. In outsider dominance perspective (Vance, 1963; Schmidt, 1975, Fama, 1980), one would believe that increasing the number of outside director in the board structure would intensify the effect of the “watchdog” strategy so that the chance for the commission of illegal behavior should be reduced, because the benefits associated with corporate crime for the outsider are small and

usually outweighed by the costs such as loss of reputation and self-concept. As Beasley summarized

“Fama (1980) and Fama and Jensen (1983) hypothesized that the viability of the board as an internal control mechanism is enhanced by the inclusion of outside directors because outside directors have incentives to develop reputations as experts in decision control [and] because the external market for their services prices them according to their performance as outside directors” (1996: 446).

In empirical tests, many researchers found strong support for the hypothesis. For example, Beasley’s 1996 research results from a logistic regression analysis of 75 fraud and 75 no-fraud firms indicated that no-fraud firms have boards with significantly higher percentages of outside members than fraud firms. Dunn (2002) used a matched sample of 103 firms that were convicted of issuing fraudulent financial statements in the period from 1992 to 1996; his results show that this form of illegal corporate behavior is more likely to occur when there is a concentration of power in the hands of insiders. And more recently Uzun, Szewczyk, and Varma (2004) examined how the characteristics of the board of directors affected the occurrence of U.S. corporate fraud from 1978 to 2001. Their findings indicated that as the number of independent outside directors on a board increased, the likelihood of corporate wrongdoing decreased.

However, contradictory results have also been presented. Kesner, Victor, and Lamont’s investigation (1986) of Fortune 500 companies violating antitrust laws and the Federal Trade Commission Act from 1980 to 1984 found no relationship between the proportion of outsiders on its board and the number of illegal acts committed by a firm. Gautschi and Jones’ 1987 secondary data analysis of Clinard et al.’s (1979) data found a negative relationship, meaning that firms with higher proportions of outside directors on

their board tended to have more criminal violations than did those with lower proportions of outside directors.

Researchers have viewed ownership as an important factor in top management's decision-making in corporate crime (Zahra et al. 2005). As we know, ownership and control are separate in modern corporations. However, some researchers think that ownership by top management and boards of directors can improve the quality of control because the board of directors and top management will lose their own assets if they do not control corporate behavior. Fama and Jensen (1983) argued that stock ownership by management can significantly reduce corporate misconduct due to the fear of financial loss. Some empirical studies supported the argument. Beasley (1996) and Beasley et al. (1999) found that as outside director ownership in the firm increases, the likelihood of financial statement fraud decreases. Alexander and Cohen (1999) also found that crime occurs less frequently among firms in which management has a large ownership stake. DuCharme, Malatesta, and Sefcik (2001) reported that increasing proceeds from initial public offers (IPOs) is a strong incentive for managers to manipulate earnings. Most recently, Efendi et al.'s (2007) study of incentives that financial misstatements at the end of the 1990s market bubble found that the likelihood of a misstated financial statement increases greatly when the CEO has a large amount of stock options.

Not surprisingly, there were contrary research findings on the relationship between ownership by board members and top management and corporate crime. Dechow et al. (1996) did not find systematic evidence that managers were manipulating

earnings to obtain a larger earnings-based bonus or to sell their stocks at inflated prices. Given the inconclusive evidence and the significance of the causal relationship between ownership and corporate crime, a re-examination of the relationship is warranted.

Another variable rational choice theorists tested is corporate financial performance. As mentioned above, a corporation's main purpose is to maintain good financial performance and maximize profits. Under this principle, a corporation is prone to commit a crime when it sees that the benefits associated with the crime outweigh the costs of committing that crime, regardless of the corporate financial status. However, this point has been vehemently argued between rational choice theory and corporate structure theory proponents.

In the rational choice perspective, corporations with good financial performance have fewer motives to commit crimes. For corporations with declining financial performance, however, the likelihood of choosing illegal behavior will be very high. Because while the tremendous costs of bankruptcy and pressures from corporate shareholders and board of directors increase, the benefits associated with the corporate crime and the costs of committing corporate crime are viewed relatively lower than usual. It would be a rational decision for some top managers to get out of financial trouble by committing crime. (For the corporate executive, what can be worse than bankruptcy?)

Many empirical studies have explored the relationship between financial performance and corporate crime. The results were quite controversial, while some

indicated medium to strong positive relationship (Stanwick and Stanwick, 1998; Keane, 1993; Staw and Sz wajkowski, 1975; Asch and Seneca, 1976; Lane, 1977), others found very limited or no support (Clinard and Yeager, 1980; Yeager, (1981); Simpson, 1986; Cochran and Nigh, 1987; Baucus, 1987; Baucus and Near, 1991; Hill et al., 1992; Alexander and Cohen, 1996). The most probable explanation for the inconsistent findings may be the research methods. For example, the studies used different measurement instruments for financial performance. Baucus (1987) used return on equity and Baucus and Near (1991) used return on investment. Baucus and Baucus (1997) later used return on assets (ROA), and return on sales (ROS). Alexander and Cohen used earnings and sale growth; Clinard and Yeager (1980) used profitability (net income divided by total assets), efficiency (total sales divided by total assets), and liquidity (working capital divided by total corporate assets). Hill et al. (1992) used both return on equity and Altman's Z and found inconsistent results; they only reported Altman's Z because they think Altman's Z is a more accurate measure of financial performance.

Altman's Z is an index that was developed to summarize the risk that a firm will go bankrupt, although it is also viewed as a reasonable index of a company's overall well being (Argenti, 1976; Chakravarthy, 1987). It is defined as follows:

$$Z=3.3X1+1.0X2+0.6X3+1.4X4+1.2X5$$

where X1 is earning before interest and tax/total assets, X2 is sales/total assets, X3 is market value of equity/book value of debt, X4 is retained earning/total assets, and X5 is working capital/total assets. Basically, the lower a firm's score on this index, the greater the probability that it will go bankrupt. (Hill et al., 1992)

In addition, the types of violations and the industry samples in these studies also vary. Simpson (1986) and Cochran and Nigh (1987) studied anti-trust cases; Yeager (1981) targeted environmental violation; Hill et al. (1992) examined labor,

administrative, and environmental violations; Clinard and Yeager (1980) focused on such high-risk industries such as oil, automobile, and pharmacy. Baucus and Near (1991) and Alexander and Cohen (1996) researched a variety of offenses, but failed to include securities fraud.

Despite contradictory results, many theorists still believe that the characteristics of goal-oriented corporations and profitability of corporate behavior and the merger of shareholders' and regulatory agencies' expectations are likely to generate pressures and strains on top management and the whole corporation, which is a strong push toward corporate crime (Albrecht et al., 1979; Finney and Lesieur, 1982).

Deterrence. Other than top management characteristics, board composition, and corporate financial performance, sanction deterrence is another variable that rational theorists have tested in explaining corporate crime. Since the reasoning of crime is based on cost-benefit analysis, these theorists claim that laws and regulations, in order to achieve deterrence, should make corporate decision-makers aware that the risks of an illegal business decision significantly outweigh its rewards.

In general, theorists agree that corporate offenders are more likely to be deterred based on their demographic characteristics. As we know, most corporate executives and managers are not committed to crime as a way of life (Paternoster and Simpson, 1993). These are people with education, high socioeconomic status, and reputable social backgrounds. They are bonded to family, work, and community, and tend toward

conformity in behaviors and attitudes. Formal (legal sanctions) and informal (loss of reputation, shame, stigma, moral culpability) costs of corporate offending both affect corporate offenders' decision-making. Because of the ties to society, corporate decision-makers have much to lose if they are accused of illegal behavior (Simpson and Paternoster, 1996; Lofquist, Cohen, and Rabe, 1997).

However, some theorists disagree with this point of view. Moore (1987) posited that given the low probability of detection coupled with a low probability of conviction, even if apprehended, the net effect of deterring corporate crime is minimal.

To date, only a few empirical studies have examined the effects of deterrence on corporations, and though the studies were sophisticated, the results are inconclusive. Braithwaite and Makkai's study of 410 chief executives of small organizations and their officially recorded compliance with regulatory standards found that deterrence does not work for CEOs (1991: 35). Block, Nold, and Sidak (1981) and Simpson and Koper (1992) found some support for the rational actor model in antitrust cases but the former study illustrated that civil sanctions serve as a better deterrent.

Simpson and Paternoster (1996) developed a *subjective expected utility* theory based on the rational actor model, which included all formal sanction threats, informal sanction threats, and self-imposed moral punishment as the cost elements in the formulation of business decision-making. Their study reported that legal sanctions applied to firms and enforcement effects and targeting individual decision-makers can

serve as deterrents to corporate crime; and the appeal to moral punishment is an especially powerful restraint on corporate management.

It is unfortunate that no empirical study has yet examined the effects of deterrents on corporate securities fraud.

3.2 Corporate Structure Model

Unlike the rational actor model, which focuses on the decision-makers, the corporate structure model puts the emphasis on organizational structure and the operating process. The theorists supporting this model understand that the corporation is literally a complex organization and its behavior is not completely controlled by its decision-makers. Likewise, trying to understand illegal corporate behavior through the analogy of the corporation as “a person” and decision-makers as “the brain” is not appropriate (Clinard and Yeager, 1980).

These theorists agree that corporate behaviors are motivated by material interests. However, they state that “organizational structure and complexity, unclearly communicated or misunderstood directives, the absence of oversight on actions of employees at different levels and places within the organization, and many other circumstances seriously confound the ability of an individual or organization to make rational choice during the pursuit of corporate goals” (Lofquist, Cohen, and Rabe, 1997:8). They conceive of the corporation as a “constellation of loosely allied decision-

making units” (Metzger, 1984) (e.g., a marketing group, a manufacturing division, a research and development staff), each with primary responsibility for a narrow range of problems. Each unit operates under general corporate guidelines, but due to the complexity and breadth of its operations, the unit possesses some autonomy in setting priorities, processing information, defining problems, and initiating action. So, corporate action is largely determined by pre-existing organizational routines, and decision-making is structured by the problems identified, information gathered, and actions initiated according to these routines (Metzger, 1984).

Organizational structure perspective proponents thus characterize corporate behavior with “bounded rationality” (Ermann and Lundman, 1978; Vaughan, 1998). Although never denying the existence of rational choice framework among corporate decision-making process, they claim that motives and opportunities to rationally plan and execute corporate crimes rarely take place simultaneously in the real world (Ermann and Rabe, 1997). Rather, the information flow and the availability of choices are influenced by a sociological paradigm of corporate behavior that situates individual action in a structure/culture/agency nexus (Vaughan, 1998). Rationality may be limited in three situations:

- 1) Uncertainty about the consequences of actions chosen from among alternatives
- 2) Incomplete information about the alternatives actually available
- 3) Complexity of the world that makes calculation of the consequences of action impossible (Simon, 1986: 169).

The empirical tests of this model focused on firm size and diversification of structure because they are seen as the proxies for the complexity of corporate structure (Dalton and Kesner, 1988). Like most other proposed antecedent variables, such as

financial performance and top management's characteristics, the tests on these structural variables generated inconclusive results. Some of the tests found the variables to be medium to strong predictors, while others demonstrated no relationship.

Clinard and Yeager (1980) found that "the violating firms are on average larger, less financially successful, experience relatively poorer growth rates and are more diversified." Baucus and Near's (1991) results indicate that large firms were the most likely to behave illegally. Cochran and Nigh (1987) found that firm size and corporate diversification both are significantly related to corporate crime. In addition, Asch and Seneca (1976), Simpson (1986), Dalton and Kesner (1987) all found some relationship between firm size and corporate crime.

The competing results, however, have been presented in more recent studies. For instance, Hill et al. (1992) found no relationship between corporate diversification and corporate crime, and even for firm size there was only a weak relationship. Asch and Seneca's (1976) study of the characteristics of collusive corporations indicate that corporate diversification is not related to corporate collusion. Stanwick and Stanwick's (1998) study of companies with respect to environmental pollution reveals that corporate social performances have a positive relationship with firm size and the profitability of the firm and an inverse relationship with the level of emissions.

Research methodology has been proposed as a major explanation of the differences in results. For example, some studies (Baucus and Near, 1991; Dalton and

Kesner, 1988) were limited to *Fortune 500* companies, which are actually larger than average; some studies examined specific types of crime, to which large companies are more exposed such as environmental crime (Stanwick and Stanwick, 1998) and administrative and labor violations (Hill et al., 1992).

There were several ways to measure firm size. Stanwick and Stanwick used total sales; Asch and Seneca (1976) used the mean of the annual values of total assets; Cochran and Nigh used the log of the value of the five-year mean for corporate assets; Baucus and Near (1991) used the number of employees; Hill et al. used the natural log of average firm sales over a four-year period. Clinard, et al. (1979), however, alleged that any one of three different measures of firm size (sales, assets, number of employees) will suffice as the measure of size because they are all highly inter-correlated; sales and assets are really not good reflectors of corporate structure.

As far as corporate diversification, Asch and Seneca (1976) used the number of four-digit Standardized Industrial Code (S.I.C.) industries in which each firm is active; Cochran and Nigh (1987) used a more complicated economic measure: $1 - \sum P^2$ where P is the ratio of the firm's sales in the industry (four-digit SIC level) to the firm's total non-foreign sales; similarly Hill, et al. (1992) used another complicated economic measure: the "entropy index," which is defined as

$$\text{Diversification} = \sum_{i=1}^n P_i \cdot \ln(1/P_i)$$

where P_i is the percentage of firm sales generated in industry and $\ln(1/P_i)$ is the weight for each segment (which is the logarithm of the inverse of its share in total revenues).

The literature review on the antecedents of corporate crime presents competing research results. It is still uncertain whether or not the major variables empirically examined by researchers are good predictors. The generalization cannot be made due to the different methodologies used in previous research. Therefore a further examination of these variables will definitely not be considered redundant, especially for some type of crime such as securities fraud never empirically tested.

4. Application of theoretical frameworks

Corporate securities fraud is one type of corporate wrongdoing resulting from corporate business decisions. Based on previous literature and theoretical frameworks of corporate crime and corporate decision-making, the present research re-examines the validity of the proposed causal factors in the context of corporate securities fraud.

Normally, empirical studies examining the causes of fraud would have to be either based a well-established theoretical framework or trying to develop a new theory. Instead of developing a new theoretical framework, this dissertation will apply previously established theories.

As described in the early section, studies of organizational decision-making fall into two theoretical camps: rational decision-making and rule-following. Statistical decision theory and game theory are more inclined to support the importance of rationality in the process of corporate decision-making that takes into consideration all

uncertainties, whereas bounded rationality and standard operating procedure perspectives place significant value on the variables and circumstances under which the rationality is considered bounded. Even though garbage can theory belongs to neither camp, it is a theory that questions the rationality in decision making and in challenging rational choice theory.

These two theoretical camps are actually, in some sense, similar to two competing theoretical frameworks of corporate crime: rational choice and corporate structure. Therefore, it is safe to allege that corporate behaviors, including corporate crime, could be seen as either rational or limited rational choice made by the decision maker. The decision maker could be an individual manager or a group of directors. The process of rational thinking and the factors involved in the rational thinking vary in different corporate contexts such as culture and control system.

To be consistent, the current study is designed to primarily re-examine proposed causal variables developed from the above two popular but competing theoretical frameworks. By re-examining those variables, the study also make a tentative effort on exploring two theoretical frameworks as a secondary purpose: corporate structure theory (firm size); rational choice theory (financial performance, top management features, and board structure)

5. Summary

As always, the variables and the theoretical frameworks are the fundamental elements of research. Chapter 3 provided, in detail, the theoretical frameworks for this study through a review of previous studies. The chapter also presented important variables proposed by the studies and related research findings.

Because corporate decision-making is the basis of rational choice theory and corporate structure theory applied in this study, this chapter summarized three models of corporate/organizational decision-making. First, rational choice model assumes that the decision-making process is highly dependent on the equation of cost-benefit analysis. In the business world all companies are profit-oriented and their primary objective is to maximize profits at minimum cost. Therefore, all business decisions can be considered the outcome of a cost-benefit analysis. Under this assumption, the characteristics of decision makers are influential variables in business strategy. These characteristics will affect the decision makers in developing and implementing business decisions.

The second model – rule-following model – does not support the idea of rationality. Instead, the model argues that most business behaviors are rule-following behaviors so that the decisions do not consist of a high degree of rationality. In reality, too many uncertainties exist and corporate decisions attempt to avoid those uncertainties. Hence, regular procedures or standard operating procedures are established and all business behaviors are supposed to follow those rules and standards in order to minimize the risks associated with those uncertainties. Under this circumstance, a corporate crime

will be seen as a misconduct resulting from the outcome of corporate rule-following behavior.

Like the rule-following model, the third model – the garbage-can model – poses some challenges to the rational choice model. According to the garbage-can model, most corporate behaviors do not involve cost-benefit analysis or rule-following nature. Instead, many corporate behaviors follow a trial-and-error model. There are too many unknowns and myths in the business world. When faced with a situation that has too many unknowns, decision makers figure out a direction for future behaviors through tentative actions and responding to those results. The action that is taken first is solely dependent on chance or randomness.

Since the criminological theories of corporate crime – rational choice and corporate structure – are based on corporate decision-making, their assumptions and reasoning are similar to those of corporate decision-making models. With these assumptions in mind, social scientists have proposed a series of variables and measurements and conducted empirical studies to test the applicability of the theories. In most of these studies, financial performance and characteristics of top management were used to operationalize rational choice theory; firm size and diversification were measured to represent corporate structure theory.

However, the research findings from those empirical studies were competing and inconclusive. The possible explanations for the inconsistency were discussed in the

chapter. For instance, differences in sampling pools (i.e., *Fortune 500* only vs. companies across all size level), measurements (i.e., return on equity vs. return on asset for financial performance; number of employees vs. total sales for firm size), and methodology (i.e., case study vs. secondary data analysis) are all possible reasons for the discrepancy in research results.

Chapter 4 Methodology

1. Introduction

As indicated in the preceding chapter, many studies of the causes and correlates of corporate crime have been conducted, and the results were controversial. For instance, some researchers (Staw and Sz wajkowski, 1975; Asch and Seneca, 1976; Lane, 1977) found that financial performance is a key cause of corporate crime while others (Clinard and Yeager, 1980; Yeager, 1981; Baucus, 1988; Baucus and Near, 1991) found no support for this variable. Still others believe that board structure and firm size played the most important roles in the commission of corporate crime (Kesner, at el. 1986, 1988; Beasley 1996; Cochran and Nigh, 1987; Clinard, et al., 1979, Lane, 1953-54; Baucus, 1988; Baucus and Near, 1991).

Other research has suggested that environments such as socio-culture, legal/politics, and industrial resources are the determinants of corporate crime (Pfeffer and Salancik, 1978; Finney and Lesieur, 1982; Staw and Sz wajkowski, 1975; Dess and Beard, 1984; Baucus, 1988; Baucus and Near, 1991). These controversial results may be due to different research methodologies, settings, statistical tests, and types of offense. Despite the differences, previous research has made significant contributions to understanding corporate crime.

With the purpose of re-examining the causal factors of corporate securities fraud, this study compares litigated companies with non-litigated companies. Therefore, a case-control design is considered appropriate to execute this comparison. For statistical tests, a chi-square is used to test the bivariate relationship between the dependent variable (litigation status) and the independent variable (firm size). The dependent variable (litigation status) in the current study is simply referring to the actual legal status of company in terms of litigation. This measurement has a clear limitation, which is related to central point of this study – corporate securities fraud. In the discussion section of this dissertation, many of research findings will be extended to discuss the likelihood of committing corporate securities fraud as company's status. It is well known that being litigated does not sufficiently mean being convicted. There are some possibilities that litigated companies may have not committed fraud at all. Since it is beyond the capability of the current study to follow each of these litigations and get conviction status, the research result has to be cautioned on this point.

The chi-square result is used to decide whether another control group (controlling for industry, location, and firm size) should be collected. After the chi-square analysis, another two bivariate analyses are conducted with litigation status as dependant variable and characteristics of top management, board structure, and financial performance as independent variables. In the multivariate analysis a logistic regression is conducted to test the relationship between the dichotomous dependent variable (litigation status) and the proposed independent variables (characteristics of top management, border structure, and financial performance).

2. Research Questions, Hypotheses, and Theoretical Frameworks

To achieve the primary research purpose – re-examining causal factors of corporate crime in the context of corporate securities fraud – research questions are presented according to the variables drawn from the literature. For the secondary research purpose – exploring the applicability of rational choice and corporate structure – there are no specific research questions or hypotheses proposed. The answer is inferential and resides in the results of statistical tests.

2.1 Research Questions

This research is interested in re-examining the important causal variables proposed in the previous studies and in testing the applicability of two competing theories, rational choice and corporate structure, in the setting of corporate securities fraud. So, the research questions are:

1. Is firm size a key cause of securities fraud?
2. Is financial performance a good predictor of securities fraud?
3. Are the characteristics of the top management team (TMT), such as age and length of service, important factors influencing its decision to engage in securities fraud?
4. Is board structure a significant factor influencing corporate securities fraud?

5. Is the stock ownership by board members and/or top management team an influential factor to their decision to engage in securities fraud?

2.2 Hypotheses

Correspondingly, there are six hypotheses:

- H1: The larger a company is, the more likely it is to commit corporate securities fraud
- H2: Compared to corporations that are financially doing well, the corporations that are in poor financial situation will be more likely to commit securities fraud
- H3: The older a top management team's average age is, the less likely the corporation will engage in securities fraud
- H4: The longer a top management team has served in the corporation, the less likely the corporation will engage in securities fraud
- H5: The more outside members in the board, the less likely the corporation will engage in securities fraud

H6: The more board members and/or top management team own stock in the company, the less likely the corporation will engage in securities fraud.

As far as theory-exploring, since the primary purpose of this study is to re-examine the proposed causal variables of corporate crime and theory-exploring is a secondary purpose, there is no specific hypothesis developed here to explore the applicability of rational choice or corporate structure theory. Instead, based on the variables constructs and theoretical frameworks, the theory-exploring will be inferred from the statistical results of hypothesis-testing. Namely, the hypothesis of firm size is extended to infer corporate structure theory (with certain limitation) and other hypotheses are used to evaluate rational choice theory.

3. Research Design

Using a case-control design, this research compares two groups of companies in terms of antecedents of corporate securities fraud proposed in literature. The case group consists of 188 companies litigated by the SEC with securities fraud between 1999 and 2003. They are collected from the SEC litigation release data, which is available on the SEC website.

Based on the litigated companies' Standardized Industrial Code (SIC) and geographical location, the same number of companies that have never been litigated by the SEC are selected as the control group.

The research is designed to examine the antecedents of corporate securities fraud. The research process is divided into two steps.

1. A chi-square is first used to analyze a key variable: firm size. In this step, the independent variable is firm size and the dependent variable is litigation status. The rationale of analyzing the firm size alone in the first step is that firm size could be a determinant variable among the samples. First, it is possible, though not likely, that extreme cases with all large size or small size companies could be selected in the control group. If so, the validity of the research will be significantly compromised. Second, in some way firm size is correlated with other variables. For instance, large companies are more capable of absorbing financial loss than small companies and so they are less sensitive to financial performance.

Because of the aforementioned reasons, if firm size is found to be a statistically significant factor, then it is highly possible that the multivariate relationship between dependent variable and other independent variables will be manipulated by the variable of firm size. This justifies the step of controlling firm size when comparing case group with control group in other proposed variables.

2. If any significant difference found between the case and control groups, another control group will be collected while controlling for firm size and a logistic regression will be conducted to test the differences between case and control companies in other

proposed variables (financial performance, characteristics of top management, board structure, and stock ownership). If there is no significant difference on firm size between two groups, then the further logistic analysis will be conducted without controlling firm size.

The data were drawn from COMPUSTAT's North America database and the companies' annual reports and proxy statements which are available from the SEC website. The variables will be discussed in detail in the section on variables and data.

4. Samples

The research is a case-control design, so two groups of corporations are selected as samples.

4.1 Case Group

For the case group, there were two steps to the sampling process:

1. select the companies litigated by the SEC in a five-year period of time (1999-2003) from the SEC website. There were 557 companies selected at this step
2. filter out the companies which do not have records in COMPUSTAT or do not have enough filings in the SEC EDGAR database. After this screening, only 188 companies remain.

At this point, 188 companies had been selected as the litigated companies. Here, some caveats need to be given. First, some companies might have violated the securities rules long before the litigation date or their violation has lasted for a while. Since there is no way to identify when the violation started and the dependent variable in this dissertation is the corporation's litigation status, this limitation regarding the actual violation date will not significantly compromise the validity of the research.

Second, step 2 will eliminate many corporations because they do not have records in COMPUSTAT or have not filed enough reports to the SEC. One may be concerned about these filtered companies. Why are only one third of companies eventually selected for the study? What are the basic features of the filtered companies? There is one more concern that needs to be mentioned. In the current study, unit of analysis is the individual company as a whole social entity. Although chapter 3 has discussed few organizational theories address corporate decision making, the actual business decisions to violate law vary a great deal from situation to situation. For instance, even though each of these case companies can be analyzed as a single social entity, the situation of decision-making varies from company to company. In some companies the decision to offend is made by an individual manager or a group of managers, while in other companies the offending decision is made by the board of directors on behalf of corporation. Since it is difficult to trace the business behavior and identify real decision maker(s) from the case description, there is no way to distinguish, in the selected case companies, between decisions made by board on behalf of corporation and decisions made by individual manager(s). Thus each

of these case companies is treated as a single social entity capable of making offending decisions.

4.2 Filtered Companies

Although it is not possible to discover the features of organizational structure of those corporations due to the inadequacy of data, a brief descriptive analysis on whatever variables available for the filtered companies will be helpful to understand the sampling pool and generalization. To perform the analysis, 100 companies are randomly selected from the filtered companies. The variables that are collected are industry, and geographic location.

4.3 Control Group

For the control group, the same number (188) of companies are selected based on the four-digit Standardized Industrial Classification (SIC) Code and the state location of companies. The process is as follows:

1. identify each case company by the four-digit SIC code and the state in which they are located;
2. randomly select the same number of companies from the same SIC code and the same state as each case company. If there is no company in the same state, a company from the closest state will be chosen. At this step, extra search works

also need to be done to make sure the selected control companies must have COMPUSTAT records or enough SEC filings as the case companies do.

3. search through the SEC litigation release using the control companies' name as key words to make sure they were never litigated. Also, search other possible legal sources such as Lexis-Nexis to make sure the control companies were never litigated.

The rationalization of selecting the control group from the same industry and the same location is due to the purpose of this dissertation, which is to re-examine the key variables such as financial performance, top management features, and board structure studied by previously proposed models of explanations to corporate crime. Controlling for the type of industry and geographical location can eliminate the effect of external factors such as local cultural, political, and economic environments.

During the control group selection, one extra step was taken: to control for firm size. As introduced earlier, this step depended on the first crosstable analysis between the case and control group 1, which is to examine the effect of firm size. If there were some statistically significant difference in firm size between two groups, then the variable of firm size would be added as one more control variable for selecting another control group of companies. If there were no significant difference, the original control group would be used for further analysis.

There is also a limitation in sampling the control group, which is that it cannot be guaranteed that those companies have not ever violated any securities rule. Given the difficulty of detecting corporate crime, it is likely that they may have violated some rules but not been detected. This limitation is out of the researchers' control.

5. Variables and Data

This dissertation analyzes the causes of corporate securities fraud. The dependent (dummy) variable is the corporation's litigation status. If the corporation is litigated, it is coded 1; if not, then coded 0. Independent variables are based on the theoretical frameworks and literature on corporate crime. These factors have attracted researchers' attention and been repeatedly tested, but no definitive conclusion has been made. Of these variables, firm size is tested to explore the applicability of corporate structure theory; characteristics of top management, board structure, and financial performance are tested to evaluate rational choice theory.

5.1 Financial Performance

Rational choice theory proposed that financial performance plays a very important role in corporate crime, and the theory has been examined in many empirical studies. Still, the results remain inconclusive. So far, several means have been used to measure financial performance (i.e. return on assets, return on equity, and Altman's Z), each of which has its own strengths.

There are three dimensions of financial performance measures: profitability, liquidity, and efficiency (Clinard et al., 1979). Return on assets (ROA) and return on equity (ROE) belong to the dimension of profitability, which reflects how much profits management is able to generate with available investment and assets. Liquidity is usually measured by current ratio, calculated as current total assets (inventories, cash, accounts receivables, etc) divided by current total liabilities (account payable, tax due, loan, etc.). Efficiency is the ability of management to use its available assets to generate revenue, and it is represented by assets turnover ratio (total sales divided by total assets).

Since this dissertation evaluates the relationship of corporate securities fraud and financial health rather than management efficiency, profitability alone is sufficient to meet the goal. So, one of the measures in the dimension of profitability is adopted here. ROE is preferred in this study because the investors' expectation of the firm's financial performance may well be one of the pressure sources effecting management decisions, according to rational choice theory in the aforementioned literature.

However, ROE is not error-proof. Return on equity is net income divided by shareholders' total equity: the difference between total assets and liability. If a company carries a large debt and raises funds through borrowing rather than issuing stock, it will reduce its total equity. A lower total equity means dividing by a smaller number, so the ROE is artificially higher (Little, 2008). Therefore, researchers suggested that it may be

more meaningful to look at the 3- to 5-year mean ROE to rule out potential flaws (Clinard et al. 1979).

In this dissertation, financial performance is measured by two variables: a 5-year mean ROE before litigation, and the trend of financial performance in the 3-year data. The trend is measured in percentage change. The trend is defined as 1=up, 2=down, 3=flat, 4=V-type, 5=reversed-V, 6=uncertain. The data for calculating ROE and Trend are available through the COMPUSTAT database.

5.2 Firm size.

Like the measure of financial performance, firm size has been measured in different ways in the literature. Those studies have focused on three dimensions: total assets, total sales, and number of employees. According to Clinard et al. (1979), these three measures are highly correlated and each one reflects the size of the corporation. In this study, firm size is designed to examine the structural model of the theoretical framework of corporate crime presented in the literature. The variable “firm size” will reflect the reasoning of structural model; the complex corporate structure and standardized operating procedures undermine management control and lead to corporate crime.

Since traditional measurement of firm size (number of employees) cannot reflect the complexity of corporate structure, and we must see how many employees each

manager supervises and whether the ratio is related to illegal behavior, firm size is measured by the ratio of number of members on the top management team to number of employees. Based on the corporate structure model, we may assume that the larger the ratio, the less crime. Therefore, by testing the relationship between litigation status and the ratio of number of members on the top management team to number of employees, we may be able to examine the validity of structural explanation of corporate crime.

Certainly, one may doubt that we miss the number of middle-level managers. Since the number of employees covers all employees, including top- and middle-level managers, omitting the middle-level managers from the ratio would not reduce the validity of the measure.

The data of these numbers are also collected through corporate annual reports, and proxy statements which are available on the SEC website.

5.3 Top Management Team (TMT) characteristics.

This measure has been repeatedly measured in the rational actor model. As some of the previous studies indicated, top management is the key factor in corporate decision-making (Daboub, 1991; Simpson and Koper, 1997). Some researchers suggested that the characteristics of TMT members might be a good predictor of corporate crime because the decision-making style differs according to characteristics, such as age and

experiences. Previous studies have generated competing results that merit further research, particularly on the topic of corporate securities fraud.

In this research, two characteristics of TMT members are measured: age and length of service. The variable of age is defined as the average age of all TMT members including board members in the year before the litigation against the company took place. Similarly, the variable of length of service is defined as the average number of years all TMT members have served the company.

The data for these two variables are available in the corporate annual proxy statements and annual reports, which can be downloaded from the SEC website. For the sake of consistency, top management comprises vice-presidents and above.

5.4 Board structure.

Board structure is designed to study top-level corporate decision-making. According to the rational actor model, the role of the outsider and the stock ownership by insiders are important factors in decision-making (Fama, 1980; Beasley, 1996; Alexander and Cohen, 1999), although not all the empirical studies supported this argument (Kesner, et al. 1986; Cautschi and Jones, 1987).

The measurement of the board structure is consistent with that of previous studies. Both the proportion of outsiders on the board and stock ownership by insiders are

measured in percentages. The data are also available in the SEC website through the corporate annual proxy statements and annual reports.

6. Summary

A solid research design is a necessary prerequisite for a successful research project. In order to ensure validity and reliability, this study reviewed the methodological issues of previous studies. By integrating strengths of previous studies and eliminating their limitations, this study becomes a case-control comparison. Variables were drawn from the literature, but the measurement was adjusted to fit the research questions and theoretical frameworks.

In the literature firm size was measured in a variety of ways including the number of employees, total assets, or total sales, but this study uses the ratio of top managers to employees as a measure of firm size. Because firm size is the variable representing corporate structure theory that assumes structure-related factors cause bounded rationality in decision-making, the ratio of top managers to employees should be a more appropriate variable to measure the structural complexity than the number of employees, total assets, or total sales.

This chapter introduced the research questions and hypotheses, quality of samples, and steps of sampling procedures. The chapter presented necessary precautions associated with the sampling process (e.g., the nature and actual date of litigation may

affect the quality of case group). The chapter also analyzed the sampling pool, including filtered companies that were removed from the sampling process due to insufficient data. Additionally, the chapter discussed the steps of sample collection, particularly control groups, in great detail. Finally, the definitions and measurements of variables in literature and in the current study are discussed and data sources for these variables are provided.

Chapter 5 Statistical Results

1. Introduction

As proposed in the preceding chapter, three kinds of statistical analysis are conducted and the results are presented in this chapter. First of all, four descriptive analyses will provide basic information for the sample companies, including 100 randomly selected filtered companies, case companies, and two control groups. Secondly, in two bivariate analyses, a Chi-Square analysis is conducted to examine the relationship between firm size and litigation status, and a correlation analysis is conducted to confirm non-collinearity among independent variables. Finally, logistic regression is used to examine the multivariate relationship between litigation status and proposed independent variables. The name, label, and constructs of the variables tested in the current study are presented in Table 5.1. All the statistical results are presented in other 8 tables: Table 5.2-5.9.

2. Descriptive Analysis

The sample pool for the case group is the companies litigated by the SEC between 1999 and 2003, and the pool for the control group is the conventional companies in the SEC company list. Of the 557 companies litigated by the SEC from 1999 to 2003, 188 were selected for this research and 369 were filtered due to data inadequacy. In order to

Table 5.1 : Variable Names, Labels, and Constructs

Name	Label	Construct
State	The physical location of the company	Corporate Structure
SIC	4-digit standardized industrial Classification	
Size	Ratio of the number of top management team (TMT) member to the number of employee	
Age	Average age of TMT	Top Management Feature
Years	Average length of service of TMT	Top Management Feature
Outsider	Percentage of outsiders in boardroom	Board Structure
Ownership	Percentage of stock ownership by board/TMT members	Stock Ownership
ROE	5-year average Return On Equity prior to litigation	Financial Performance
Trend	3-year ROE trend prior to litigation	Financial Performance

have a clear picture of the sampling pool for the case group, this research randomly chose 100 companies from the filtered companies to conduct a descriptive analysis. The results are showed in Table 5.2.

Table 5.2 : Descriptive Analysis of the Filtered Companies (N=100)

	Percent
State	
CA	28
NY	18
TX	12
FL	10
Others (12 States)	32
SIC	
6211*	16
6282**	13
1311***	7
Others (27 categories)	54

* Security Brokers, Dealers & Flotation Companies

** Investment Advice

***Crude Petroleum & Natural Gas

As far as the business location is concerned, 4 states account for 68% of the filtered companies: California (28%), New York (18%), Texas (12%), and Florida (10%), and other 12 states account for the rest (32%). For business type, security brokers, dealers and flotation companies, and investment advice account for slightly less than half, but a significantly higher percentage than any other single industry. Due to data limitation, the descriptive analysis for the variable “firm size” could not be conducted.

For 188 case companies, the result of descriptive analysis is presented in Table 5.3. Like in the filtered companies, in the case group California (20.7%) has a substantially high percentage of the litigated companies. However, the distribution of case companies in other states is different from that of filtered companies: Florida (9.6%) takes the second place, followed by Texas (9.6%) and New York (7.4%). Other 35 states account for the rest (52.7%).

Table 5.3: Descriptive Analysis of the Case Companies (N=188)

	Frequency (%)	Mean (Sd)
State		
CA	39 (20.7%)	
FL	18 (9.6%)	
TX	18 (9.6%)	
NY	14 (7.4%)	
Others (35 States)	99 (52.7%)	
SIC		
7372*	13 (6.9%)	
7389**	12 (6.4%)	
6770***	10 (5.3%)	
.....		
6211	3 (1.6%)	
6282	1 (.5%)	
Others (103 categories)	149 (79.8%)	
Size		
Small (<50)	124 (66%)	
Medium(50—500)	29 (15.4%)	
Large (>500)	35 (18.6%)	
Age		48.8 (6.1)
Missing	2 (1.1%)	
Years		5.1 (3.8)
Missing	1 (.5%)	
Outsider		53.1% (26.4)
Ownership		24.5% (23.1)
ROE		-1.5 (2.2)
Trend		
Up	35 (18.6%)	
Down	55 (29.3%)	
Flat	1 (.5%)	
V-type	59 (31.4%)	
Reversed-V	36 (19.1%)	
Missing	2 (1.1%)	

* Services-Prepackaged Software

** Services-Business Services

*** Blank Checks

Unlike the filtered group, the case group has only about 2% of companies from the industry of security brokers, dealers, and investment advice. The primary industry in the case group is “services,” which accounts for 13.3%, Service-Prepackaged Software (6.9%) and Service-Business Services (6.4%). Blank Check companies account for 5.3%. By definition, blank check companies do not have specific business plan or purpose; they may have indicated their business plan is to engage in a merger or acquisition with an unidentified company or companies, other entity, or person.

The majority of case companies (124, or 66%) are small, with ratios of employee to top management less than 50/1. The medium-sized companies, whose ratios are higher than 50/1 but lower than 500/1, account for 29 or 15.4% and the large companies, whose ratios are higher than 500/1, for 35 or 18.6%.

The mean age of the top management teams (TMT) of the case companies is 48.8 years old with a standard deviation of 6.1 years. Average length of service of these TMTs is 5.1 years with a standard deviation of 3.8 years. With respect to the board of directors of the case companies, the mean percentage of outsiders in boardroom is 53.1 % with a standard deviation of 26.4%; the mean percentage of stock ownership by the insider board/TMT members is 24.5% with a standard deviation of 23.1%. Regarding financial performance, for five years before the litigation, the average return on equity (ROE) of the case companies is -1.5 with a standard deviation of 2.2

Since the Chi-Square analysis will be conducted to test the variable of firm size between case companies and the first group of control companies, only the data of firm size was collected for the first control group.

Table 5.4: Firm Size of Control Companies for Chi-Square Analysis (N=188)

Frequency (%)	
Size	
Small (<50)	89 (47.3%)
Medium (50—500)	67 (35.6%)
Large (>500)	32 (17.1%)

As showed in Table 5.4, nearly half of companies (47.3%) in control group 1 have a small ratio of number of managers to number of employees; medium- and large-sized companies account for 35.6% and 17.1%, respectively.

Table 5.5 indicated the frequency analysis of control group 2 – control companies for logistic regression. The mean age of TMT of these companies is 49.6 years old with a standard deviation of 6.9 years. On average the length of service of these management teams is 7.4 years with a standard deviation of 5.4. Relating to board structure and stock ownership, the percentage of outsiders in the boardroom of these companies is 62% with a standard deviation of 23.5% and the mean stock ownership by top management/board directors is 28.4% with a standard deviation of 23.4%. Like case companies, this group of control companies has a negative value for financial performance: average ROE -.8 with a standard deviation of 1.6.

Table 5.5: Descriptive Analysis of Control Companies for Logistic Regression (N=188)

	Frequency (%)	Mean (Sd)
Age		49.6 (6.9)
Missing	1 (0.5%)	
Years		7.4 (5.4)
Outsider		62% (23.5)
Ownership		28.4% (23.4)
ROE		-0.8 (1.6)
Trend		
Up	31 (16.5%)	
Down	49 (26.1%)	
Flat	3 (1.6%)	
V-type	63 (33.5%)	
Reversed-V	42 (22.3%)	

3. Bivariate Analysis

As stated in the literature review, many studies have found that firm size is not correlated, or is only weakly associated, with corporate crime. However, some prior studies selected their samples by controlling for firm size. Furthermore, both theoretical knowledge and empirical experiences have illustrated that firm size, in some situations, could be a critical key to the corporate behavior. Therefore, re-testing the relationship between firm size and corporate crime is necessary and meaningful. After conducting the descriptive analysis, this dissertation tests the bivariate relationship of firm size and litigation status on case companies and group 1 control companies. The testing result is supposed to answer research question 1: Is firm size a key cause of securities fraud?

A cross-table (Chi-Square) analysis is conducted with the dependent variable (litigation status) and the independent variable (firm size). The result is presented below:

Table 5.6: Chi-Square Analysis of Litigation Status and Firm Size (N=376, CI=95%)

	% Litigated	X ² (df)	Phi	Sig. (2-Tailed)
Size				
Small (<50)	58.2	6.887 (2)	.236	.032
Medium (50—500)	30.2			
Large (>500)	52.2			

As Table 5.6 indicates, there is a statistically significant relationship between litigation status and firm size ($X^2=6.887$, $p<.05$ with 2 degree freedom) and the firm size contributes to 23.6% of the variance of litigation status. With respect to the odds ratio, large-sized companies have .78 less odds than small-sized companies to be litigated and 2.53 more odds than medium-sized companies to be litigated; compared to small-sized companies, medium-sized companies have .31 less odds to be litigated.

Hypothesis 1 is that “The larger a company is, the more likely it will commit corporate securities fraud.” The bivariate analysis indicates a significant relationship between firm size and corporate crime. However the direction of relationship is not the same as hypothesized. Although the large companies are less likely to commit corporate securities fraud, the difference of .78 less odds ratio is not substantial. But the difference between large-sized companies and medium-sized companies, as well as that between

small-sized companies and medium-sized companies, is quite substantial. Compared to the large-sized companies, the medium-sized companies have .39 less odds to commit corporate securities fraud. Compared to the small-sized companies, the medium-sized companies have .31 less odds to commit corporate securities fraud.

Large companies are only slightly more likely than the small companies to commit corporate securities fraud. Medium-sized companies are substantially less likely than large or small companies to commit corporate securities fraud.

The Chi-Square analysis presented statistical significance, which implicates that firm size plays a significant role in explaining companies' litigation status. Since firm size is a significant factor that may manipulate the statistical relationship between litigation status and other proposed variables, another group of control companies were collected while controlling for location, industry, and firm size.

Prior to multivariate analysis, two bivariate analyses are conducted to test the bivariate relationship between dependent variable (litigation status) and all proposed independent variables (age, years, outsiders, ownership, ROE, and trend). The correlation between the dependent variable (litigation status) and a categorical independent variable (trend of financial performance) is presented in Table 5.7. As the table indicates, there is no statistical significance between litigation status and trend of financial performance. The correlation between the dependent variable (litigation status) and other proposed independent variables is shown in Table 5.8.

Table 5.7: Bivariate Relationship Between Litigation Status and Trend (N=376, CI=95%)

	%Litigated	X ² (df)	Phi.	Sig. (2-Tailed)
Trend		2.171(4)	.076	.704
Up	53.0			
Down	52.9			
Flat	25.0			
V-Type	48.4			
Reverse-V	46.2			

Table 5.8: Correlations Between Litigation Status and Age, Years, Outsider, Ownership, and ROE (N=376, CI=95%)

Variables	Litigation	Age	Years	Outsider	Ownership	ROE
Litigation	1.000					
Age	.060	1.000				
Years	.241***	.323***	1.000			
Outsider	.175***	.022	.138**	1.000		
Ownership	.063	.019	.032	.360***	1.000	
ROE	.176***	.052	.270***	.274***	.055	1.000

***p<.001

** p<.01

First of all, although some of the independent variables do correlate with others (i.e., Years is correlated with Age, Outsider with Years, Ownership with Outsider, ROE with Years, and ROE with Outsider), none of the values of Pearson correlation are higher

than .80. Therefore, there is no collinearity issue for the multivariate analysis. Second, of the continuous independent variables, Age and Ownership are not statistically significant variables. There are significant bivariate relationships found between litigation status and Years, Outsider, and ROE, respectively. These significant bivariate relationships are all in positive direction and their magnitudes are all at $p < .001$ level. To be specific, average years of service of TMTs is statistically significantly related to company's litigation status. The longer a TMT has served a company, the more likely the company will not be litigated. The direction of this bivariate relationship is consistent with many of previous empirical studies which demonstrated that the longer years of service of TMTs the less likelihood of corporate crime.

Percentage of outsiders on the board is positively related to litigation status, which implicates that the more outsiders on the board the less likely a company will be litigated. This relationship implies that high percentage of outsiders is facilitative to reduce the possibility of corporate securities fraud. The direction of this relationship is also consistent with that of most empirical studies and Outsider Dominance Perspective.

Finally, a company's financial performance, average ROE, is also positively related to the company's litigation status. Although there have been a hot debate over the relationship between a company's financial performance and the company's illegal behavior, a rational choice perspective supports that poor financial performance increases the weight of rewards and decreases the weight of risks to a company's business

decision-making. The indicated positive bivariate relationship between ROE and litigation status provided certain supports to the rational choice perspective.

4. Multivariate Analysis

Since firm size has a statistically significant relationship with the litigation status in this research, another control group with the same number of non-litigated companies is selected while controlling firm size for multivariate analysis.

A logistic regression analysis is conducted to examine the multivariate relationship between the litigation status (dependent variable) and the hypothesized variables (independent variables). The results are presented in the following table:

Table 5.9: Logistic Regression of Litigation Status (N=376, CI=95%)

Variables	B.	Exp(B)	Wald
Age	-.002	.998	.013
Years	.090	1.095	10.024***
Outsider	.015	1.015	9.191**
Ownership	.013	1.013	5.758*
ROE	.100	1.105	2.390
Trend			1.887
Up	--	--	
Down	-.424	.655	
Flat	-.358	.699	
V-Type	-.042	.959	
Reverse-V	-.189	.827	
Constant	-1.319	.267	

Model: Chi Square=40.580(9), $p < .001$; R Square = .138

*** $p < .001$, ** $p < .01$, * $p < .05$

In the proposed model, financial performance and age are not significantly related to litigation status. Average length of service of the TMT, percent of outsiders in the board of director, and percent of stock ownership by board/TMT members are statistically significantly associated with litigation status at $p < .001$, $p < .01$, and $p < .05$ levels, respectively. For length of service, an increase in the years of service will predict a decrease in the odds of litigation. With all other factors being equal, one unit longer of TMT's years of service decreases the odds of litigation by a 1.095 factor. For percent of outsiders in the board of directors, one unit increase in the percentage decreases the odds of litigation by a 1.015 factor while controlling for other factors. For percent of stock ownership by insider board/TMT members, 1 unite increase in the percentage decreases the odds of litigation by a 1.013 factor while holding other factors constant.

Overall, the model indicates a statistic significance at $p < .001$ level with $X^2 = 40.580$ ($df=9$). Taken together, the model explains 13.8% (Nagelkerke R-Square) of variance of the dependent variable, litigation status, between case and control companies. A further detailed discussion of the model and the significant independent variables are provided in the next chapter.

5. Summary

Three kinds of statistical analyses are conducted in the current study: descriptive, bivariate, and multivariate. The descriptive analysis was executed on both filtered companies and case-control groups. Due to the nature of descriptive analysis, one cannot

gather much from the result. For the bivariate analysis, chi-square was conducted between firm size (IV) and litigation status (DV). There is statistical significance in the relationship between these two variables and the strength of the relationship was mild (23.6% of DV's variance was explained by IV), but the direction of the relationship is not consistent as predicted by hypothesis.

The hypothesis based on corporate structure theory stated that the larger the company's ratio of top managers to employees, the more likely the company will be litigated. However, the statistical results indicated that small-sized companies are more likely to be litigated than other sized companies, although large-sized companies are more likely to be litigated than medium-sized companies. Therefore, the applicability of corporate structure theory in the context of corporate securities fraud is not supported in the present study.

Other two bivariate analyses were conducted to measure the correlation between dependent variable (litigation status) and all independent variables. The first bivariate analysis tested the relationship between litigation status and company's trend of financial performance. The result found no significant relationship. The second bivariate analysis tested the relationships between litigation status and other continuous independent variables. The testing result indicated that TMT's length of service, company's percentage of outsiders on the board, and company's financial performance are statistically significantly associated with company's litigation status. The magnitudes of these significant relationship are all at $p < .001$ level and the directions are all positive. In

addition, the second bivariate analysis indicated that although there are some statistically significant relationship among the independent variables, the collinearity is not an issue.

Finally, after collecting another group of non-litigated companies while controlling for one more variable (firm size), logistical regression was used to measure multivariate relationship. While financial performance and age were not statistically significant in the model, length of service, percent of outsiders, and stock ownership were statistically associated with the dependent variable – litigation status – at $p < .001$, $p < .01$, and $p < .05$ level respectively. The proposed model overall indicated a strong statistical significance ($p < .001$), and 13.8% of variance could be explained by the model. Furthermore, the statistical result, to some degree, provided support for rational choice theory of corporate crime in explaining corporate securities fraud.

Chapter 6 Discussion

1. Introduction

Based on the statistical results presented in the preceding chapter, a detailed discussion on each of the tested variables is provided in this final chapter. All the previously proposed explanations to the statistical relationship between litigation status and independent variables will be introduced. In addition, this chapter discusses the strengths and limitations of the study, particularly in terms of methodology, sampling procedure, sample size, and measurements.

This study will present policy implications targeting internal and external controls of corporations. Based on the research findings, this chapter will propose a control strategy to target identified causal factors and regulate corporations. Meanwhile, academic implications will be discussed in which the direction of future studies will be suggested.

2. Sampling Population

It is necessary to understand the sampling population before conducting valid research. In this study a few issues of sampling must be addressed before discussing the statistical results.

The case companies are selected from the SEC litigation publication, in which both registered and non-registered companies may be included. While there are data for the registered companies on management and financial performance, only some of the non-registered companies may have data, compiled by some organizations such as Who Owns Who, Corporate Affiliation, and D & B Corporation. Further, the data compiled by those organizations are not relevant to this dissertation.

Therefore, the unavailability of some companies' data reduced the number of available case companies from 557 to 188. Despite an attempt to describe the dropped case companies with limited data, a clear picture of sampling population on the case companies is compromised. Many of the filtered companies are located in California or New York State and in the industries of stock brokerage, dealership, or investment counseling.

The control companies are also selected from the SEC company database while controlling for industry, location, and firm size. The data for control companies on management and financial performance are also collected either from the SEC EDGAR or the COMPSTAT database. Even though consistency in the sampling pool and procedure has been achieved, generalization is limited because the samples included only companies that have complete data in the SEC EDGAR or the COMPSTAT database.

How are registered companies different from non-registered companies? At first glance, the difference may not be significant. They include both large and small

companies; they are all surviving the fierce competition in today's globalized market; and they have qualified management and well-trained employees. However, a close look at the registration and regulation will reveal the salient differences.

First, once registered, the company issues an Initial Public Offering (IPO) and be under the supervision of the SEC regulations. All companies' business activities will be subject to the rules and laws of the SEC. The company also has to undertake the costs of compliance with regulation and the subsequent increase in the costs of doing business. In addition, the ownership of the company is shifted to shareholders. The company's strategic planning and short- and long-term goals is adjusted to meet the expectation of the shareholders. A board of directors is needed and all business plans, including the turnover of the management, will have to be approved by the board. The corporation's internal and external control environments are changed, although these changes may not affect the likelihood of corporate crime.

Thus, the findings in this dissertation can only be applied to registered companies. To improve generalization, future researchers may want to examine non-registered companies as well. Also, a more complete description of the litigated companies will improve the external validity and generalization of research.

3. Research Questions and Hypotheses

This research has re-tested the causal variables of corporate crime and compared two theoretical frameworks — corporate structure model and rational choice model— to explain corporate securities fraud. The statistical results showed a significant relationship between some of the hypothesized causal variables and the litigation status. The results also provided partial support for rational choice model.

3.1 Firm size

The research findings indicate that firm size is significantly related to the litigation status. Large-sized companies have .78 less odds than small-sized companies to be litigated and 2.53 more odds than medium-sized companies to be litigated. In comparison to small-sized companies, medium-sized companies have .31 less odds to be litigated. The findings provide no support for hypothesis 1:

“H1: The larger a company is, the more likely it will commit corporate securities fraud.”

Although there is a statistically significant relationship found between firm size and litigation, the direction of the relationship is not consistent with the hypothesis. Among three classes of firm size (large, medium, and small), medium-sized companies have the least likelihood of committing securities fraud. The difference between large companies and small companies is much smaller than that between large companies and medium companies or that between small companies and medium companies.

While some prior studies found no relationship or a very weak relationship between firm size and corporate crime (Hill, et al., 1992; Stanwick and Stanwick's, 1998), others reported a positive relationship between firm size and criminality (Asch and Seneca, 1976; Simpson, 1986; Dalton and Kesner, 1987; Cochran and Nigh, 1987; Baucus and Near, 1991). For example, in their study of antitrust cases, Asch and Seneca (1976) characterized the features of collusive firms as less profitable and larger than conventional firms.

There have been several explanations of the relationship between firm size and corporate crime suggested in previous studies. First, large companies have more complex structures and, thus, less effective communications between management and employees (Finney & Lesieur, 1982; Vaughan, 1998). This explanation serves as the basis of the corporate structure model to corporate crime. As explained earlier, the model denies rational choice and gives more weight to the structural and environmental factors that limit or bound the rationality of corporate decision-making.

The aforementioned explanation claims that many corporations are multinational conglomerates, within which each unit or division is in charge of a certain operation. When the structure is poorly designed, the information flow is not well-managed. The mistakes, such as misunderstanding the directives from the supervisor or the failure of coordination, between units will take place and eventually lead to law breaking. The opportunity for corporate crime will be increased, because the invisibility and the murky

accountability of the operation associated with the criminal opportunity will reduce the risk of crime and encourage the offense.

Needleman and Needleman (1979) asserted that in a crime-facilitative corporation, employees are not forced to commit crime but choose to do so when presented with enticing incentives and opportunities that encourage crime. Unclear communication and misunderstandings do happen among standardized operating procedures and stiff guidelines. Hence, these loopholes could be very important facilitators of criminality.

The second explanation pertains to resources. Many people claim that large companies receive more attention from the investing public and, therefore, get involved in lawsuits more frequently than small companies do. Simply speaking, large companies are more likely to be targeted by investors and private lawyers. In some situations, this statement is valid. As Baucus stated:

Larger firms may be chosen more frequently as a target for government prosecution because their violations affect more people (more consumers, employees, investors and so forth) and thus the government can have a greater impact with their limited resources. Similarly, individuals may believe they can win larger awards against large companies (since they presumably have greater assets), so individuals also may be more likely to pursue legal action against the larger firms. (1987: 198).

This explanation is inconsistent with the corporate structure model, because it does not attribute the criminality of the large companies to structure, communication, or management efficiency. Instead, it ascribes the greater frequency of offenses in the large companies to external social factors such as consumer expectations to receive damage

compensation. This explanation gained substantial support from Joyce (1989) who proposed that

“... small firms guilty of price fixing often have few assets available for victims of the collusion to recover. If assets available to victims are small in value, then price fixer can be nearly immune to treble-damage actions that constitute a major deterrent to large corporations. This set of circumstances also may explain a perceived higher incidence of collusion in declining industries: The declining asset values accompanying declining demand and abnormally low profits may encourage collusion in such markets since the declining asset values reflect a shrinking target for damage suits.” (1989: 24).

In essence, the second explanation provides more support to the rational choice theory than the corporate structure theory. This explanation is focused on the stock ownership and value of assets for damage suits. They both relate to the conception of stake in conformity, which is an important element in the rational choice theory.

In the present study, although firm size is found to be statistically significant, the direction of relationship between firm size and litigation status is not consistent with what is hypothesized based on corporate structure theory. Therefore, the explanation proposed by corporate structure theory is not applicable in the setting of corporate securities fraud. One possible explanation for these results is that small companies in the financial market receive less attention from the SEC.

In today's financial market, deregulation and enforced self-regulation are still popular control strategies. When small companies receive less attention from regulatory agencies, they have a low possibility of detection even if they commit fraud. If the risk of fraud is low while the reward remains the same then fraud will be a rational choice. However, the direction of the relationship between firm size and litigation status across

large- and medium-sized companies is consistent with the hypothesis of corporate structure theory, which indicates that structure-related factors do play some role in the difference between large- and medium-sized companies.

In summary, firm size was found to be significantly associated with litigation status. But it seems that the relationship can be explained by both rational choice theory and corporate structure theory. For the statistical relationship between large- and medium-sized companies, corporate structure theory may be applicable, but for the relationships between large- and small-sized companies and between medium- and small-sized companies, rational choice theory seems to be more appropriate when risk-reward analysis and stake in conformity are taken into account. In general, the hypothesis relating to firm size, based on corporate structure theory, was not supported in this study.

3.2 Financial Performance

Financial performance of companies is the most controversial variable in corporate crime studies. The majority of prior studies designed to examine or re-examine the criminality of corporate behavior included some type of measurement on financial performance. A variety of findings, ranging from strong to no relationship between the criminality and performance, have been reported.

For the previous research results that found certain statistically significant relationships between corporate crime and financial performance, a traditional

interpretation has been provided to the relationship. The interpretation asserts that low profitability leads to criminality due to the pressure of survival (Staw and Szwajkowski, 1975; Asch and Seneca, 1976; Cochran and Nigh, 1987). This interpretation is close to the hypothesis about the effects that a scarcity or munificence of environment/resource has on corporate behavior (Staw and Szwajkowski, 1975; Baucus, 1987).

This study found no statistically significant relationship between litigation and financial performance that was measured by two variables: 5-year average ROE before litigation and 3-year performance trend prior to litigation. The finding lends no support for the hypothesis 2.

H2: Compared to corporations that are financially doing well, the corporations that are in poor financial situation will be more likely to commit securities fraud.

Accordingly, it may be inferred that low profitability is not statistically related to litigation status in corporate securities fraud. In other words, poor financial performance will not predict the possibility of corporate securities fraud.

A possible explanation is related to business nature – profit maximization. All companies wish to maximize their profits. Therefore, considering the impact of business nature of profit maximization, financial performance is not an influential factor in corporate securities fraud.

3.3 Age

Although some prior studies found that top management average age was influential to corporate performance more than did prior decision-making experience (Taylor, 1975), this study did not find a significant relationship between average age of top management team (TMT) and litigation status. Older TMT members are assumed to be more emotionally mature and prefer stable and sustained development while their younger counterparts are inclined to be more ambitious and aggressive in strategic planning. In relation to corporate securities fraud, however, this assumption does not apply.

The reason that the aforementioned assumption does not apply to corporate securities fraud may be related to the expectation or qualification of the position of TMT. Under normal circumstances, many years of experience will be required for the position of TMT and many TMT members are already over middle-age when they take the position. As indicated in the data, the average age of TMT for the case group is 48.8 and for the control group is 49.6. Meanwhile the case group has only one company with TMT average age under 30 and 12 companies under 40, while 13 companies in the control group have TMT average age under 40. Also, this finding could explain the correlation between average age and average length of service of TMTs indicated in table 5.7.

Therefore, the age difference between the case companies and the control companies is not statistically significant, suggesting that corporate securities fraud would be different from that of other corporate crimes in which the age of management plays a significant role. Thus, these research findings negate hypothesis 3.

H3: The older a top management team's average age is, the less likely the corporation will engage in securities fraud.

3.4 Length of Service

According to the statistical results, this dissertation found that average length of service of the TMT is statistically significantly associated with litigation status at $p < .001$ levels. With all other factors being equal, one unit longer of TMT's years of service decreases the odds of litigation by a 1.095 factor. This finding is consistent with the results of some prior empirical studies. For instance, Finkelstein and Hambrick's (1990) research concluded that top management teams with longer service are less likely to generate strategic change than those with short years of service. The finding also supports hypothesis 4.

H4: The longer a top management team has served in the corporation, the less likely the corporation is to engage in securities fraud.

While Simpson and Koper (1997) found no relationship between the length of service and corporate crime, the general understanding is still inclined to support that once a top management team has been in the position for a long time, it tends to be less likely to make decisions jeopardizing the interests of the corporation and team members. As Daboub's (1991) study indicated, although the relationship between top management team tenure and corporate crime is not statistically significant, the direction of the relationship is in accordance with the notion that teams with more years of inside service are less likely to engage in illegal behaviors.

TMTs take many factors into consideration when making business decisions. Three types of reasoning procedures have been adopted by TMTs in their decision-making process: statistical decision theory, utility theory, and bounded rationality and standardized operating procedure. Although competing research findings were presented by prior empirical studies, in the application of these three theories, each decision involves top management team's preference, which is related to team members' age, length of service, and educational background.

For instance, every business decision takes into account both risks and rewards. Years of service increase the attachment of TMT members to the company, such as compensation and hard-to-build reputation and networks. All these factors are transferred into potential stakes in the decision equation. Therefore, long years of service raise the stakes and the risks associated with corporate crime, decrease rewards that might be brought about by corporate crime, and increase the incentive for TMTs to consider

company interest. Overall, long years of service decrease the possibility of offending decision, as suggested by the positive correlation between length of service and average return on equity (ROE) in Table 5.8.

This reasoning also explains Finkelstein and Hambrick's (1990) findings that long-tenured TMTs tend to have imitative strategies directly in line with the industry trends, whereas short-tenured teams tend to have novel strategies that deviate from industry pattern. Companies with long-tenured TMTs are more likely to exhibit the performance in consensus with the industry average, while other companies led by short-tenured teams are likely to have deviated performance.

3.5 Percentage of Outsiders on the Board of Directors

In the statistical analysis, there is a negative relationship between the percentage of outsiders on the board of directors and litigation status, which is also statistically significant at $p < .01$ level. Each one unit increase in the percentage decreases the odds of litigation by a 1.015 factor while controlling for other factors. This is consistent with the results of many previous studies (Beasley, 1996; Dunn, 2002; Uzun, Szewczyk, and Varma, 2004), reporting that outsiders play an important part in reducing the possibility of illegal corporate behavior. Thus, hypothesis 5 is supported.

H5: The more outside members on the board, the less likely the corporation will engage in securities fraud.

For many years, scholars have used the outsider dominance perspective to explain the relationship between board of directors and corporate behavior. The perspective is based on two points (Kesner, et al. 1986).

The first point is the conflict of interest. Modern corporations have a clear separation between ownership and control. While the corporation's ownership by shareholders and management is in charge of operations, the control of hiring and firing, compensation, and long-term strategies is still held by the board. Ultimately, the board is responsible to shareholders who are the real owners. Therefore, if a management insider is sitting in the boardroom, he is going to make a judgment on his peer's performance and on his own. Is this different from letting the fox guard the henhouse?

A large percentage of US corporations have their CEOs serve as the chairperson of their boards. The conflict of interest is present in many boardroom decisions. As Baysinger and Hoskisson (1990) proposed, outsiders tend to reward management on the basis of objective financial performance, but insiders are inclined to be more subjective. Hence, only when the board is dominated by outsiders can the conflict of interest be minimized.

The second point of the outsider dominance perspective is the relationship among the board members. Since boards have their chairperson who is also the CEO of the company, an odd work environment is created on the board. For instance, a free

evaluation and judgment on management performance is compromised because outsiders will be uncomfortable performing the evaluation (Kesner, et al. 1986). Dunn (2002) argued that once the power of board is held by the insiders, corporate crime is more likely to occur because the outsiders would have to submit to pressure from insiders. Similarly, if the board is dominated through the power of outsiders, then the possibility of corporate crime will be significantly reduced.

The explanation of the outsider dominance perspective has meaningful support from empirical tests. However, we should not overlook the relationship between the percentage of outsiders on the board of directors and corporate criminality. As Fama and Jensen (1983) argued, outside directors are important monitors of management; the monitoring effect cannot be readily removed even in an insider-dominated boardroom led by the company's CEO. Now that the media is eager to discover any kind of corporate scandal, cultural, social, and political factors all affect boardroom decisions. Even though the submission of outsiders to the pressure of insiders is possible and conflicts of interest likely exist in the boardroom, the effect of watching and monitoring business decisions should not be underestimated. The presence of a monitor, whether strong or weak, does have some psychological effects on the target. Research studies that examine the interpretation of the relationship between board composition and corporate behavior would be worthwhile.

3.6 Percentage of Stock Ownership by Board/TMT Members

This research observed a negative and statistically significant relationship between the percentage of stock ownership by board/TMT members and corporate securities fraud at $p < .05$ level. The interpretation of the relationship is that controlling for all other factors, each one unite increase in the percentage of stock ownership by insiders decreases the odds of litigation by a 1.013 factor while holding other factors constant. This finding provides additional support for empirical studies relating stock ownership to corporate behavior.

Morck et al. (1986) found that as management's stake rises, corporate financial performance improves. Beasley (1996) found that as outside director ownership in the firm increases, the likelihood of financial statement fraud decreases. Alexander and Cohen (1999) also reported a relationship between corporate crime and equity ownership of management and board members. Corporate crime occurs less frequently among firms in which management has a large ownership stake. The findings also confirm hypothesis 6.

H6: The more board members and/or top management team owns stock in the company, the less likely the corporation will engage in securities fraud.

Kesner (1987) proposed a "financial dependence" perspective to explain the relationship between ownership and performance. According to this perspective, the greater the director and management's stock ownership in a company, the more likely the performance of the firm will increase. This point is actually similar to the notion of stake

in conformity. When one has great stock ownership in a company, his financial interests are closely related to the company's performance. Subsequently, he is sure to be concerned with every factor that may affect the company's performance, such as cost-cutting, outsourcing, and strategic planning. Therefore, he is less likely to expose the company to high risk behaviors such by breaking the law. His business decisions will tend to serve the best interests of company and its shareholders. As suggested by Alexander and Cohen (1999), ownership plays an important role in aligning the actions of top management with the shareholder interest.

There is one important limitation in measuring ownership that should be discussed. In contrast to empirical studies that separated stock ownership between board members from management, this dissertation studied the ownership as many other studies did -- combining board members' and management's stock ownership. However, the differences between the ownership of board members and of management must be addressed.

For example, what does the ownership weigh to management and board members? Kesner (1987) stated that the actual holding may be greatly different in terms of management and board member stock ownership. Management usually receives a substantially higher value of salary, compensation, and bonus. Hence, the value of its shares may not be as significant to management as it is to outsider board members. Therefore, the positive effect of stock ownership on management might be lower than on board members.

In addition, the work environment in a boardroom and personal relationships between outsider board members and management will likely be affected by the ownership. If the board/TMT ownership is focused on TMT members and there is only insignificant ownership for outsider board members, then the outsider board members are likely to become “outside observers”. They will not be involved with the company’s decision-making. Thus, management and insider board members will be less likely to be closely monitored because of reduced supervision from outsider members. This situation will be less likely to occur when the ownership is equally distributed between outsider board members and management.

Since the board represents shareholders, a non-compromised boardroom will best represent shareholders. Thus, a future examination of the difference between board members’ and management’s stock ownership will be useful in determining how a board watches its management and serves the interests of shareholders.

4. Theoretical Frameworks

Besides identifying the causal factors of corporate securities fraud, this dissertation has a secondary objective, which is to exploring the applicability of rational choice and corporate structure theories.

In this dissertation, the measurements of rational choice theory are characteristics of top management, board composition, stock ownership, and financial performance, while the measurement for corporate structure theory is firm size. First, the study observed a significant relationship between firm size and litigation at $p < .05$ level. The firm size contributes to 23.6% of the variance of litigation status. Relating to the odds ratio, large companies have .78 less odds than small companies of being litigated and 2.53 more odds than medium-sized companies of being litigated. Compared to small-sized companies, medium-sized companies have .31 less odds of being litigated.

The results show that large companies are more likely than small companies to commit corporate securities fraud. However, among all companies examined in Chi-Square analysis, the medium-sized companies showed the fewest cases (30.2% only) of corporate securities fraud. The result refuted the hypothesis that the larger a company is, the more likely it is to commit corporate securities fraud. Therefore, the applicability of corporate structure theory is relatively challenged in this research.

As far as the results for measurements of rational choice theory, financial performance is not significantly related to litigation. The average age of top management does not demonstrate statistical significance in the model. However, the average length of service of TMTs, the percentage of outsiders in the board of director, and the percentage of stock ownership by board/TMT members are statistically significantly associated with litigation status at $p < .001$, $p < .01$, and $p < .05$ levels, respectively. The proposed model also indicates statistical significance at $p < .001$ level and explains 13.8% of variance of the

dependent variable—litigation status – between case and control companies. Thus, the applicability of rational choice theory is, to certain degree, supported.

However, there is a weakness in the conclusion of exploring the applicability of the two theories. Firm size is the only dimension used to measure corporate structure. In the research design, there were several dimensions of rational choice model examined. Therefore, the possibility of accepting one or more hypotheses of those dimensions is statistically higher than examining only one dimension. For example, many scholars have considered financial performance a typical dimension of rational choice model, but it does not demonstrate a significant relationship in the research. However, other dimensions measured in the research present significant relationships.

By the same token, if more variables of a corporate structure model, such as diversification of company, are applied, the possibility that one or more measurements would present statistically significant relationships would be increased. Due to data limitations, other measurements of corporate structure model are not collected in this study. Therefore, the conclusion regarding the applicability of corporate structure theory must be confined to the dimension of firm size. Future studies intended to re-test the applicability of corporate structure theory in corporate crime should use more variables to measure corporate structure.

Even though hypotheses of rational choice theory in the study receive confirmative support, scholars still challenge the applicability of rational choice theory.

The rational choice model of corporate crime treats corporations as a single entity and amoral calculator, who is concerned with costs and benefits of its business only (Cochran and Nigh, 1987). Corporate decision-making is a single amoral calculation of costs and benefits associated with certain kinds of business conduct. However, the corporation consists of a variety of subdivisions, units, and personnel meaning that corporate criminal behavior could be taken place in any unit and by any employee and/or manager. Just as Finney and Lesieur (1982) stated that a requirement of a solid theory is to address multiple levels or dimensions of causality, a detailed analysis on the different levels of decision-making process in a corporation is surely necessary to form an applicable theory.

However, an analysis of rational choice theory indicates that the theory does not deny that many units or divisions constitute a single corporation, each with some capability for business decision-making. To the contrary, the rational choice model distinguishes not only decision-making within a single corporation but also motives of different offending decisions in different organizational contexts. This point can be best elaborated by the rational choice theory's feature—crime-specific decision-making (Clarke and Cornish, 1986). In explaining the reasoning of criminals, Clarke and Cornish (1987) introduced the notion of crime-specificity, which means that the decision to engage in crime and to choose certain targets is the outcome of a series of rational reasoning stages that takes into account a variety of possible costs and benefits.

In corporate decision-making, there are two levels of decision-making processes for two separate kinds of decisions. One is conducted at the top -level, which includes decisions made by top management and/or by board of directors. These decisions are usually related to long-term strategies and goals. The other level of decision-making is conducted at the middle- and lower-level, which includes decisions made by supervisors and is related to daily operational activities.

Since the nature and context of the two levels of decisions are different, the rationales are dissimilar as well. This is consistent with the notion of crime-specific decision-making, a critical strength in the rational choice theory of criminology.

In fact, every corporate decision, including those to offend, depends on a variety of social, economic, and cultural factors. For example, the decision to commit corporate securities fraud depends on the feasibility of manipulation of accounting books and the availability of alternative strategies. Finney and Lesieur (1982) asserted:

Criminal action is developmental and contingent in nature, including both events leading to the offense and the enactment and consequences of crime. Not only does such action involve a temporal sequence, but as commonly put, one thing leads to another; events in the sequence are causally associated or interlinked. Viewed retrospectively, such links involve numerous situational contingencies (1982: 260).

This dissertation targets top management and does not explore the factors influencing the middle- and lower-level managers' decision-making. A further study of all levels of management and a comprehensive exploration of the corporate decision-making process would be worthwhile.

Another challenge comes from a traditional perspective of bounded rationality (Simon, 1986). Some scholars contend that some criminal behaviors, particularly corporate criminal behaviors, are unexpected results rather than the intended outcome of costs and benefits analysis (Vaughan, 1998). How do these unexpected results occur? Scholars have claimed that these results come from decision makers' bounded rationality. For instance, due to the lack of collective knowledge on legal issues, decision-makers may develop a plan that is not rational and that violates a regulation. Standardized operating procedures (SOPs), prior decisions, or inertia and habits (Simpson, Piquero, and Paternoster, 2002) may direct decision-makers to behavior that is not rational.

These scholars criticize the rationality of choice from a retrospective angle. This challenge is a misunderstanding of rational choice theory. First, we need to answer a question: To whom is the choice rational? It is true that some decisions are made without important information or result from inertia, habit, or standard operating procedure. It is also true that these decisions may be not rational when examined in hindsight. However, these decisions can be considered rational to the decision makers during the point in time when they are making the decisions with the information they possessed at that moment.

Second, it is unrealistic to expect decision makers to have full knowledge or information before making a decision, especially in the context of competitive business. It is well known that time is always of essence in the business world. Obtaining collective knowledge on a business decision is definitely costly. Under the situation of lack of

collective knowledge, most decision-makers will make a time-sensitive, rational choice after a cost-benefit analysis based on available information.

In addition, characteristics of management in the corporation provide us with some support for the notion of rational decision-making. Managers are middle- or upper class people with strong ties to their family, community, or nation. (Simpson, Piquero, and Paternoster, 2002). People with these characteristics are not likely to engage in antisocial or irrational behaviors. Also, compared to other kinds of criminals, corporate crime offenders have high stake in conformity, which restrains them from irrational actions. Thus, although the decisions these people make may seem irrational in hindsight considering all adequate information, the analysis of costs and benefits based on the available information and the specific context does take place among decision makers.

In conclusion, the research results support rational choice, not corporate structure theory. Although challenges remain, the purpose of this dissertation is to test the applicability of rational choice theory and corporate structure theory in corporate securities fraud, not to refute the challenges. Thus, lawmakers, regulatory agencies, and other stakeholders in the context of corporate securities fraud should pay more attention to the factors proposed in the model of rational choice such as board composition and stock ownership.

5. Implications

This research re-examines some key antecedents of corporate securities fraud based on previous empirical works and tests the applicability of two theories of corporate securities fraud. The research has merit for policy making, especially during the present financial crisis. First, by re-examining the key antecedents of corporate crime, the model indicated that financial performance and average age of top management are not significant antecedents of corporate securities fraud. Firm size, average length of service of top management, and board structure are statistically significant antecedents. The research confirmed some previous empirical research results and challenged others, providing further evidence for regulatory policies. For example, based on the model, an increased regulatory effort focusing on board composition and stock ownership as well as tenure of the top management team should improve the use of resources.

Second, like external social control, corporate internal control plays an important role in corporate behavior. Current problems in the subprime mortgage and investment banking industries reflect a need for better internal control. For instance, in early 2008, a French bank trader used computer access codes of other employees and falsified documents to avoid supervision and made unauthorized futures trades that cost the bank \$7 billion. A better internal control system is closely associated with corporate culture whose tone is set by the board and top management. This research's results provide an important reference for corporations to pay attention to their top management team and board structure in order to establish an effective internal control system.

A further level of policy implication is about the philosophy of external social control in corporations, namely governmental regulations toward corporations in the securities market. There has been a long-standing debate on how to control corporate behavior. What kind of regulatory philosophy should government adopt? Some research suggested that deterrence should be adopted as the major philosophy because of corporations' rational decision making. (Paternoster and Simpson, 1996; Snider, 1990) Others recommended a model of enforced self-regulation to improve the cooperation between the regulatory agency and the corporation and to reduce the corporate wrongdoings resulting from structure related factors. (Braithwaite, 1982)

The theoretical foundation for these two regulatory strategies stems from the debate between rational choice theory and structure theory. Therefore, these two regulatory strategies have long been seen as opposing strategies of regulatory enforcement and cannot be adopted simultaneously.

Several researchers have suggested that regulatory strategies should be based on the social image and the nature of individual corporations (Kagan and Scholz, 1984). They categorize corporations into three groups. In the first group, corporations are viewed as amoral calculators. The behavior of these corporations is profit-oriented. They do business after careful calculation of all related costs and benefits. If the benefit outweighs the cost, they will implement the strategy even if it will violate certain laws and cause serious damage.

In the second group, corporations are seen as political citizens, “ordinarily inclined to comply with the law, partly because of belief in the rule of law, partly as a matter of long-term self-interest” (Kagan and Scholz, 1984, p.67). If corporations do break some laws, it is because they disagree with them. The last group of corporations are considered organizational incompetent entities. The law-breaking stems from structural and control failure.

To each of these three groups of corporations, researchers suggested appropriate regulatory strategies: deterrence for amoral calculators, cooperation for political citizens, and consulting for incompetent entities. However, there should be a dominant regulatory philosophy, because it is not easy to discover the real nature of the corporation. The results of this dissertation showed some support for the rational choice theory of corporate crime. Thus a deterrence strategy is recommended by this study.

Certainly, the present research is exploring the applicability of rational choice theory and corporate structure theory rather than testing them. The policy implication here is more a suggestion rather than an evidence-based recommendation. Thus, one needs to be cautious on the implication. However, that three out of six tested variables representing rational choice theory indicated statistical significance has proved that deterrence strategy, which is based on rational choice theory, will not an ineffective strategy.

As far as the compliance strategy that is based on corporate structure theory, because the theory is measured solely by firm size, it is not certain whether this theory will gain support if more variables are developed. Given this uncertainty, more variables needed to make a solid policy recommendation. Regardless, one point about the measurement of firm size worth noting, that is, the measurement can be considered well constructed and highly representative. Unlike any of previous studies, the current study measures the firm size by the ratio between the number of managers and the number of employees. The central point of corporate structure theory is that the complexity of corporate internal structural makes the management less effective in supervising and monitoring employees' behavior, and thus leads to corporate crime. Therefore, even though the statistic result regarding the corporate structure theory-related hypothesis cannot be used as a strong evidence to reject the applicability of corporate structure theory, the compliance strategy of control is more or less in doubt by the current study. All in all, the research recommends that the regulatory agencies should adopt deterrence as the major control strategy. This implication is consistent with today's "getting tough on crime" and "zero tolerance" attitude.

6. Future Studies

In addition to policy implications, this research has several academic implications. First, this study filtered some unregistered case companies, which precluded a full-scale understanding of the sampling population of case companies. Future studies may try to

utilize other data collection methods such as questionnaires to compensate for the limitation.

Second, the study did not have multi-measurements representing corporate structure model of corporate crime, which may limit the significance of statistical evidence supporting the theory of rational choice. Therefore, a future study with more dimensions of corporate structure, such as the number of sub-units or division and diversification of business operations should be attempted. The methods of data collection for this attempt could be questionnaire letters or phone interviews. Third, to discover the effect of the boardroom on management, an examination of differences in stock ownership between board members and top managers is also strongly recommended.

7. Strengths, Limitations, and Validity and Reliability Issues

Every research design has its strengths and limitations. This dissertation is not an exception, and its strengths and limitations in this research are discussed below.

7.1 Sample size.

Three factors affect statistical power testing differences between case group and control group: alpha level, effect size, and sample size (Meyers, et al. 2006). Among these three factors, sample size is particularly important to eliminate Type II errors that

take place when researchers fail to reject an untrue null hypothesis. The differences exist, but researchers do not find them. One of the strengths of this dissertation is the sample size.

How many cases should be considered appropriate? The answer depends on the specific research context. Researchers can achieve greater statistical power with larger samples (Meyers, et al. 2006; Shadish, Cook, Campbell, 2002). Some researchers propose that “a good size sample, e.g., 200-500, is needed for multiple regression, analysis of covariance, or log-linear analysis, which might be performed for more rigorous state impact evaluations” (Israel, 2003:6). Others suggest that a minimum of 50-100 elements is needed for each major group or subgroup in the sample (Sudman, 1976). In the literature of corporate crime, many significant studies exploring causal factors had samples ranging from 50-200. For instance, Baucus and Near (1991) examined 160 *Fortune 500* companies; Hill, et al. (1992) examined 170 *Fortune 1000* firms; and Simpson (1986) examined 52 corporations convicted of anti-trust charges. Simpson and Koper (1992) sampled only 38 cases in their study of deterrents to anti-trust crimes.

Based on the theoretical framework of sampling and previous empirical studies, this dissertation takes a 5-year time period for the sample case group, litigated corporations. Although the second step of the sampling process excluded many primary samples due to the missing data, 188 out of 557 companies are actually selected. This large number of counts significantly reduced the likelihood of a Type I error (wrongly

rejecting a hypothesis). In addition, another 100 companies are randomly selected from the 369 filtered companies to get a clearer picture of the sampling pool.

7.2 Sampling process.

This dissertation uses stratified random samples. As mentioned above, there are two steps in collecting samples. In addition to randomization, the noteworthy strength here is that the sampling of the control group intentionally eliminated the effects of external environments, which has been considered a potential influence on the corporate culture and decision-making process. Given that the main theoretical frameworks applied to explore the causes of corporate securities fraud in this dissertation are rational actor model and corporate structure model, it is better to control the environmental effects that might result from local culture and industrial environments. Future attempts to explore the external environmental and cultural explanations of corporate crime are recommended.

Limitations in the sampling process were briefly discussed in Chapter 4. One limitation concerns the actual number of times that case companies violated the rules. The date of the violation for some companies might be much earlier than the litigation date. Therefore, the corporate situation in the one or two years before litigation does not actually reflect a true status. For instance, the company may have been underperforming for a lengthy period of time, but they performed well one or two years before litigation. The other point is related to data availability. As shown above, many litigated

corporations were eliminated from the case group because they do not have records in COMPUSTAT or did not file enough reports to the SEC. Some people assume that small corporations are less likely to appear in those two databases. However, it is not possible to find out the structural features of those corporations because of the lack of data. Therefore, one needs to be careful about the variable Firm Size when making a generalization based on this research.

One point about the case group is noteworthy. Some companies may be prosecuted by the SEC but not convicted. Since this dissertation focuses on the litigation status and uses the litigation status as the dependent variable, the conviction status is not a concern to the research.

Among the companies in the control group, no one can guarantee that they have never broken any securities rule. They might be more fortunate than case group companies and committed securities fraud without being caught. As previously stated, given the difficulty of detecting corporate crime, this limitation is out of the control of researchers.

7.3 Validity threats.

The research design of this dissertation adopts a case-control method, which is a strong design *per se*. Data are collected from reliable sources and measurements are constructed appropriately under theoretical frameworks. Most common validity threats

are ruled out in this study. For example, statistical power is strong and threats to statistical conclusion validity (Shadish, Cook, and Campbell, 2002) are reduced by appropriate sample size and reliable measures (ROE for financial performance; Ratio between TMT to employees for firm size). Data are transformed for proper statistical analyses. For instance, in order to conduct a proper logistic regression analysis, the longitudinal variable ROE is transformed to a cross-section variable (5-year mean) and a categorical variable (Trend).

In terms of internal validity, two items on Shadish et al.'s (2002) threat list are worth noting here: history and attrition. For example, it is possible that factors aside from stock ownership cause illegal corporate behavior. For instance, after TMT turnover/change due to poor financial performance, a new TMT is likely to resort to aggressive strategies to change their financial situation. Other social movements occurring outside a corporation could also cause the corporation to act abnormally. For example, 2001 was the year the United States launched the war on terror and human resources and monetary resources were diverted from regulatory agencies into other law enforcement agencies such as the Department of Homeland Security.

It is difficult to say that no corporation will take advantage of a time when government dedicates more resources to international affairs than to corporate crime. This may explain why the years 2001 and 2002 have higher numbers and more serious corporate crimes committed, leading to the Sarbanes-Oxley Act being passed. The other potential threat is attrition. Some companies went bankrupt shortly after litigation and no

more data is available on them. A further discussion of this point will be provided in the next section.

Construct validity in this study is strong, because the close relationship between the measures of variables and the underlying constructs. At first, financial performance is measured by a mean ROE and the trend before litigation. The underlying constructs of the variable are built on the reasoning of a rational actor—corporations with poor financial performance or downtrend financial performance are more likely to commit corporate securities fraud. Second, firm size is measured by the ratio of number of employees to number of TMT members. The underlying constructs of the variable are built on the corporate structure theory — the more complex a corporate structure, the more likely the company will commit corporate securities fraud.

TMT characteristics are measured by age and length of service, board structure is measured by proportion of outsiders and ownership of insiders. The underlying constructs of these variables derive from the rational choice model — the older a management team, the more likely it is to have stable and less risky behaviors; the longer a management team served, the stronger its attachment to the company; and the more outsiders in the board and higher level ownership by insiders, the higher its stake in conformity. All of these circumstances decrease the likelihood that the company will commit corporate securities fraud.

External validity might be constrained in this study. This dissertation focuses on corporate securities fraud, and the samples are companies that either have adequate records available in the COMPUSTAT database or have filed sufficient reports to the SEC. Therefore, generalizability may only be applied to financial crimes and companies registered with the SEC.

7.4 Missing data

Some companies were established not long before the litigation, and some companies went bankrupt shortly after litigation. These situations result in a lack of financial performance data before litigation for 72 companies. The remedial action this dissertation takes is to use a 5-year mean ROE to measure the financial performance before litigation. If a company does not have 5 years of performance, the average yearly ROE before litigation is used instead. By averaging ROE before litigation, the rate of missing data is reduced, but the validity of the measurement is not changed.

7.5 Reliability

Since this research is a secondary data analysis and all data are obtained from the SEC's website or the corporations' annual reports and proxy statements, the substance of this dissertation data is highly consistent. Even though the accuracy of some companies' data may be in doubt, especially for the litigated companies' data, the consistency of the

data would ensure that repeated tests of the data with proposed regression and correlation should have high statistical reliability.

8. Conclusion

As indicated in the statistical results, although financial performance (ROE and Trend) and average age of top management are not statistically associated with corporation's litigation status, average years of service of top management, board structure, and stock ownership do show various levels of statistical significance. Although the relationship between firm size and litigation status is statistically significant, the direction is not consistent with the hypothesis developed out of corporate structure theory. Correspondingly, out of 6 hypotheses tested in the current study, 3 are supported by the statistical results.

H4: The longer top a management team has served in the corporation, the less likely the corporation will engage in securities fraud

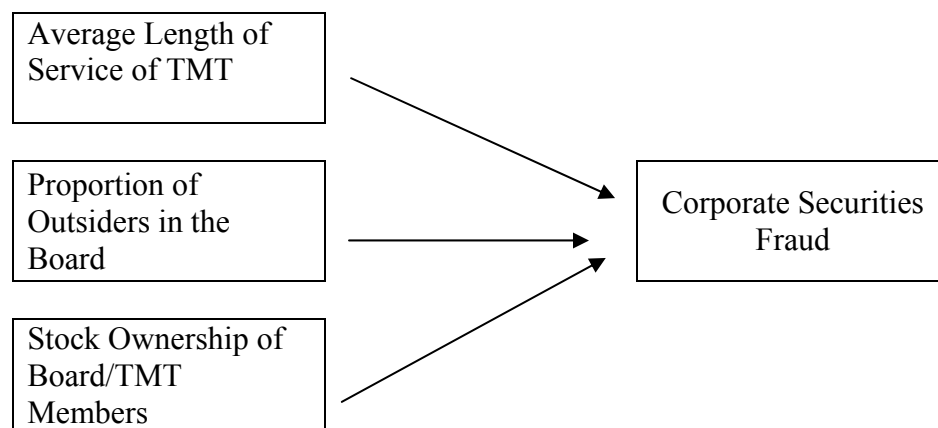
H5: The more outside members in the board, the less likely the corporation will engage in securities fraud

H6: The more board members and/or top management team owns stock in the company, the less likely the corporation will engage in securities fraud.

Other hypotheses, including those addressing average age of top management team, financial performance, and firm size, are not statistically supported, despite the fact that firm size is statistically significantly related to the dependent variable – litigation status.

Overall, the proposed model indicates statistical significance at $p < .001$ level. Firm size, average years of service of top management, percent of outsiders in the boardroom, and stock ownership by insiders are four independent variables that are found to be statistically related to the dependent variable – litigation status. To be specific, for length of service, every one-year increase in the service can reduce the odds of litigation by a 1.095 factor with all other factors being equal; for percent of outsiders in the board of directors, every 1% increase can reduce the odds of litigation by a 1.015 factor while controlling for other factors; and for percent of stock ownership by insider board/TMT members, every 1% increase can reduce the odds of litigation by a 1.013 factor while holding other factors constant.

In conclusion, based on the research results, a preliminary diagram illustrating the relationship of corporate securities fraud and its proposed causal factors could be drawn as follows:



Average length of service, percentage of outsiders in the boardroom, and stock ownership of board/top management are all the measurements of rational choice theory in the proposed model. The diagram asserts that these variables affect the calculation of perceived costs vs. perceived benefits assumed to exist in the corporate decision-making process by rational choice theory. The diagram suggests that compared to corporate structure theory, the rational choice theory is relatively more applicable in the context of corporate securities fraud.

Another tested feature of top management, average age, did not significantly affect corporate decision-making in the context of corporate securities fraud. The most reasonable explanation for this finding is because of age and experience requirements for the job position. Financial performance, a popular variable in rational choice theory, was not found to be a significant factor. Perhaps, the business nature of maximizing profits at all the times could explain this finding. Because a limitless financial goal will push the corporation to pursue more profits even if the corporation has already been financially performing well.

Although firm size, the variable measuring corporate structure theory in the current study, was found to be a statistically significant variable, which means it explains some difference in comparison between litigated and non-litigated companies, further analysis of the statistical relationship between firm size and litigation status did not support corporate structure theory. Under the hypothesis of corporate structure theory, larger companies are supposed to commit more frauds than smaller companies. However,

the research finding indicated the inconsistent result: small companies committed the most frauds, followed by large companies. Medium sized companies committed the fewest frauds.

9. Summary

This chapter discussed the statistical results and introduced explanations for all the tested variables. For instance, firm size is found significant, but the direction is not as hypothesized. One of the possible explanations for the discrepancy is suggested; small companies receive less regulatory attention, therefore, they tend to commit more frauds under the deregulation policy.

For the variables measuring rational choice theory, age and financial performance were not significant. Age and experience requirements for the job positions were supported to provide explanations for insignificance of age; the business nature of profit-maximization was proposed to explain the insignificance of financial performance.

Length of service, percent of outsiders, and stock ownership of board/top management were statistically significant variables in the proposed model. Length of service and stock ownership were regarded as the reflection of attachment and bonds of board/managers to their company. Under the rational choice perspective, stake in conformity is proposed to explain the significant relationship. For the variable percentage

of outsiders in the boardroom, the “monitor effect” was considered an appropriate explanation.

Following the discussion of theoretical frameworks, policy and academic implications were presented. A deterrence control strategy was proposed for policy reference; the direction of future study was suggested for academic implication. In reviewing the strengths and limitations of the current study, this chapter reviewed the features of the sampling pool, generalization of the research findings, and the validity of the research methodology.

Finally, the chapter concluded that three of the rational choice variables were statistically related to litigation status of tested companies. Although the corporate structure variable, firm size, was found to be statistically significant, the structure theory could not be supported because the direction of the statistical relationship was not consistent with the original hypothesis.

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Appendix 1: Data for Case Companies

Company	Date ¹	Size ²	Age ³	Years ⁴	Outsider ⁵	Ownership ⁶	ROE ⁷	Trend ⁸
American Energy Group, Ltd.	1/25/99	1	45	3.8	57.14	19.8	-0.08	2
Golden Eagle International, Inc.	3/8/99	1	49.3	3	50	30.6	-2.04	4
Betting, Inc.	3/15/99	1	54	1.5	0	5.95	-4.66	5
Green Oasis Environmental, Inc.,	6/4/99	1	51	7	33.33	35.6	-0.38	1
Excal Enterprises, Inc.	7/30/99	1	49	6.75	66.67	42.5	-0.05	1
Arete Industries, Inc.	8/2/99	1	45	2	66.67	24.2	-1.1	2
First Entertainment, Inc.,	8/2/99	1	45.5	1	40	22.8	-4.39	5
Kanakaris Communications, Inc.	8/2/99	1	43	1	50	25.1	-3	5
Compressent, Inc.	8/2/99	1	49.5	2	50	28.4	-2.2	2
ICN Pharmaceuticals, Inc.,	8/11/99	3	53.9	14.3	75	8.5	0.08	4
Beachport Entertainment Corporation	8/27/99	1	51	3.5	75	16.7	-1.26	1
Ammonia Hold, Inc.	9/27/99	1	38.5	2.5	60	10.1	0.05	1
C.E.C. Industries Corporation	9/28/99	1	57	11	60	1	-1.58	4
Computone Corporation	9/28/99	1	48.5	2	60	27.3	-8.57	4
International Heritage, Inc.,	10/7/99	1	37	4	0	87.7	-2.01	2
Magnum Petroleum, Inc.	10/15/99	1	54	3.5	77.78	18.8	-0.52	4
ABS Industries, Inc.,	10/27/99	1			0	1	0.11	2
Equisure, Inc.	11/30/99	1	49.3	2	33.33	9.8	0.1	1
Long Distance Direct Holdings, Inc. ("LDDI")	1/10/00	1	45.6	6	33.33	49.5	-1.58	4
Spartan Oil Corporation	2/1/00	1	69	1	0	73.5	-0.22	2
IteX Corporation	2/10/00	1	52	1	42.86	18.2	-1.21	2
Fabri Centers of America, Inc.	2/11/00	3	45.8	5.5	57.14	25.38	0.1	4
PerSeptive Biosystems, Inc.	2/29/00	1	49.7	8	66.67	5.7	-0.4	4
Inamed Corporation	3/8/00	2	53.75	1.3	71.43	27.5	-1.37	4
Nevada Manhattan Group, Inc.	3/10/00	1	46.8	1.3	80	4.9	-2.46	4
Laser Technology, Inc.	3/20/00	1	47	9.3	40	18.9	0.01	5
Micro Warehouse, Inc.	3/22/00	2	42.4	6.7	84.62	13.31	0.03	4
Digital Lightwave, Inc.	3/29/00	1	48.2	3.2	80	75.6	-0.51	4
Solv-Ex Corporation	4/5/00	1	56	8.7	57.14	21	-0.96	5
Enterprises Solutions, Inc.	4/7/00	1	48.5	0.8	25	1	-1.98	2
Peritus Software Services, Inc.	4/13/00	1	48.2	5	40	11.6	-1.89	4
Incomnet, Inc.	4/28/00	1	40.3	1.5	83.33	45.49	-1.75	1
America Online, Inc.	5/15/00	3	47.5	4.2	80	2.4	-0.69	5
Intile Designs, Inc.	5/23/00	1	48	3	66.67	1.1	-3.09	2
Ferrofluidics Corporation	6/6/00	1	57	6.8	83.33	1	0.08	4
Firstmark Corp.	6/8/00	1	43.5	3	66	20.5	-0.21	4
CUC International Inc.	6/14/00	3	40.6	2.2	42.86	6.39	0.04	5

¹ Date = Litigation Date

² Size = Firm Size (1=Small; 2=Medium; 3=Large)

³ Age = Average Age of Top Management Team

⁴ Years = Length of Service of Top Management Team

⁵ Outsider = Percentage of Outsiders in Boardroom

⁶ Ownership = Stock Ownership of Top Management and Board Directors

⁷ ROE = 5-year Average Return on Equity prior to Litigation

⁸ Trend = 3-year Trend of Financial Performance prior to Litigation (1=Up; 2=Down; 3=Flat; 4=V; 5=Uncertain)

Exsorbet Industries, Inc.	6/22/00	2	44	4.6	16.67	22.44	-0.14	5
DCI Telecommunications, Inc.	6/26/00	1	55	4	20	29.2	-0.24	2
KFX, Inc.	6/29/00	1	53.7	6	85.71	26.8	-1.18	4
Hybrid Networks, Inc.	6/29/00	1	53.3	2.3	60	49.9	-2.86	4
Rocky Mountain International, Ltd.	7/13/00	2		1.5	66.67	46.23	-1.91	4
System Software Associates, Inc.	7/14/00	3	52.3	2.8	66.67	22.4	-1.41	4
JW Charles Financial Services, Inc.	7/19/00	2	42.5	13.5	66.67	27.4	0.33	2
Guilford Mills, Inc.	7/24/00	2	49.9	5.2	77.78	15.64	0.1	2
Cronos Group	8/5/00	1	45.5	5.2	66.67	4.5	-0.08	1
Broadband Wireless International Corp.	8/14/00	1	43	1	25	9.2	-4.52	2
EquityAlert.com, Inc.	8/24/00	1	31.5	1	0	53.2	-0.83	1
IDB Communications Group, Inc.	8/28/00	2	42.8	5.6	50	8.1	0.04	5
Heartsoft, Inc.	9/6/00	1	41.8	5.8	33.33	15.95	-1.19	5
New Directions Manufacturing, Inc.	9/6/00	1	55.7	3	60	66.1	-0.15	4
Material Sciences Corporation	9/7/00	2	50.23	5.9	87.5	11.4	0.08	1
Pier 1 Imports, Inc.	9/19/00	3	60.5	5	62.5	2.84	0.15	2
Versatility, Inc.	9/19/00	1	42.5	11.8	66.67	31.5	-0.63	2
Carolina First Bancshares, Inc.	9/20/00	2	53.5	11	90.91	7.07	0.13	4
Health Management, Inc.	9/25/00	1	55.7	7	0	44	-0.63	2
Centennial Technologies, Inc.	9/26/00	1	49.8	2.3	85.71	21.5	-0.39	5
Premier Laser Systems, Inc.	9/27/00	1	49	2.8	85.71	9.4	-0.77	5
Sirena Apparel Group, Inc.	9/27/00	2	55.7	3.3	50	8.1	0.06	1
Craig Consumer Electronics, Inc. ("Craig")	9/27/00	1	47.8	8	66.67	34.3	0.01	2
Countryland Wellness Resorts, Inc.	9/27/00	1	68	13	77.78	0	-4.4	1
Oak Industries, Inc.	9/27/00	3	51.7	6	85.71	9.8	0.06	4
Cylink Corporation	9/27/00	1	49.11	3.78	77.78	11.73	-0.23	5
McKesson HBO & CO	10/2/00	3	49.9	1.3	85.7	2.68	0.12	4
Intelligent Decision Systems, Inc.	10/2/00	1	45	2.7	40	17.8	-2.41	2
Alexander & Alexander Services Inc.	10/4/00	3	50.7	12.1	66.67	1	-0.04	1
Engineering Animation, Inc.	10/5/00	2	46.9	4.9	40	19.3	-0.09	2
Informix Corporation	10/5/00	3	49	3.8	80	1.66	-1.28	2
Aviation Distributors, Inc.	11/8/00	1	49.7	5.3	40	1	-0.59	1
Nemdaco, Inc.	11/8/00	1	49.3	1	40	27.6	-2.61	1
Concord Capital, Inc.	11/24/00	1	46.8	3	40	62.97	-2.99	5
Saf T Lok, Inc.	12/12/00	1	57	11.7	40	6.68	-3.32	5
MicroStrategy Inc.	12/14/00	2	37	4.7	75	52.3	-1.46	2
International Business Machines Corp.	12/21/00	3	51.9	3.5	83.33	1	0.33	1
Westergaard.com, Inc.	12/27/00	1	48	1.5	66.67	59	-1.94	1
Loch Harris Inc.	1/8/01	1	46	3.5	20	18.19	-5.14	4
Home Shopping Partners	1/9/01	3	44.5	5	91.7	3.1	-0.09	5
Aurora Foods Inc.	1/23/01	2	49.9	2.9	80	66.1	0.05	4
Ives Health Company	4/10/01	1	42	1.5	16.7	73.2	-3.83	2
AutoLend Group Inc.	5/2/01	1	53	0.5	50	0	-0.21	4

Raintree HealthCare Corporation	5/7/01	3	45.4	2.4	80	48.93	-0.85	1
Pacific Biometrics, Inc.	5/14/01	1	55	5	50	37.4	-2.08	1
Sunbeam Corporation	5/15/01	3	49	1.3	88.89	1	-1.77	2
Manhattan Bagel, Inc.	5/15/01	2	48.6	6.4	40	28	-0.99	4
Am Pac International, Inc.	6/5/01	1	42	2.5	0	88.14	-2.1	2
Redneck Foods, Inc.	6/7/01	1	46	4	60	1	-3.88	2
World Homes, Inc.	6/11/01	1	51.2	2.7	0	53.11	-0.41	2
China Food and Beverage Company	6/18/01	1	39.5	6	33.33	4	-1.54	4
Trans Global Holdings, Inc.	6/18/01	1	59.3	4	0	90	-0.91	4
Paracelsus Healthcare Corporation	6/20/01	3	47.3	8.8	83.33	39.4	-2.54	4
Vista 2000, Inc.	6/21/01	1	48	4	66.67	31.7	-0.25	4
Tradamax Group, Inc.	6/21/01	1	49	8.3	25	30	-0.24	4
Heartland Financial USA, Inc.	6/22/01	2	48.7	17.3	71.43	27.3	0.11	3
International Brands, Inc.	6/25/01	1	27	2	0	15	-5.71	1
WIZ Technology, Inc.	7/6/01	1	47.8	8.6	0	25.29	-1.52	2
Lone Star Casino Corporation	7/13/01	1	33	2	0	46.1	-2.94	4
RMS Titanic, Inc.	7/13/01	1	53	1.3	40	10.1	0.17	4
American Banknote Corporation	7/18/01	3	51.4	5.8	60	45.3	-13.75	2
Accelr8 Technology Corporation	7/19/01	1	49.5	5	75	21.35	0.18	2
Advanced Technical Products, Inc.	7/23/01	2	45.2	4.2	50	3.77	-0.1	4
MAX Internet Communications, Inc.	8/1/01	1	44.7	2.8	66.67	44.3	-1.3	4
USA Detergents, Inc.	8/13/01	2	54.6	7	60	19.36	-0.23	5
Indus International, Inc.	9/5/01	2	50	1.8	66.67	53.31	-0.09	5
M & A West, Inc.	9/6/01	1	58	1	0	36.9	-1.14	4
Swisher International, Inc.	9/10/01	1	44.8	5	66.67	34.9	-0.11	4
Baker Hughes Incorporated	9/12/01	3	50.8	6.2	85.7	57.35	0.02	1
Madera International, Inc.	9/19/01	1	49.5	4	25	10.12	-0.02	5
Vari-L Company, Inc.	9/27/01	1	45.6	4.6	80	11.7	-0.03	4
Sabratek Corporation	9/27/01	1	43.6	3	77.78	19.67	-0.5	5
TELnet Go 2000, Inc.	9/28/01	1	54.5	2	71.43	55.5	-6.42	5
Trans Energy, Inc.	9/28/01	1	58.3	6.7	25	3.5	-1.9	5
Millionaire Com	10/2/01	1	55	2	40	18.5	-1.71	1
Chiquita Brands International,	10/3/01	3	51	11.1	85.7	1	-0.09	2
AremisSoft Corporation	10/4/01	2	44	3	62.5	11.67	0.05	5
WAMEX Holdings, Inc.	10/11/01	1	35.5	2	0	87.3	-1.5	5
Ramoil Management Ltd.	10/11/01	1	50	7	25	90.9	-1	2
AbsoluteFuture.com	10/11/01	1	41.5	1	50	12.82	-2.77	5
HITSGALORE COM INC	11/29/01	1	46.5	4	33.33	7.85	-0.68	4
Spectrum Brands Corp.	12/11/01	1	36	2	0	42	-7.63	4
Save the World Air, Inc.	12/19/01	1	48	3	0	26.7	-1.26	2
Fine Host Corporation	12/27/01	3	46	4.6	66.67	1	-0.46	2
Global Datatel, Inc.,	1/10/02	1	50.6	2.8	33.33	23.5	-0.35	5
BellSouth Corporation	1/15/02	3	50.8	7.5	91.7	1	0.21	5
Turbodyne Technologies, Inc.	1/24/02	1	48	5.5	100	9.3	-4.34	1
Tel-One, Inc.,	1/24/02	1	51.5	3	33.33	40.6	-4.83	2

New Energy Corp., International Thoroughbred Breeders, Inc.,	2/4/02	1	39.3	0.7	0	81.3	0.91	2
Victor Industries, Inc.	2/14/02	1	56	15.5	75	29.1	-0.2	4
Eagle Building Technologies, Inc.	2/27/02	1	54.5	3	0	19.34	-6.18	1
Freestar Technologies Corp.	3/1/02	1	62.3	1	57.14	36.7	-4.57	2
FoneCash, Inc.	3/6/02	1	37.5	1	33.33	35.73	-5.32	1
Xerox Corporation Pinnacle Business Management, Inc.,	4/10/02	1	43.8	4.4	20	41	-13.09	1
Unify Corporation	4/11/02	3	52.8	4	87.5	1	0.08	4
Investco, Inc.	5/8/02	1	44	4	50	35.4	-1.57	2
Ashford Com Inc.	5/20/02	1	47.8	8.8	80	6.88	-1.87	4
Amazon.com, Inc.	5/21/02	1	56	4.5	40	67.5	-5.96	1
Aura Systems, Inc.,	6/10/02	1	38	2.3	57.14	38.01	-1.34	5
WorldCom, Inc.	6/10/02	3	42.6	2.6	83.33	31.45	-1.28	1
Oxford Health Plans, Inc.	6/11/02	1	46.3	3	75	3.2	-5.9	4
National Presto Industries, Inc.	6/27/02	3	51.4	10.4	72.73	1.1	0.03	2
Hyperbaric Systems, Inc.	7/25/02	3	46.4	2.6	88.89	6.26	-1.47	4
Environmental Solutions Worldwide, Inc.,	8/1/02	2	55	12	50	31.1	0.05	2
Rhino Ecosystems, Inc.	8/6/02	1	58.5	3.3	25	23.6	-3.97	5
COI Solutions, Inc.	8/13/02	1	47	2	40	7	-3.35	4
Uncommon Media Group, Inc.	8/15/02	1	47.33	3	25	17	-2.19	4
Motorcar Parts and Accessories, Inc.	8/15/02	1	49	5	0	60.79	-5.35	5
Dynegy Inc.	8/15/02	1	41.3	1	33.33	47.3	-2.67	2
Las Vegas Entertainment Network, Inc.,	9/19/02	2	48	13.3	50	28.5	-0.25	1
800America.com, Inc., Adelphia Communications Corporation	9/25/02	2	46.8	9	85.71	7.8	-0.1	2
Siebel Systems, Inc.	10/9/02	1	48.5	9	50	11.8	-0.85	2
Syncor International Corporation	11/13/02	1	52.2	3.4	50	49.6	-0.23	5
ClearOne Communications, Inc.,	11/14/02	3	52.5	15	55.56	100	-0.11	2
Online Power Supply Inc., International BioChemical Industries, Inc.	11/25/02	3	44.4	5.2	75	17.69	0.11	4
Autofund Servicing, Inc.	12/10/02	3	52.1	7	77.78	18.9	0.14	1
Moller International, Inc.,	1/16/03	2	45	4	71.43	21	0.26	4
Vector Holdings Corp.	1/21/03	1	49	8.7	75	10	1.06	4
Spiegel, Inc.	2/6/03	1	50	3	60	4.77	-3.88	1
American Tissue, Inc.,	2/12/03	1	51	10	66.67	7	-0.76	1
Merrill Lynch & Co., Inc.,	2/19/03	1	59.7	17.7	62.5	67.68	-0.97	1
HealthSouth Corporation	3/7/03	1	36	2	50	16.4	-1.02	4
Pacel Corp.	3/7/03	3	49.3	6.4	73.33	1.4	-0.5	5
Gateway Distributors, Ltd.,	3/10/03	2	53.5	11.1	33.33	70.74	0.2	5
Wasatch Pharmaceutical, Inc.	3/17/03	3	46	5.1	90	70.67	0.13	1
ThermoElastic Technologies, Inc.	3/20/03	3	45.2	11.1	77.78	7.06	-0.14	4
Thomas & Betts Corporation	3/31/03	1	59	9	50	42	-3.58	2
	3/31/03	1	50.5	8.5	33.33	72.39	-0.57	2
	3/31/03	1	57.6	4.8	66.67	13.63	-0.55	4
	3/31/03	1	58.5	4	33.33	0	-7.38	4
	4/1/03	3	53.7	2.3	90	1.94	-0.02	1

Rocky Mountain Energy Corporation, Inc.,	4/3/03	1	47.7	1	60	2.4	-2.13	
U.S. Bancorp Piper Jaffray Inc.	4/28/03	2	51.5	20.5	60	5	-0.03	4
Andrx Corp.	5/3/03	2	49.2	4.8	57.14	3.7	0.13	4
Concentrax, Inc.	5/19/03	1	47.3	1.8	33.33	26.83	-2.98	2
Amplidyne, Inc.	5/27/03	1	50	10.7	50	32.82	-1.85	2
Seitel, Inc.	6/6/03	1	50.4	9.6	60	3.7	-1.12	4
Peregrine Systems, Inc.	6/30/03	2	45.7	4	33.33	4.71	-1.35	5
Rent Way, Inc.,	7/22/03	3	50.3	10.4	57.14	7.6	-0.16	2
Investment Technology, Inc.	7/24/03	1	52	4	50	23.45	-3.99	2
Quintek Technologies, Inc.	8/4/03	1	46.3	2	0	0.85	-3.86	1
Panamed Corp.	8/4/03	1	50	1	33.33	45.8	-2.13	2
Unistar Financial Service Corp.	8/8/03	2	42.3	2.6	55.56	28.6	0.01	
Medi-Hut Company, Inc.,	8/19/03	1	45.8	12.3	40	27.8	0.01	5
Wulf International Ltd.	8/20/03	1	65	5	57.14	23.9	-6.79	2
Schering Plough Corporation	9/9/03	3	47	4.1	90	1	0.26	2
Brightpoint, Inc.	9/11/03	2	45.1	4.9	80	6.3	-0.21	2
American International Group, Inc.	9/11/03	3	56.6	9.8	63.16	3.22	0.12	4
Sport Haley, Inc.,	9/29/03	1	53.9	5.3	60	22.58	0.03	2
AmeriCredit Corp.	11/3/03	3	50	9	85.7	4.86	0.15	5
Schick Technologies, Inc.,	11/17/03	1	43.8	4.9	75	43.8	-3.13	2

Appendix 2: Data for Control Companies for Logistic Regression

Company	Size	Age	Years	Outsider	Ownership	ROE	Trend
Apex Minerals Corp.	1	67	4	0	65.27	-2.03	4
Miller Industries Inc.	1	64	7	0	37.9	-0.07	4
Altex Industries Inc.	1	47	14	66.67	41.7	0.05	2
Allergan Inc.	3	46.1	9.5	75	3.5	0.11	4
Translation Group Ltd.	1	65	2.5	50	44.9	0.03	2
CDSI Holdings Inc.	1	39	4.5	50	1	-2.65	2
Symbiat Inc.	1	40.5	1.5	75	29.3	-1.62	4
Cash Technologies Inc.	1	45.5	4	66.67	45.9	-1.03	2
ParkerVision Inc.	1	42	8.5	60	38.4	-0.23	2
Investors Title Co.	1	41.6	13.6	20.43	70	0.15	2
Pro Tech Communications, Inc.	1	58.5	7	0	33.5	-0.11	4
FAB Industries Inc.	2	63.1	20.9	66.67	32.64	0.05	2
YTB International, Inc.	1	47.7	13	50	71.3	-0.3	5
8X8 INC	1	34	3.6	85.71	7.8	-0.79	4
BMC Industries Inc.	2	39.2	3.5	83.33	6.6	0.1	4
Cost Plus Inc.	3	51.4	4.3	85.71	2.85	0.12	1
Castelle	1	50	6.5	80	19.1	-0.36	4
Cardinal Health Inc.	3	46.9	4.5	83.33	2.9	0.14	4
Ariba Inc.	2	40.8	1	80	8.79	-0.38	4
Hewlett Packard Co.	3	49.7	5.5	72.7	18.8	0.2	1
Ralcorp Holdings Inc.	2	53.9	5.9	80	3.7	0.35	2
Exelixis Inc.	1	45	1	77.78	24.1	-3.97	4
Ampal-America Israel Corp.	1	46.2	6	77.78	58.3	0.05	5
SportsQuest, Inc.	1	50.5	12.5	0	54.2	-0.05	5
Bowne & Co Inc.	3	50.6	2.4	77.78	5.2	0.1	2
Iris International Inc.	1	54.8	4.6	80	11.5	-0.21	4
Accelrys, Inc.	2	46.5	3.5	85.71	4.5	-0.06	5
Cameron International Corp.	3	45.4	5.5	87.5	4.65	0.12	4
Castle Energy Corp.	1	55.5	9.8	66.67	31.19	0.26	2
Chiquita Brands International, Inc.	3	51	12.9	85.71	1	-0.13	2
Mile Marker International Inc.	1	48.5	12.8	33.3	51.28	0.15	4
RCN Corp.	3	44.4	2.6	80	16.3	-0.48	5
Turbodyne Technologies, Inc.	1	48	5	100	9	-1.68	1
Mid-State Raceway Inc.	1	56	1.5	77.78	58.12	-0.83	2
Ameralia, Inc.	1	54.8	9	71.43	2.8	-0.62	2
Devcon International Corp.	1	63	24	66.67	48.79	-0.01	5
Gradco Systems Inc.	1	68.3	11	50	8.1	-0.24	2
Intraware Inc.	1	41.3	4.4	60	37.5	-2.22	4
Symbol Technologies Inc.	3	50.6	12.7	85.71	7.6	0.08	4
ADStar Inc.	1	52	7.4	40	22.1	-1.19	1
Insight Enterprises Inc.	3	44.3	12.3	50	10.3	0.15	5
Pacific Fuel Cell Corp.	1	57	1	33.33	50.2	-0.47	5
Aetna Inc.	3	54.7	2.7	87.5	1.6	-0.05	2
Salton Inc.	2	54	10.7	62.5	16	0.38	2
Centerpoint Energy Houston Electric LLC	2	50.1	12.9	88.89	5.2	0.1	2

DISH Network CORP	3	44.9	9.1	62.5	6.2	-1.07	5
Symantec Corp.	3	52	6.3	88.89	2.3	0.12	4
CalAmp Corp.	2	46.3	7.3	66.67	6.7	0.01	2
Standard Management	1	53	6	57.14	24.87	0.03	2
Ever-Glory International Group, Inc.	1	64.5	9	50	54	-1.04	5
Schwab Charles Corp.	3	51.3	11.1	85.71	21.8	0.15	2
US Oncology Inc.	3	46.3	5.9	80	24.1	0.01	5
CareAdvantage Inc.	1	47.8	4.3	60	41.91	0.21	1
AmeriResource Technologies Inc.	1	54	13	50	80.2	-0.61	4
Hubbell Inc.	3	50	14	85.71	53.08	0.15	4
Noven Pharmaceuticals Inc.	2	50.4	6.8	83.33	4.7	0.13	2
TGC Industries Inc.	1	58	13.5	85.71	62.08	-0.62	5
BEA Systems Inc.	2	47.1	3.4	75	10.63	-0.17	4
Alpharma Inc.	3	57.5	6	77.78	2.21	0.01	4
Richardson Electronics Ltd.	2	55.5	13.7	60	74.48	-0.03	4
Mossimo Inc.	1	45.3	7.3	60	64.15	-1.33	5
First Data Corp.	3	50.5	4.91	90.91	1.7	0.29	1
SEI Investments Co.	2	47.4	13.9	83.33	30.14	0.54	5
Insure.com Inc.	1	44.9	3.5	71.43	50.2	-0.28	5
HMI Industries Inc.	1	49.2	1.6	77.78	56.11	-0.36	5
3DX Technologies Inc.	1	45.9	4.9	60	31.3	-0.51	2
Whitney American Corp.	1	44.3	1	0	81.3	-0.47	1
ALCiS Health, Inc.	1	63	8	50	42.5	0	3
F2 Broadcast Network Inc.	1	44	3	83.33	20.7	-5.32	5
Communication Intelligence Corp.	1	54.3	3	60	7	-3.09	1
Alysis Technologies Inc.	1	48	2.7	85.71	55.5	-0.93	4
Mason Hill Holdings Inc.	1	42	4.5	33.33	70.3	-3.43	2
Pachinko World, Inc.	1	56.7	5.7	0	60.97	-2.11	2
3TEC Energy Corp.	1	42.3	5.3	80	33.7	-0.26	4
AMBIENT Corp.	1	38.5	2.5	0	11.4	-4.16	4
Pegasus Solutions Inc	1	45.4	2	80	3.56	-0.62	5
OfficeMax Inc.	3	48.8	4.4	85.71	4.4	-0.04	1
Clinical Data Inc.	1	52.7	12.7	66.67	33.9	-0.08	4
SunRise Medical, Inc.	2	52.2	6.4	83.33	11.6	-0.01	4
FirstGold Corp.	1	47.8	0.5	33.33	1	-1.29	5
Cardiogenesis Corp.	1	54.5	4.3	60	20	-0.96	2
Delias Inc.	2	35	1.9	44.44	38.5	-0.06	5
Stratford American Corp.	1	52	7.9	66.67	25.5	-0.8	5
Bitstream Inc.	1	45	2.2	75	21.97	0.21	5
WebHire Inc.	1	42.8	6.2	60	21.64	-0.08	5
8X8 Inc.	1	34	2.7	71.43	7.8	-0.8	4
American Management Systesm Inc.	3	56.4	21	66.67	5.2	0.15	1
Riverside Group Inc.	1	52	9.5	66.67	38.2	-3.28	2
Micronetics Inc.	1	45.7	6.3	66.67	36.09	0.12	4
Hertz Corp.	3	53.6	22	77.78	2.1	0.17	1
U.S. Liquids Inc.	2	51	1.7	83.33	10.8	0.06	2
Westmoreland Coal Co.	1	54.8	7.2	40	23.5	2.77	4
Aspyra Inc.	1	54	19	50	26.2	0.1	4
IPC Communications Inc.	2	48.8	3.3	44.44	23.2	-1.64	2

SPSS, Inc.	2	50.3	13	75	31.1	0.18	5
JWGenesis Financial Corp.	2	42.3	17	40	25.1	0.26	4
AdAI Group Inc.	1	42	4	50	0	-1.01	4
Global Telemedia International Inc.	2	41.3	1	75	40.2	-4.38	5
American Education Corp.	1	52	7.3	80	22.3	0.44	2
Westbridge Research Group	1	53	5	50	12.3	-0.33	4
InfoData Systems Inc.	1	47.5	8.3	77.78	26.2	-1.07	2
Bank of Granite Corp.	2	61	23	71.43	7.71	0.14	3
Asia Supernet Corp.	1	50.5	6.5	33.33	67	-1.84	4
Media 100 Inc.	1	38.8	3	75	5.96	-0.13	5
Cardiac Science Inc.	1	43	3.5	66.67	15	-4.74	1
Tarrant Apparel Group	2	46.7	10.3	33.33	56.1	0.17	2
American Technology Corp.	1	47	8	60	25.4	-1.57	1
Westbury Metals Group Inc.	1	55.3	2.5	80	22.5	-0.62	5
Amphenol Corp.	3	47.2	16	33.33	53.97	0.65	4
Flexiinternational Software Inc.	1	54.5	4	83.33	12.5	-3.06	4
AXA Equitable Life Insurance Co.	3	47.5	11.8	77.78	46.1	0.11	1
Renaissance Learning Inc.	2	50.4	6	50	71.41	0.42	3
Parametric Technology Corp.	3	43.2	3.1	83.33	2.6	0.22	2
Kaire Holdings Inc.	1	44.3	3	33.33	9.76	-1.36	4
AccuImage Diagnostics Corp.	1	55.5	3	50	29.1	-0.69	1
AmerImmune Pharmaceuticals Inc.	1	45.7	1.8	75	19.4	-2.41	2
Servotronics Inc.	1	44.2	15.8	50	42.2	0	4
Deotexis Inc.	1	62	2.5	71.43	6	-0.67	2
Cabot Oil & Gas Corp.	1	50.3	3.1	70	1.7	0.08	1
Hanover Direct Inc.	3	49.7	2.1	88.89	6.1	-1.19	5
MannaTech Inc.	1	46.7	4.1	66.67	46.8	2.19	2
Agility Capital Inc.	1	42.5	6	62.5	81	-0.28	5
ARV Assisted Living Inc.	3	46.3	3.5	80	51.5	-0.5	4
WestPoint Stevens Inc.	3	54.8	14.8	88.89	46.66	-0.2	4
Enterprise Software Inc.	2	46.4	7.4	57.14	12.56	-1.72	5
Cala Corp.	1	40	2	50	49.43	-1.56	4
N U Pizza Holding Corp.	1	46.7	9	33.33	19.7	-1.32	4
California Coastal Communities Inc.	1	43	6	75	6.27	-5.25	4
Duravest Inc.	1	43.5	2.5	0	27.02	-0.77	5
Tenet Healthcare Corp.	3	52.3	15.5	80	2.13	0.05	1
G III Apparel Group Ltd.	1	51.6	16	66.67	59.9	0.1	1
Avantogen Oncology, Inc.	1	43	2	0	92.85	-0.94	1
Hills Bancorporation	2	54	16	80	10.23	0.43	1
Giant Group Ltd	1	55	12	80	63.7	-2.14	4
Cumetrix Data Systems Corp.	1	34.5	3	33.33	31.28	-0.12	2
Full House Resorts Inc.	1	55.3	6.3	66.67	29.5	-0.01	4
Semx Corp.	2	51.2	7.6	71.43	22.9	0	5
CRW Financial Inc.	1	36.5	6	80	31.2	1.69	4
Church & Dwight Co Inc.	2	52.4	13.8	76.92	4.22	0.16	4
U.S. Global Investors Inc.	1	44	12.3	80	9.2	-0.07	5
Affinity Technology Group Inc.	1	46	5.3	83.33	9.46	-2.58	2
Dewey Electronics Corp.	1	56	24	71.43	40.8	0.12	2
DRI Corp.	1	39.2	4.8	75	57.7	-0.11	1

Aksys Ltd.	1	55	4.5	66.67	3.8	-0.84	5
Capital Gaming International Inc.	1	47.3	6.7	25	10	-3.3	5
PowerSecure International, Inc.	1	46.5	6.8	60	11.9	-0.42	4
Dendrite International Inc.	2	44.6	3.7	62.5	13	0.12	5
Balstron Corp	1	37	2	0	78.6	-2.04	2
Affinity International Marketing Inc.	1	61	1	50	1	-0.69	1
1st NRG Corp.	1		4	33.33	7.42	-2.49	1
First Choice Health Network Inc.	1	49.4	5.8	93.33	4	-0.01	2
Bankrate Inc.	1	43.3	1.3	66.67	58.4	-3.62	4
Carrols Corp.	3	48.7	10.7	71.43	9.6	-0.03	5
Elite Technologies Inc.	1	37	10	50	27.83	-5	4
Cirilium Holdings Inc.	1	66.3	9	60	76.08	-1.41	1
Aptimus Inc.	1	37.4	2.6	80	44.7	-1.26	2
Global Axxess Corp.	1	57	5	60	34.05	-4.05	4
Amacore Group, Inc.	1	57.5	8.5	77.78	10.4	-2.45	1
Play Co Toys & Entertainment Corp.	1	54.7	5.7	25	1	-12.71	5
CenturyTel Inc.	3	53.6	24	78.57	3.1	0.15	4
Arrowhead Research Corp.	1	50	9.5	50	84.7	-0.21	2
Coates International Ltd.	1	64.5	8.5	33.33	83.83	-2.35	2
Turbochef Technologies Inc.	1	44.5	7.5	50	40.44	-2.05	5
Polydex Pharmaceuticals Ltd.	1	60.7	22.7	66.67	29.48	0.03	2
Accelerated Building Concepts CORP	1	50	2	75	45.5	-1.17	4
Maxwell Technologies Inc.	2	52	2.5	66.67	3.1	-0.23	5
Bio-Life Labs Inc.	1	56.7	5	33.33	64.61	-4.03	4
Admiralty Holding Co.	1	54	11.8	40	33.43	-0.27	4
Cardinal Health Inc.	3	48.4	5.3	92.86	3.1	0.16	4
Wattage Monitor Inc.	1	44	3.4	33.33	13.5	-1.25	5
Ocean Bio-Chem Inc.	1	59.3	20.3	50	65.4	0.02	1
Groen Brothers Aviation Inc.	1	55.5	22	0	16.02	-1.89	1
Lands End Inc.	3	50.1	9	57.14	57.39	0.17	4
Glatfelter P H Co.	2	47.7	5.8	80	4.8	0.09	4
MetaTec Inc.	1	42.8	2.7	85.71	24.5	-0.88	4
Biolase Technology Inc.	1	48	5	75	10.13	-4.81	1
Edge Petroleum Corp.	1	46.6	6.9	88.89	11.18	-0.03	2
EF Johnson Technologies, Inc.	1	47	3.3	60	5.2	-0.29	1
Merrimac Industries Inc.	1	46.3	8.5	87.5	19.8	-0.01	2
United Rentals (North America) Inc.	3	50.5	5.8	70	12.1	0	2
Global Pari-Mutuel Services, Inc.	1	63.5	4	33.33	39	-1.7	4
Morris Business Development Co	1	60.7	5	0	77.9	-1.41	4
WWA Group Inc.	1	41	8.5	50	18.3	-2.79	1
Boundless Corp.	2	45.5	5.5	83.33	34	-1.29	1
Regen Biologics Inc.	1	52.3	6	83.33	43.98	-4.47	2
eDoorways Corp.	1	51.5	5.5	33.33	52.71	-0.93	2
Loews Corp	3	58.9	18.6	60	19.9	0.03	5
Vicon Fiber Optics Corp.	1	46	3	75	3.6	-2	4

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