

Banking on Robbery: The Role of Fraud in the Financial Crisis

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Abstract. In his book, *The Best Way to Rob a Bank is to Own One*, William Black describes in detail the complex collusion between bankers, regulators, and legislators that brought about the Savings and Loan crisis of the 1980s and early 1990s. As part of the scheme, leverage was used to purchase bankrupt companies that became the basis for a Ponzi-like speculative bubble that ultimately collapsed. Deceptive accounting rules were used to hide the true state of the banks. Litigation and lobbyists were used to delay and frustrate timely enforcement, adding significantly to the taxpayer's bill. Since the bursting of the S&L bubble, a number of additional financial bubbles and debacles have occurred, including Enron, the Internet bubble, the subprime bubble, and the Madoff Ponzi scheme. The details of the S&L crisis—civil and criminal trials and federal agency investigations—have been well-documented and will serve as a model for later crises. This paper will describe how fraud and corruption played significant roles in these financial crises, including the current crisis that began in 2007 and is still unfolding.

Motivation. Though “moral hazard” and “the principal agent problem” are frequently cited when discussing the causes of the financial crisis, relatively little research has focused on the role of fraud. This paper highlights the role of fraud and corruption in the financial crisis.

Method. We review the fraud literature with respect to past financial crises, and highlight commonalities between some of the well-documented financial frauds of the past and the current global financial crisis. We also support our arguments with some statistics from the current crisis that predicted the bubble before it burst.

Results. The evidence indicates that a well-established and well-known permissive attitude towards fraud created a global systemic risk of such significance that a financial crisis of major proportions was all but inevitable.

Conclusions. Reinstitution of previously abandoned regulations that protected the banking system from risk (i.e., Glass-Steagall Act) and a new commitment to SEC enforcement of already existing anti-fraud laws are greatly needed. If fraud is not pursued and prosecuted, future financial crises where fraud is a significant factor are likely to occur.

Keywords. Financial crisis, fraud, systemic risk.

1. INTRODUCTION

In his book, *The Best Way to Rob a Bank is to Own One*, William Black describes in detail the complex network of collusion between bankers, regulators, and legislators that brought about the Savings and Loan Crisis of the 1980s. The author coins the word “control fraud” to denote a “wave of frauds led by men who control large corporations.”¹ Control frauds are of special concern because the perpetrators of fraud gain control of the corporation (thereby subverting internal management mechanism that could have prevented the disaster), as well as its lawyers, accountants, lobbyists and through them legislators and regulators. As a lawyer working for the Federal Home Loan Bank Board under Ronald Reagan, Black has an

¹ Black 2005, page XIII.

insider's knowledge of many details not generally known. The participants and enablers included Charles Keating of Lincoln Savings, junk bond king Michael Milken, highly placed politicians such as former speaker Jim Wright (who was forced to resign in disgrace) as well as accounting conventions whose fraud friendly rules helped hide the true extent of the collapse for a long period. As bad banks were allowed to buy other banks, using phantom capital, a Ponzi scheme of immense proportions affected the S&L industry. Black makes it clear that a regulator, Edwin Grey, was partially effective in implementing regulations that ultimately revealed and stopped the frauds. Black argues that, without the regulatory response, and despite the interference that tempered the response, the systemic risk generated by the frauds would have spread through the economy and a global debacle not unlike the current global financial crisis might have taken place. Black's real message is clear: in the aftermath of the S&L crisis he thought U.S. regulators had learned a lesson and would vigorously enforce anti-fraud regulations. But subsequently crises with similar causes occurred. His books and papers and subsequent events suggest that government and the regulators failed in their responsibility to protect the public from fraud and the financial risks that accompany them.

Another spectacular debacle occurred in the early 2000s and included the Internet and telecom bubble and the demise of Enron. The literature (Fox 2003) suggests Enron was essentially a financial Ponzi scheme where inflated estimates of the lifetime profits from contracts were booked as income in a single year (Fox 2003). In addition, Enron booked income from derivative investments whose values were tied to the Enron share price, creating a huge risk of loss, should the price go down. The fictitious income created fictitious capital that could then be leveraged to fund more high-risk and ultimately unprofitable deals. Enron engaged in a number of high-risk derivative transactions that were accounted for off balance sheet, thereby hiding the enormous risk from investors and bondholders. The power and reach of Enron was such, that a Wall Street analyst that gave Enron a negative rating was fired (*Washington Post*, 2002). In addition, legislation dubbed the "Enron Law" was incorporated into a commodities legislation that prohibited the regulation of derivatives. This not only delayed detection of the Enron fraud, but made a significant contribution to the current subprime crisis by allowing bankers and investment firms to create risky derivative products that escaped supervision.

In 2007, the current global financial crisis began to unfold. The crisis has had a number of manifestations. Initially, the most visible aspect of it was the subprime bubble. That is mortgage loans were made to people with poor credit where it should have been apparent that large numbers would be unable to pay their mortgages. (i.e., these mortgages had names

like “liar loans” and “NINJA (no income, no job, no assets) loans”). These loans were then used as the basis for numerous derivative products including CDOs (collateral debt obligations) and CDSs (credit default swaps). When the subprime bubble burst, its effect was magnified by the derivatives layered on top of them. It is widely believed that legislators and regulators had an enabling role, whether witting or unwitting in the debacle (Prins 2009; Galbraith 2010).

This paper will provide evidence of numerous similarities between the 1980s S&L crisis and the current global financial crisis (GFC) including:

- role of new “innovative” but risky securities
- unethical and sometimes illegal acts used to market the new securities
- use of growth to drive a Ponzi-like scenario
- co-option of legislators to get legislation favorable to those trading the securities
- co-option of regulators to inhibit investigation and enforcement that could prevent some of the damage if stopped earlier
- use of flexible accounting rules to hide the risk from investors and regulators
- excessive incentive compensation for executives and managers of companies selling risky and unprofitable financial products

Calvatia et al. (1997) compare the actions of principals involved in the S&L crisis to organized crime. They also argue that fraud was a significant factor in the S&L crisis that was probably involved in the majority of institutions that went bankrupt. Markopolos (2009) and Lewis (2009) present evidence of pervasive fraud in their investigations of the Madoff fraud (Markopolos 2009, 2010) and the derivatives involved in the GFC (Lewis 2010). This paper will summarize and supplement their evidence. It will expand on Black’s claim that fraud is a significant risk to the financial system and that systems to monitor and regulate fraud, as well as strict enforcement of current laws are needed, in order to prevent further serious crises.

1.1 Research Context

Since the inception of the global financial crisis (GFC) in 2007, the actuarial profession has been engaged in research to understand its causes and develop procedures to mitigate and prevent future global crises including recommendations for systemic risk regulation. One of the earliest North American actuarial publications to dissect the causes of the financial crisis is *Risk Management: Current Financial Crisis, Lessons Learned and Future Implications*

sponsored by the Joint Risk Management Section (JRMS) of the Society of Actuaries, Casualty Actuarial Society, and Canadian Institute of Actuaries. The book, published in December 2008, presents a number of useful insights and theories on the causes of the crisis as well recommended actions to prevent future crises. Critics of the risk management failure, a failure that allowed the financial crisis to occur, have suggested that risk management efforts be abandoned as futile. However, the contributors to the eBook felt that “real” risk management had not failed and that financial services companies should not abandon their efforts to identify and control risk. “If Greenspan’s critics are right, and we must look to rating agencies and regulators to define the risks and how to measure them, then ERM will likely never amount to more than a game of minimizing the reportable magnitude of externally specified risk measures. Unfortunately, that seems to be how it has been practiced until now by many companies, including some highly touted for their superior risk management prowess.”²

Many of the essay authors believe that the banks, brokers, and insurance companies that were principals in causing the crisis did not make a genuine attempt to implement risk management or develop a risk management centric culture. The following are some of the causes of the crisis the various authors cited:

- systemic failure of regulatory system
- lack of confidence resulting from accounting opacity and gimmickry
- a liquidity crisis partially resulting from “mark to market” accounting
- a bubble of historic proportions that could have been predicted from information available to bank managers and regulators at the time
- lax underwriting standards
- companies that were too big
- too much leverage
- inappropriate use of models without consideration of their limitations and without scrutinizing their assumptions for reasonableness
- moral hazard resulting from transferring risk to others, through securitization, leading to a complete failure to underwrite and manage the risks
- compensation incentives that encouraged taking on imprudent risk exposures

² Wacek 2008, page 26.

- Lack of³ a reliable source of independent information.
 - In the case of subprime mortgages and the credit agencies, due to conflicts of interest, the information was not independent, and essentially only one view, an optimistic one was tolerated
- “[E]xcesses had been building up for a while throughout the financial system”⁴
 - Those who warned of the coming crisis were punished or ignored.

The JRMS also sponsored a research project, “The Financial Crisis and Lessons Learned for Insurers,” (Klein et al. 2009). The project placed primary blame on the key assumption utilized both by modelers and the banks when they assessed and priced the massive risk that caused the crisis. That assumption was that housing prices never go down, at least on a national basis. “This optimistic belief was shared by policymakers, economists, and market participants in general, permeated the models used by rating agencies to assign inflated ratings to securities built from subprime mortgages, and was reinforced, for a time, in market prices through a self-fulfilling prophecy.”⁵ The authors also separately assign some blame to regulators and the credit rating agencies.

The issue of the operational risk lessons learned from the financial crisis is discussed in another JRMS-sponsored project, “A New Approach for Managing Operational Risk,” (OpRisk Advisory 2009). The authors suggest that the “principal-agent” risk played a key role in the financial crisis and was the primary cause of the AIG credit default swap debacle. The authors note that the operational risk approaches currently in use do not address principal-agent risk, and therefore leave their companies vulnerable to significant losses from it. The concept of principal-agent risk relies on the idea of asymmetric information⁶ between the agent and the principals. It is the risk that an agent, such as a chief executive officer, manager, or other employee, will expose the company to risks that are harmful to the company and its stakeholders but beneficial to themselves. The authors distinguish the principal-agent risk from the risk of criminal wrong-doing, as shown in Table 1.1. The authors define both criminal and malicious acts and principal-agent acts as acts of intentional wrongdoing. A key difference in definitions is that the criminal and malicious acts are intended to be at the expense of another party (such as the agent’s company), but the

³ Ingram (2008)

⁴ Rudolph 2008, page 31.

⁵ Klein et al. 2009, Executive Summary.

⁶ Asymmetric information means that the agents have access to information that the stakeholders do not. For instance, if the management of a company uses off balance sheet structures to suppress information about the risks they are taking, they are privy to information that is not available to shareholders, customers and taxpayers.

principal-agent acts may nominally benefit the firm but are not in the firm's best interest. In addition those engaged in criminal acts expect a monetary benefit, while, based on these definitions, it is not as clear that a monetary benefit is expected by agents. Thus, the main distinction between a crime and principal-agent acts is that criminals intend to harm their victim and principal-agents do not⁷.

Table 1.1⁸

Criminal and Malicious Acts	Events where the perpetrator(s) engages in a conscious act of wrongdoing, where he/she intends to benefit him/herself at the expense of another party. Criminal acts involve events where the perpetrator expects to receive a monetary benefit. Examples: Theft, fraud. Malicious acts involve events where the perpetrator also expects to benefit, but the benefit is of a non-monetary kind. Examples: Vandalism, terrorism.
Principal Agent Acts	Events where the perpetrator(s) engages in a conscious act of wrongdoing, which may nominally benefit his/her firm, but which are not in the firm's best interest. Example: falsifying or misrepresenting underwriting information to secure additional clients.

Another related term appearing in the literature exploring the causes of the financial crisis is "moral hazard." Moral hazard explains why a group of people intentionally take on risk when they are shielded from the consequences of the risk. An example would be a policyholder with a low deductible or no deductible engaging in more accident-prone behavior than a policyholder with a high deductible.

⁷ OpAdvisory, page 33.

⁸ From OpRisk, "A New Approach to Operational Risk." page 32.

Walker (2009) points out that in insurance the principal of *uberrima fides* or “utmost good faith” governs insurance while that of *caveat emptor*, or “let the buyer beware” had come to govern the rest of the financial services industry. This may explain a sharp difference between how insurance companies and banks are regulated and in how the managements in these industries behave.

This paper takes the view of Black (2008) that a key cause of the financial crisis is a more significant and dangerous risk than is implied by terms such as “moral hazard” or the principal-agent problem, and that many of the principals to the crisis participated in transactions that they knew to be abusive and even illegal, but because they did not believe they would incur adverse consequence for themselves personally they did not care about the consequences to others including their companies. Black (2005) argues that the subject of fraud is poorly understood and rarely researched by economists, and that therefore many misunderstandings prevail and guide official policy with respect to regulation. One of the misunderstandings that Black believes is not backed by the empirical data is that the market forces are sufficient to identify and address fraud, so regulation and enforcement are unnecessary. The economic theory claims that in transactions between two knowledgeable parties, fraud will ultimately be detected and eliminated, as it is not in the best interests of the potential victim to relax their vigilance. Black argues otherwise, that often the actual victim is a bondholder or shareholder who is not a party to the fraud decisions and not in a position to detect and stop it. He argues (Black 2008) that tolerance of fraud creates a “pathogenic environment” that spreads fraud.

In this paper we will make no distinction between criminal acts and principal-agent acts. The commonality between the two, intentional wrongdoing, whether illegal or not and whether the harm was intended or not is the focus of this paper. We will refer to the wrongdoing as fraud and corruption. We also believe that many of the factors cited in the JRMS essays and research papers, such as regulatory failure and wildly inappropriate assumptions, are manifestations of an environment that is so tolerant of fraud and abuse, as to cause it to become widespread in mortgage lending and investment banking.

1.2 Systemic Risk

This section contains a discussion of systemic risk, as the relationship between fraud and systemic risk is a key focus of the paper. The literature contains a number of definitions of systemic risk. A common definition is risk to an entire system or sector. This is typically conceived as a risk involving financial institutions, but other systems, such as the electric grid, can also suffer systemic risk. This is the definition used by Wang (2010). Under this

definition, the underwriting cycle in property and casualty insurance is an example of systemic risk. During the downward or “soft market” phase of the underwriting cycle, systemic factors that cause the P&C industry, in the aggregate to underprice insurance, causing industry wide income loss and declines in capital, affecting all companies in the industry (even those who do not underprice) and typically causing an above average number of supervisory interventions and bankruptcies.

Hiemstra⁹ focusing more on financial institutions and their role in the financial crisis, defines systemic risk as “the probability that a large number of firms, especially financial firms, could fail during a given time period.” He states that the “too-big-to-fail” financial institutions impose a systemic risk because their failure imposes a cost to society generally. Hiemstra noted that limited liability corporations are granted an option to “put” their losses to their creditors in the case of a bankruptcy, but a “too-big-to-fail” is given an option to put their losses to the taxpayer and continue functioning suggesting that government guarantees create a moral hazard that increases systemic risk.

Another definition of systemic risk is that it is a risk that spills over into and has a significant effect on the general economy. In the words of Weiss (2010), “systemic risk is a risk of adverse consequences that reverberates across a large segment of the financial sector as a whole, posing a potentially grave effect on the economy.” The Property Casualty Insurance Association (PCI 2010) believes that “unusual and extreme federal intervention” is a manifestation of the potential danger of the risk to the economy. This is a more stringent definition that requires a broad-based impact on the economy, and is exemplified by the Global Financial Crisis that began in 2007 and led to government bailouts of a number of large corporations in 2008. Thus, even though subprime mortgages had declined in value, they would not have been a systemic risk absent the widespread damage to the general economy.

Weiss considers whether the insurance industry present a systemic risk. In investigating this question, Weiss attempts to determine whether certain events that could be catastrophic to the insurance industry such as the collapse of a single large insurer, widespread default by the reinsurance sector or a large catastrophe could spill over into the overall economy. Weiss identifies seven factors as key indicators of systemic risk. These are:

- **Size:** A very large company may pose a systemic risk if its bankruptcy can have a significant impact on the economy, i.e., it is “too big to fail.”

⁹ ERM-II May 2010 Systemic Risk Workshop

- **Substitutability:** If one product or company can substitute for another (i.e., catastrophe bonds for catastrophe reinsurance) there is substitutability. The absence of substitutability can be an indicator of systemic risk.
- **Interconnectedness or Contagion:** This occurs when a stress to one company causes a domino effect on other companies that share components of each other's liabilities. The LMX London reinsurance spiral, where the same loss to a primary insurer cycled through many reinsurers because each had a share, is an example.
- **Concentration:** This occurs when one or a few companies control a large percentage of an important product. It can also involve geographic or type of product concentration. When a large percentage of mortgages and mortgage derived securities were concentrated in the subprime sector, the entire financial system became vulnerable to a failure of this product.
- **Liquidity:** Liquidity is the availability of a market in a security even in a distress situation. For instance a problem with the financial crisis is that not only can mortgages be illiquid, but the derivatives of mortgage securities became unsellable. The crises of Lehman Brothers and Bear Stearns were in part due to their inability to rollover short-term financing once the market lost confidence in them.
- **Infrastructure:** The financial institution or sector is a critical component of the functioning of the larger economy, i.e., it is part of the infrastructure. Banks are an example of this, as financial exchange cannot occur without banks.
- **Leverage:** This term in finance refers to the asset to capital ratio. In property and casualty insurance leverage often refers to the liability-to-capital ratio. The use of leverage multiplies the impact of declines in assets or increases in liabilities. The higher the leverage, the higher the risk. For instance, the derivatives based on mortgage-backed securities contained significant leverage and many of the institutions that precipitated the crisis were highly leveraged, exacerbating the effect of the crisis.

Weiss examined each of these factors and concluded that the insurance industry is not a generator of systemic risk. For instance there is no one insurance company that is large enough to cause a crisis if it fails, insurance has relatively low barriers to entry and other products can substitute for insurance, insurance companies are not extremely interconnected to other parts of the economy, do not show significant concentration, have relative modest leverage compared to banks (especially P&C), and most of their assets are liquid. On the other hand, Weiss believes insurers are vulnerable as recipients of systemic risk, as their asset portfolios, and for life insurers, some of their products, can (and did) suffer significant declines in a financial crisis.

AIG, a company that in 2008 was the country's largest insurer, precipitated a government intervention in fall 2008 when it was unable to meet collateral demands on mortgage-related derivatives that declined in value as the subprime crisis worsened. Numerous financial institutions were AIG counterparties, and a widespread crisis was feared if the U.S. government did not intervene. Due to AIG's significant role in the financial crisis, a number

of people disputed the claim the insurance companies do not pose a systemic risk, using the strict (Weiss 2010) definition of systemic risk noted above.¹⁰ Even though a relatively small financial products division caused the AIG crisis, not its insurance division, some are not persuaded that this lets the insurance industry off the hook. It has also been noted that the product that brought AIG down, credit default swaps, was, for all practical purposes, an insurance product, even though it is not classified as such or regulated as such.¹¹ Though this paper does not focus on the role of AIG or of credit default swaps in the crisis, AIG serves as an example of the way systemic risk will be treated in this paper: that is, Weiss's stricter definition of a financial institution-caused-crisis that can affect the functioning of the broader economy, causing distress not only to other financial companies but potentially to the broader economy.

1.3 Objective

The objective of this paper is to explore the role of fraud and corruption in the global financial crisis (GFC) that began in 2007. We will review the history of the Savings and Loan crisis of the late 80s and early 90s and provide evidence that fraud played a major role in that crisis. We will also show that there were many similarities between the S&L crisis and the GFC, but that the scale of the GFC was dramatically different, partially because of regulatory intervention in the 1980s to mitigate the S&L crisis. This paper will show that regulatory lessons that should have been learned from the S&L crisis were not. It will then explore several aspects of the global financial crisis including (1) the subprime mortgage crisis and associated derivatives, (2) the Bernard Madoff Ponzi scheme, and (3) a theory of "looting" that explains the behavior of managers during the S&L and subsequent crises. We will present both statistical data and documentary evidence that fraud and corruption played a major role in the S&L crisis and GFC. We then discuss the systemic risk consequences of widespread fraud and corruption. Finally, we summarize our findings and discuss remedies.

1.4 Outline

The role of fraud in the Savings and Loan crisis is described in Section 2. The role of fraud in the global financial crisis is described in Section 3. The Madoff Ponzi scheme and the regulatory response to the scheme are discussed in Section 4. A description of a theory of "looting" is presented in Section 5. In section 6 the results of a financial fraud

¹⁰ ERM-II Systemic Risk Workshop, May 11-12, 2010

¹¹ It also turns out that AIG had significant losses from a securities lending program in one of its life companies (Harrington 2010) though Harrington suggests this might not have caused a default.

survey are discussed. Results of all six sections are presented in Section 7. Conclusions and lessons are presented in Section 8.

2. THE SAVINGS AND LOAN CRISIS

This paper will argue that the Savings and Loan (S&L) crisis provided a model of the use of bank loans for fraud and presaged many similar business, regulatory, and legislative pathologies that occurred leading up to the GFC. Some background on the economic and regulatory environment of the time is provided.

Black (2005) describes the economic environment that set the stage for the S&L crisis. In the early 1980s, Federal Reserve Chair Paul Volker raised interest rates in order to reduce inflation. Because the Savings and Loan banks had a portfolio of long-term mortgages, issued for the most part many years earlier, at low fixed-interest rates, the increased rates caused a perverse effect on them. The market value of the assets fell dramatically, while the value of liabilities, which were much shorter term, did not. We illustrate this in Table 2.1, which shows the assets and liabilities (in millions of dollars) before and after an interest rate change. The very simple assumptions used were: (1) an interest rate increases of 3%, and (2) average duration of assets (mortgages) of five years. Interest rates increased from single digits to double digits in the early 80s. Therefore, these assumptions are somewhat moderate. Note also, that since most liabilities were primarily for short duration assets, such as saving accounts and CDs, in this simplified scenario the value of liabilities do not change after interest rates increase. The net result of the interest rate change is a market value decline in capital from \$10M or about 5% of liabilities to -\$19 M or 9% of liabilities. According to Black, by 1986, most S&Ls were insolvent by about 20%. When banks were willing to pay (i.e., not receive financial help from the regulators as an inducement) for taking over a troubled bank, no claims were made on the FSLIC's insurance funds to support the take-over, thus preserving the limited resources that the FSLIC had for shutting down failing institutions.

Table 2.1

	Assets	Liability	Surplus
Before	210.0	200.0	10.0
After	181.1	200.0	(18.9)

However because the agency responsible for insuring Savings and Loan institutions, the FSLIC, was underfunded and near insolvency itself, it resisted closing down failed banks,

preferring to support accounting approaches that allowed distressed banks to continue operation, and to merge or be purchased without infusion of federal funds. Since most banks initially had positive cash flows, recognizing the “true” condition of the bank could be delayed for years. Black (2005) makes it clear that under Pratt (an early 80s commissioner of the Federal Home Loan Bank Board) weak S&Ls were encouraged to purchase other weak S&Ls in order to eliminate a prospective insolvency of one of the institutions. This was accomplished by creating a “goodwill” asset as a result of the mergers and acquisitions (M&A) activity. Black considered the goodwill to be an accounting fiction. Table 2.2 displays an illustration of how goodwill is used to transform an insolvency into a viable business. Before the acquisition, both Bank A and Bank B are insolvent, as indicated by their negative capital. If Bank B purchases Bank A and records goodwill of \$90M, the combined company after the merger shows a capital of \$20M, an increase of \$90M. The justification for the “goodwill” is that Bank B is willing to pay above market value for Bank A, and would only do so for the intangible “goodwill” asset. The circular reasoning is as follows: If a company was willing to pay more than market value (of assets minus liabilities) of a firm, this is proof that an additional intangible asset, i.e., goodwill exists. Black (2005) argues that the typical justifications for goodwill (i.e., customer relationships, synergy between merged firms, etc.) usually did not exist and that the goodwill was, in fact, an accounting device that permitted essentially bankrupt enterprises to continue operating.¹² Because the resources of the FSLIC were inadequate to support all the bankruptcies that in reality existed, regulators favored the device, although its real effect was to delay the recognition of bank insolvencies and worsen their severity. A pathological result was that since the banks were in fact insolvent on a market value basis, only incompetent and fraudulent managers were willing to pay far in excess of what the banks were in fact worth. Ingram (2009) refers to this as Gresham’s Law of Risk: “[T]hose who do not see a risk will drive those who do see the risk out of the market.” Gresham’s Law is of course the same as the adage, “Bad money will drive out good.”¹³

¹² In order for Black’s assertion that the S&Ls were really insolvent to hold, one must also believe that the declines in asset values were not temporary, but were sustained and could not be worked out by waiting for values to return to a previous level.

¹³ Ingram 2009, page 8.

Table 2.2

Before Bank Purchase

	Bank A	Bank B	Bank A + Bank B
Assets	165	165	330
Liabilities	200	200	400
Goodwill	0	0	0
Capital	-35	-35	-70

After Bank Purchase

	Bank A	Bank B	Bank A + Bank B
Assets	165	165	330
Liabilities	200	200	400
Goodwill	90	0	0
Capital	55	-35	20

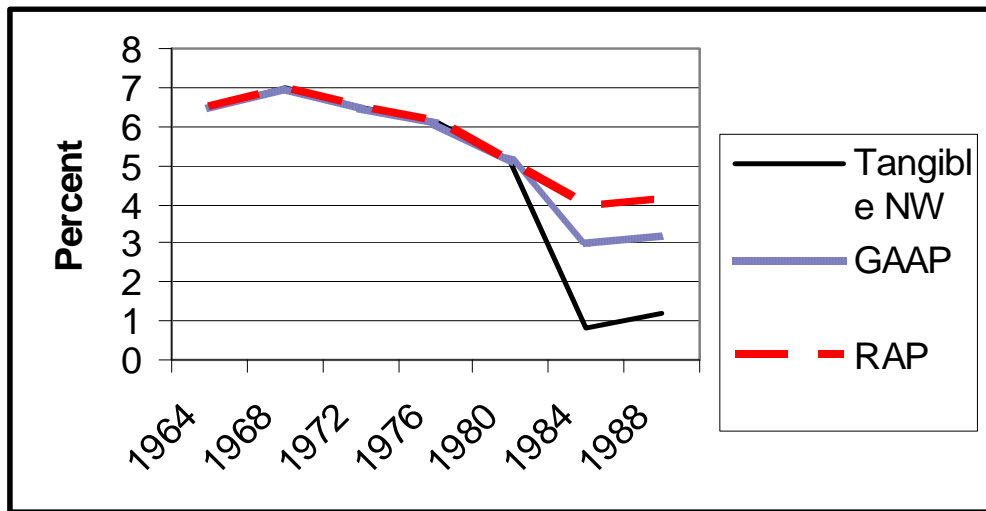
Brumbaugh (2004) points out that, in addition to “goodwill,” other accounting techniques, including overstatement of assets, were used. To support his argument that flexible accounting rules made a significant contribution to the S&L crisis, Brumbaugh supplied the information in Chart 2.1. Chart 2.1 displays the capital ratio for three different accounting conventions, Regulatory Accounting Principals,¹⁴ Generally Accepted Accounting, and Tangible Net Worth derived by subtracting “goodwill” from the GAAP net worth. As a result of accommodative changes to regulatory accounting rules in 1980, the RAP capital ratio is the highest. The tangible net worth, which Brumbaugh regards as the most accurate, falls below 1% at the during the crisis,¹⁵

Growth was crucial to the strategy. The S&Ls that ultimately proved to be the most problematic grew rapidly by purchasing other companies, including non-bank companies and investing in low-quality risky projects, often not in their core area of mortgage financing. Financing for the high-risk ventures was acquired through brokered certificates of deposits and junk bonds.

¹⁴ RAP is similar in concept to statutory accounting principles in insurance. However, based on Black (2005) it was less conservative than GAAP.

¹⁵ Black (2005) notes that three of the big eight accounting firms and many law firms involved in assisting the S&L frauds.

Chart 2.1
Percent of Capital to Assets for RAP, GAAP, and Tangible Net Worth¹⁶



Black (2005) and Calavita et al. (1997) believe that because regulators favored this use of goodwill, ultimately incompetent and fraudulent purchasers were attracted into the S&L industry, as rational business managers would not pay more than a company was worth to acquire it. In Black’s words (2008), “the regulators created a criminogenic environment.” If the banks could be used as a vehicle to sell seemingly profitable loans, and extract significant fees and incentive compensation based on the loans, acquisition of a distressed bank was rational. That is, it was rational, until no more funding could be found to grow the bank’s business, and the cash outflow for liabilities exceeded the cash inflows from assets. “High risk heavily concentrated investments with grossly inadequate or non-existent underwriting are highly unprofitable from the point of view of a profit maximizer not engaged in fraud. They are profoundly rational, however, from the viewpoint of a manager committing fraud.”¹⁷ A typical example of the frauds involving S&Ls was ADC or acquisition, development, and construction loans. The scheme involved a 100% loan from a bank to a builder (i.e., no down-payment) who also posted no collateral, and received lavish up-front fees and proceeds before the project even began. The loans often required no interest or principal payment for a number of years. The loans also generated high fees to the bank

¹⁶ The figures in the chart are estimated from the graph on page 88 of Brumbaugh (2004). That graph was from Barth (1991).

¹⁷ Calavita et al. 1997, page 39.

which were then booked as profit so S&L executives could pay themselves well from the “income” they generated from the construction company. Often, the S&L took an equity position in the project. Many of the construction projects were never completed, and some were never begun, even though the S&Ls booked significant profits from them. An “aha” moment occurred when then Federal Home Loan Bank Board Chair, Edwin Grey, viewed a video of acres of partially built (and abandoned) construction projects in Texas financed by ADC loans. Until that time Grey had had a strong antiregulatory, laissez faire stance. Grey wanted legislation passed to eliminate some of the accounting and investment abuses used in the ADC loans. One of these was the direct investment rule, which would prohibit equity investments in the businesses which were loan customers.

Black (2005, 2008) coined the term “control frauds” to describe what he saw in the S&L industry as a regulator.¹⁸ With control frauds, those committing the frauds have control of their company. They also control many other resources needed to keep the fraud going such as lawyers, accountants, appraisers, and lobbyists. The perpetrators of the S&L frauds, such as Charles Keating, orchestrated an extensive lobbying effort against the regulators. Black (2005) documents the scheming that was used to restrain the Bank Board from intervening to close down the frauds. “One of the great advantages that white-collar criminals have over blue-collar criminals is the ability to use top lawyers even before criminal investigations begin.”¹⁹ An August 1985 letter, uncovered during litigation, from a lawyer with a prominent lobbying firm provided a relatively frank and somewhat shocking description of the strategy²⁰ to interfere with regulatory enforcement. The memo includes a plan to have the Reagan administration dismiss Edwin Grey, Bank Board Chair, who was proceeding with enforcement, and replace one or more Bank Board members with someone selected by Keating. Reagan ultimately did not dismiss Grey, so then Keating and his allies implemented a plot to pressure him to resign and destroy the effectiveness of the Bank Board. Typically the Bank Board chair has a lot of say in selection of fellow commissioners on the Bank Board but this was denied to Grey. The plan was to pressure the president into appointing Keating’s selection by holding his top priorities (tax and budget bills) hostage.^{21 22} Due to this and other pressures and interference, the loyalty of regulatory staff diminished further weakening Grey and the Bank Board staff that favored a strong regulatory response. The

¹⁸ Black was a lawyer with the Bank Board at the time of the S&L crisis.

¹⁹ Black, 2005, page 66.

²⁰ Black 2005, page 65.

²¹ Two Senators who were beholden to Keating and part of the Keating Five were used to influence the appointments, as they could hold key legislation hostage.

²² In actuality, the appointments were made in exchange for an appointment to a U.S. Court of Appeals. One of the appointments fell through (because of a scandal involving the appointees).

memo also described a plan to get the “Keating appointee” to persuade other Bank Board members to join him in opposing Grey. Keating also used litigation to prevent regulators from closing down known frauds. The Keating Bank Board members opposed Grey at congressional hearings. Keating also orchestrated congressional hearings to embarrass Grey, in part by supplying planted questions.

One of the members of congress who worked with Keating was Jim Wright. Wright was vulnerable to manipulation because he wanted to be House speaker. Keating and his allies created a political action committee (PAC) to elect Wright. The PAC was run by Tom Gaubert, who, according to Black, ran a control fraud, the bank Independent American.²³ Wright intervened repeatedly on behalf of the S&L frauds. Wright successfully pressured Grey on behalf of Craig Hall, a borrower who was insolvent by \$1B. Another example involved Don Dixon of Vernon Savings, regarded as one of the worst control frauds in the nation. Dixon bought Vernon without putting up any of his own money. After regulatory action against Dixon was initiated, Representative Robert Eckhardt phoned the FBI director to find out who authorized subpoenas against Vernon and to convey Wright’s displeasure. Another representative called the Bank Board and requested they not help the Justice Department. The Vernon bankruptcy ultimately cost the taxpayers \$1B. Some of the additional regulatory interference that Keating and other S&L owners implemented was:

- The Bank Board was coerced to block aggressive interventions against known frauds by field offices.
- The Bank Board was forced to hire back an incompetent manager who was sympathetic to the control frauds. The Bank Board was required to give the employee a significant raise.
- The Bank Board was forced to sign an agreement to cease and desist in its investigation of Lincoln Savings.

According to Black (2005) this level of regulatory interference was unprecedented.

In addition to the interference with regulation, Wright also interfered with legislation to reform S&L accounting and regulation²⁴ to prevent abuses.

After Grey’s term expired he was not reappointed and Danny Wall, who was favored by the control frauds, replaced him. Wall had no experience in supervision and believed the S&Ls could grow out of their solvency problem and worked to delay regulatory intervention

²³ At one point it lost “\$1M a day.”

²⁴ Known as the FSLIC recap bill.

against the frauds.

Despite the significant publicity given to the S&L crisis and the prosecution of some of the most high-profile operators of insolvent S&Ls, there is not wide agreement as to the role of fraud in the crisis. Calavita et al. (1997) express concern that revisionist economics has de-emphasized the role of fraud, instead blaming the economic environment, poor regulation, and poor (but not intentionally fraudulent) management. Calavita et al. provide statistics to support their claim that fraud was a major, if not *the* major factor in the S&L crisis. Table 2.3 is based on data in Calavita et al. (1997). The information in Table 2.3 shows that for the majority of banks under Resolution Trust Corporation Control (because they were taken over by the government) a criminal referral was filed. Though Calavita et al. recognize that a referral is not a conviction, they point out that referrals were not made unless significant evidence of a crime existed. They also note that many frauds that occurred were probably not recognized and referred.

Table 2.3: Statistics From S&L Crisis

	Total	Ca	Tx
Institutions Under RTC Control	686	59	137
Institutions Where A Criminal Referral Was Filed	455	42	85
Percent	66%	71%	62%
Referrals	2,265	175	631
Individuals Named on Referrals	4,559	223	1,350

From Table 2, p38, Big Money Crime by Calavita et al.

Calavita et al. compares the S&L frauds to organized crime. Their data suggests that while the frauds involved insiders, they also required networks of outsiders, including lawyers, accountants, appraisers, lobbyists, and legislators. Calavita et al. conclude that the thrift frauds constituted a kind embezzlement. “Most important, hot deals and looting²⁵ comprise a kind of hybrid crime, corporations against corporations or collective embezzlement.”²⁶ They distinguish between the S&L frauds and other kinds of white collar crime, by pointing out that corrupting government by influencing the legislative and

²⁵ Hot deals involved investments in trendy, ultimately overpriced projects, such as commercial real estate, where the repeated selling of the same properties drove its price up dramatically. Looting involved investments in projects with little prospect for positive return, in order to generate fees and the appearance of profit.

²⁶ Calavita et al., page 171.

regulatory process was an integral part of the frauds.

Black supplies the following list of characteristics common to control frauds including the Enron and WorldCom scandals (Black 2010):

1. Fast growth
2. Extreme leverage
3. Lending to the uncreditworthy
4. Misuse of accounting, in particular inadequate reserves

Black believes (2009, 2010) that the subprime crisis was also an example of control frauds. What transforms control frauds into a risk to the financial system is the co-operation of various branches of government (i.e., legislative and executive) through favorable legislation and/or regulatory forbearance.

Both Calavita et al. (1997) and Black (2005, 2008) warn that failure to regulate against fraud creates an environment that significantly increases the probability that fraud will occur. When the companies managed by control frauds come to dominate, as in the case of the Savings and Loan institutions, contagion is created that can devastate an entire industry and even the financial system of a country. Black (2008) believes that regulators must act like public health experts and constantly search for pathologies (especially criminal pathologies) that have the capacity to spread and cause severe crises. Calavita et al. and Black are critical of economists, who in their view supplied the theory that was used to suppress regulation, even in the face of empirical data suggesting that fraud was a significant problem. Black uses Grey as example of a regulator who performed like a public health expert. “Grey reconceptualized the crisis, recognizing fraud, not interest rate risk, posed the gravest danger. The agency identified the correct problem over the universal opposition of economists by developing a new methodology, reaching the right analytical conclusions from the data provided by the new methodology, rejecting the conventional theories that form the core of modern finance theory, and developing a coherent theory of control fraud.”²⁷

3. THE SUBPRIME CRISIS

As noted in the introduction, the role of fraud in the GFC appears to have received less attention than other factors. In this section a combination of data and literature review will be used to support a claim that fraud played a key role in the GFC.

²⁷ Page 5 of (Black 2008).

One of the questions we address is, “should the banks, brokerage companies, credit rating agencies, and regulators have known how risky the mortgages underwritten were?” A number of studies (Francis and Prevosto 2009; Barnett-Hart 2009; Carson and Dastrup 2009) argue that data and techniques widely available at the time could have been used to forecast problem loans and to alert underwriters to the deterioration of their loan portfolios. Data and information collected from a number of sources will be used to illustrate this.

In a 2008 Casualty Actuarial Society VALCON²⁸ list e-mail, Gary Venter distributed foreclosure rates for cohorts of subprime mortgages organized by origination year.²⁹ The data was originally from Barth (2008).³⁰ Venter noted that when the data are transposed, they have the form of a loss development triangle, a standard tool applied by property and casualty actuaries to estimate ultimate liabilities. He provided some qualitative insights and conclusions that could be drawn by an actuary from the information. Expanding on Venter’s suggestion, below are the results of applying the standard chain ladder technique to the foreclosure data.

The cumulative foreclosure rate triangle is presented below with one adjustment to the original data: the incremental values on the diagonal, which were evaluated as of September, were divided by 0.75 to bring them to an annual basis, consistent with all the others entries. For the adjustment to be reasonable, the defaults must occur uniformly throughout the year. This assumption likely does not hold and is a limitation of the analysis affecting the uncertainty of the results.

²⁸ The VALCON list is a list sponsored by the Committee on the Theory of Risk of the Casualty Actuarial Society and is a list that is subscribed to by actuaries and insurance professionals. The community of subscribers share research, ideas and musings related to the **V**aluation of **C**ontingent obligations.

²⁹ Barth et al. were the original source of the data.

³⁰ The actual data was from First Core Logic. See www.loanperformance.com.

Table 3.1

Year	Cumulative Default Rates @12/31/07								
	Development Age								
	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
1999	0.013	0.076	0.131	0.179	0.202	0.223	0.231	0.236	0.239
2000	0.015	0.084	0.144	0.177	0.202	0.214	0.221	0.225	
2001	0.019	0.090	0.148	0.191	0.209	0.221	0.228		
2002	0.011	0.066	0.111	0.135	0.151	0.158			
2003	0.008	0.050	0.081	0.103	0.114				
2004	0.009	0.048	0.064	0.089					
2005	0.010	0.074	0.136						
2006	0.026	0.128							
2007	0.040								

Table 3.2³¹

Age-to-Age Factors

Year	Development Age								
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	Tail
1999	5.869	1.714	1.371	1.128	1.101	1.035	1.024	1.012	
2000	5.573	1.719	1.233	1.141	1.059	1.033	1.018		
2001	4.876	1.644	1.285	1.099	1.056	1.029			
2002	6.150	1.691	1.213	1.116	1.052				
2003	6.049	1.627	1.276	1.107					
2004	5.570	1.344	1.383						
2005	7.577	1.845							
2006	5.005								
Average	5.834	1.698	1.294	1.118	1.067	1.032	1.021	1.012	
Selected	5.800	1.700	1.300	1.100	1.067	1.032	1.021	1.012	1.0453
Age to									
Ultimate	16.779	2.893	1.702	1.309	1.19	1.115	1.08	1.058	1.0453

Before performing an analysis, observations can be made from the data on the triangle. Note that the relatively mature years of 1999 through 2001 have cumulative default rates in the vicinity of 25%. This appears to be quite a high rate for a period that preceded the financial crisis and was presumably a more rational period for mortgage loans. What may be surprising to many is that a subprime mortgage business flourished in the 1990s. However, most of the companies involved experienced difficulties and disappeared before the real estate bubble of the 2000s was under way. Lewis, in *The Big Short* (2010), describes how two Wall Street analysts uncovered major problems with the 1990s subprime companies. In 1997, the analysts, Steve Eisman and Vincent Daniels acquired a Moody's database with information about the subprime industry. While the database did not have loan level details,

³¹ The inverse power curve was used to derive a tail.

it contained descriptive statistics about the loan portfolios of the subprime companies. In particular, the database contained default and prepayment statistics. Daniels noticed extremely high prepayment statistics for the manufactured housing category. He determined that the prepayments were really defaults classified as “involuntary prepayments.” Because mobile homes start to depreciate in value as soon as they are purchased, significant losses were realized on the loans. “Eventually I saw that all the subprime sector was either prepaying or going bad at an incredible rate. I was just seeing stunningly high delinquency rates in these pools.”³² Daniels continued to analyze the data over a number of months for additional insights into the industry. He eventually concluded that the entire subprime industry was distressed, but through a combination of growth (to get fresh investment cash) and creative and misleading accounting, the industry avoided the recognition of their condition. Lewis (2010) notes that ultimately most of the 1990s subprime lenders went bankrupt. One of the subprime lenders from the 1990s, Long Beach, was purchased by Washington Mutual (WaMu) and wrote billions of dollars in subprime loans during the housing bubble. An e-mail from Long Beach’s regulator at the Office of Thrift Supervision (OTS) claims that it was one of the 13 worst institutions in 1997 through 2003 (Levin 2010). In 2003, the company had so much trouble that WaMu temporarily stopped securitizations from it. However, operations were soon resumed, and Long Beach was to cost WaMu many billions of dollars in losses.

The difficulties of the early subprime lenders received little notice, probably because their size was small relative to all financial assets in the global economy. Nonetheless, there was historic evidence of losses and bankruptcies in the recent past from subprime mortgages.

In order to gain insight into the default problems of more recent origination years, ultimate default rates will be estimated. Table 3.3 displays the application of the age-to-ultimate factors, to the diagonal (as of yearend 2007) cumulative foreclosure rates to estimate ultimate foreclosure rates for each origination year. Estimated ultimates derived from the chain ladder method, or any other actuarial development techniques are very uncertain. The estimates are considered especially unstable for data of low maturity, such as that of the 2007 and 2006 years. Moreover, some of the assumptions underlying the chain ladder are violated, adding yet additional uncertainty to the estimates. Using the chain-ladder technique, foreclosure rates are estimated to be nearly 40% for 2006 and over two-thirds for 2007. In other words, the estimates of ultimate default rates suggest that the majority of subprime loans from 2007, along with a very large percentage of 2006 loans will default.

³² Lewis 2010, page14.

Table 3.3

Default Rates Developed to Ultimate

<i>Current Year End Year</i>	<i>Default Rate</i>	<i>Age To Ultimate</i>	<i>Ultimate Default Rate</i>
(1)	(2)	(3)=(1)*(2)	
1999	0.239	1.058	0.253
2000	0.225	1.058	0.238
2001	0.228	1.080	0.246
2002	0.158	1.115	0.177
2003	0.114	1.190	0.136
2004	0.089	1.309	0.117
2005	0.136	1.702	0.231
2006	0.128	2.893	0.371
2007	0.040	16.779	0.673

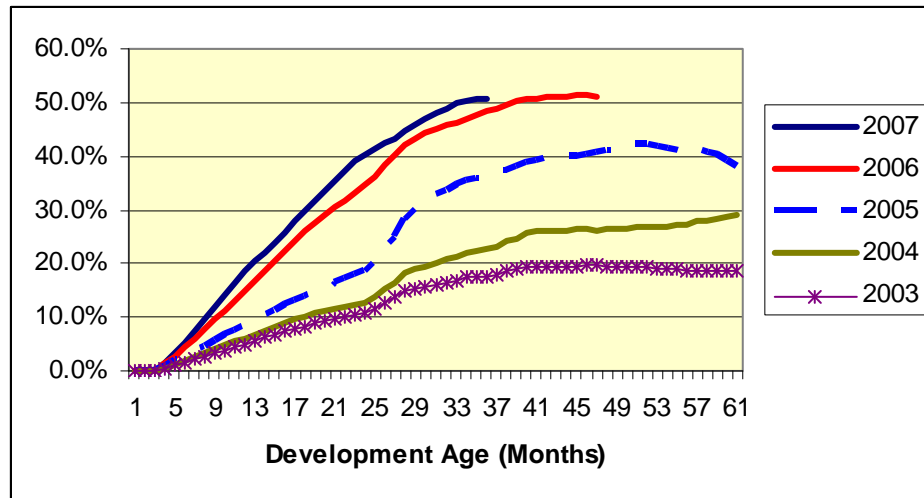
Notes:

(1) All rates adjusted to 12 month basis by dividing by 0.75

Among the many limitations of the data that were not taken into account were origination year, calendar year, and economic effects that will impact future development patterns and violate the assumptions of the chain ladder, i.e., that the development patterns are constant over time. Nonetheless, the simple technique, using data from September 2007 gives an early indication of significant default rates in pools of subprime business. More recent information was obtained from LoanPerformance.com.³³ Figure 3.1 displays the development over time of loans 60 or more days past due for pools of Alt-A and subprime mortgages. This data suggests that as of 35 months of maturity the number of loans in or near “default” already exceeds 50% for the 2006 and 2007 years.

³³ The data supplied by e-mail and is the December 31, 2009, valuation.

Figure 3.1
Mortgages 60+ Days Past Due



Assuming that there is some recovery (40% is a typical recovery assumption on defaulted bonds (Altman, Kishore, 1996))³⁴ after foreclosure, these rates portend massive losses on the subprime-backed securities. Moreover, the analysis of data in the triangle, suggest that the possibility of significant default rates could have been predicted from past data, especially if history from the 1990s when many subprime writers became insolvent, were included. From the analytical perspective, the research of Demyanyk and Van Hemert (2008) suggests a significant degradation in loan quality in 2006 and 2007. According to Demyanyk and Van Hemert, the deterioration in foreclosure rates should have been known to the mortgage lenders as early as 2005, based on loan information that is routinely collected. Their analysis applied logistic regression to loan level data and found that the quality of loans declined for six consecutive years. For instance, their data indicates that the percentage of loans with balloon payment, and the percentage of loans with no documentation grew dramatically over time. Demyanyk and Van Helmert also observe that their model indicates that low subsequent price appreciation (and depreciation) contributes about 2 to 4 percentage points to default rates 12 months after origination. They state: “Problems could have been detected long before the crisis, but they were masked by house price appreciation.” Francis and Prevosto (2010) also provide evidence that using data available at the time, potentially problematic mortgages could have been identified before loans were approved. In addition to showing simple descriptive statistics that provided early warning of loan portfolio deterioration, they provide examples of data mining procedures that could have been used to

³⁴ The securities backed by the subprime mortgages were packages rated and marketed as if they behaved like bonds. Many of the lenders may have expected almost full recovery on defaulted assets based on the mistaken belief that housing prices never go down.

predict the likelihood of default on loans.

Moreover, the default problems with subprime mortgages appears to be inherent in their design, as they apparently were not designed to be held to maturity, with interest and principal being completely discharged by the debtor. Gorton, an advisor to AIG, describes the subprime based securities in a paper (Gorton 2008), which indicates that serial refinancing was intended and built into the product when the mortgages were sold. To protect the lender from the “risky borrower,” the loans were structured to be held for a relatively short period (two to three years) and then refinanced. As price appreciation of the underlying asset was expected, the refinancing was expected to occur before the rates of an ARM or of a mortgage with an initial teaser rate were adjusted upwards and the mortgage payment exceeded the debtor’s resources. However, the refinancing was at the option of the lender so if houses failed to appreciate the borrower faced the risk of being stuck in a mortgage that under any realistic scenario exceeded his or her ability to pay. According to Gorton, “The appreciation of the house became the basis for refinancing every two to three years.”

The view that subprime mortgages were not intended to be paid off is supported by others. Demyanyk (2009) notes that termination rates for subprime mortgages were relatively constant for origination years from 2001 through 2006. At 12 months of maturity, termination rates are about 20%, at 24 months they are about 50%, and at 36 months they are about 80%. However, when housing price appreciation slows, defaults grow as a percent of the terminations and refinancings decline. Demyanyk’s analysis also indicates that the subprime lending was a net loss to homeownership; that when foreclosures are subtracted from the number of first-time buyers that obtained houses through subprime financing, the former exceeded the latter. Black accuses the subprime lenders of unethical behavior, likening them to used car dealers (2010). He accuses them of using aggressive sales tactics to sell mortgages to people who did not need them, did not understand them, and could not pay them.

Lewis (2010) describes how hedge fund manager Michael Burry witnessed the enormous price increases in San Jose and in 2003 decided that a housing price decline of historic proportions would eventually occur. “You have to watch for the level in where nearly unlimited or unprecedented credit can no longer drive the housing market higher.”³⁵ Burry analyzed the statistics, such as percent with no documentation, loan-to-value ratio of mortgages, location, etc. before betting against the mortgage pools. He wrote that, “It is

³⁵ Lewis 2010, page 47.

ludicrous to believe that asset bubbles can only be recognized in hindsight.”³⁶

Thus the subprime mortgages were very vulnerable to declines in housing prices. Yet a core assumption of pricing and rating (Lewis 2010; Muolo 2008) was that housing prices would never decline. Taleb in his book *The Black Swan* (2007) describes the fallacy of believing an event will never happen merely because it was not experienced or in one’s data. Appropriate risk management would consider such events. Indeed, the housing price declines were not a “black swan” or rare event, as housing price declines in the United States have occurred in relatively recent years. Examination of publically available data would have shown the assumption to be unreasonable. Figure 3.2 shows the annual rates of change for housing prices based on the Case-Shiller index.³⁷ The chart clearly shows a decline in the late 1980s-early 1990s. Lewis (2010) describes the surprise of hedge fund investors when they learned that all the credit rating agencies shared the same two assumptions: housing prices would rise and loan losses, even for the lowest-rated securities, would be around 5% (with the 5% loss estimate strongly dependent on the price appreciation assumption).

Black (2010) refers to certain kinds of mortgages, such as those dubbed by the industry as “liar loans,” as negative expected value products. That is, the product is structured so as to create adverse selection that guarantees a loss. This is the equivalent to selling an insurance product to substandard risks without underwriting the policyholders or examining historic data on their experience. Thus the enormous losses experienced on such loans did not constitute a rare event arising from extreme risk, but should have been the expected outcome.

Lewis also makes it clear that the rating agencies only did a cursory job of evaluating the mortgage securities underlying the pools they rated and refused to develop detailed databases that could have been used for a rigorous evaluation of mortgage loan portfolios. Levin (2010) and Black (2010) cite a memo of S&P management to their employees demanding that they not request loan level data from the companies, because they did not have it and because it would be unreasonable to do so. Muolo (2008) also notes that the rating agencies sometimes intentionally ignored data that did not agree with the assumptions of their models. “To judge from their behavior, all the rating agencies cared about was maximizing the number of deals they rated for Wall Street investment banks, and the fees they collected from them.”³⁸

³⁶ Lewis 2010, page 54.

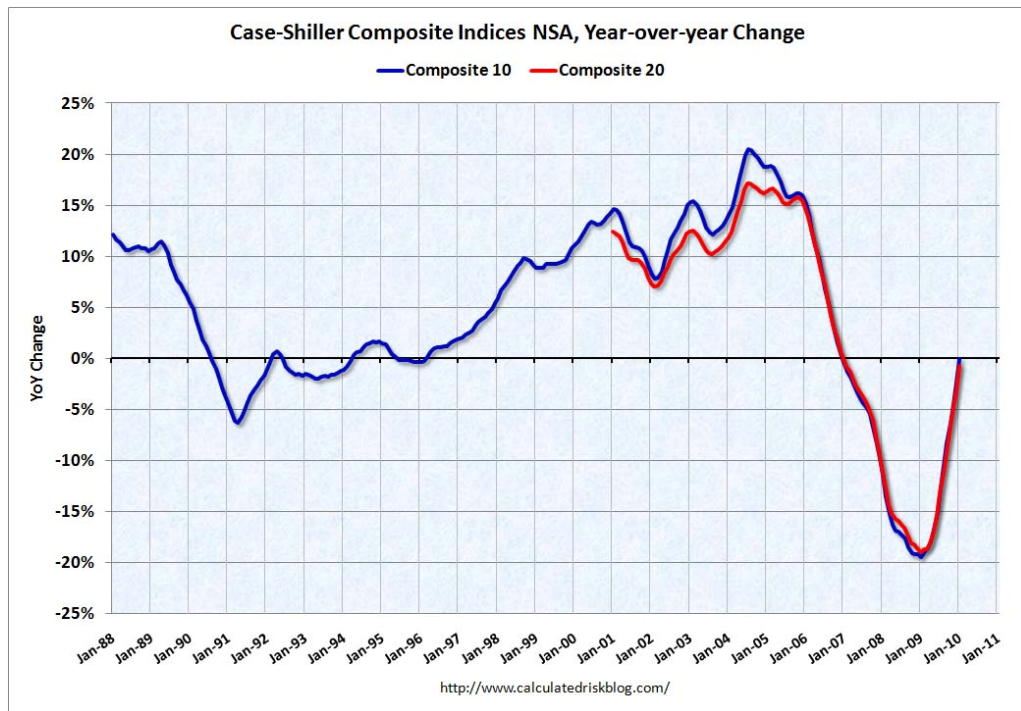
³⁷ The chart index from www.calculatedriskblog.com. The data is from the Case-Shiller index published by S&P.

³⁸ Lewis 2010, page 157.

The evidence presented above indicates that, though the rating agencies were well paid for their work, they did not do a conscientious evaluation before assigning credit rates, and likely intentionally avoided negative information about the securities they rated, in order to maintain their fee income. Black (2009, 2010) accuses the rating agencies, as well as the managements of companies that securitized the loans of having a “don’t ask, don’t tell” policy that limited their exposure to negative data and information that would contradict the high quality ratings that were assigned.

Figure 3.2

Annual Change in House Prices³⁹



Lewis (2010) makes it clear that the hedge fund managers he highlights, such as Eiseman and Burry, believed that the companies involved in selling the subprime loans and derivatives such as the banks, investment companies, and credit rating agencies, were not only inept, but were unethical. He describes how the investment banks devised strategies to convince the credit rating agencies to assign A or better ratings to subprime pools that did not merit the high ratings. These securities could then be packaged and sold to pension funds and ordinary investors as high-quality fixed investment products. He also cites the

³⁹Graphic courtesy of www.calculatedriskblog.com.

statistic that by 2005 the FBI claimed that mortgage fraud had increased by 600% and more resources needed to be dedicated to the problem (they in fact were not). In 2004 CNN reported that the FBI warned of the potential for the mortgage fraud to become an epidemic (Frieden 2004).

First-person evidence of mortgage-related fraud is also supplied by Richard Bitner (2008). Bittner was a subprime lender for five years during the subprime peak. He sold his share of his mortgage business in 2005 when he noticed a marked deterioration in the quality of the loans and felt that the market was no longer rational. At the time he decided to leave, he was finding that about 70% of applications to his company contained some misrepresentation. In his chapter titled, “The Underbelly: Mortgage Brokers” (*Confessions of a Subprime Lender: An Insider’s Tale of Greed, Fraud, and Ignorance*, Bitner, 2008), Bitner describes the deceptive tactics brokers used to get loans approved. In another chapter subtitled, “The Art of Creative Financing,” he describes the methods used by brokers and mortgage banks to subvert conventional underwriting criteria.

The investigative journalism organization ProPublica (Eisinger and Bernstein, 2009) published a report describing how the hedge fund Magnetar colluded with brokers and investment banks to select some of the most toxic securities to be included in CDOs, which they then bet against using credit default swaps. Their investigation indicated that the Magnetar deals helped to keep the bubble going for an extra two years. Recently, the SEC has initiated a civil lawsuit against Goldman Sachs for a similar arrangement with the Paulson hedge fund, where Paulson selected assets for inclusion in CDOs based on their low quality. Ivry and Shenn (2010) describe a CDO-based fund, Davis Square III, that was created by Goldman Sachs and insured by AIG. Although AIG believed it had not undertaken any new CDS exposure after 2005, Goldman replaced the collateral in the fund with CDOs originating in 2006 and 2007 that were significantly worse in quality. Declines in the credit quality of the Davis Square III fund helped trigger collateral demands on AIG by Goldman and other counterparties. Ivry and Shenn suggest that the practice of collateral replacement may have been relatively common and that it constituted a “gotcha” that the writers of CDSs were unaware of.

Newspaper articles have also contained accounts of corrupt practices within the banks making loans. In a November 2, 2008, article titled, “Was There a Loan it did not Like?”, *New York Times* reporter Gretchen Morgenson describes the travails of a senior underwriter at Washington Mutual who at the height of the bubble was pressured to approve loans that she felt were obviously flawed, and in some cases blatantly fraudulent. Several times her decisions were overruled at a higher level. On at least one of those occasions, after no

payments were made on the loan for six months, the “house” was discovered to be a vacant lot. She was also written up three or four times for rejecting suspect and flawed mortgage applications. “I swear 60% of the loans I approved I was made to,” she said. According to Levin (2010) two of WaMu’s most prolific and highly praised underwriters were found by an internal audit to be flagrantly violating the company’s underwriting standards. The review found in 2005 that they “had an extremely high incidence of confirmed fraud” of 58% and 83% respectively.⁴⁰ Yet the auditor’s recommendations were not implemented and two years later WaMu’s insurers refused to insure any more loans produced by the two.

More evidence of fraud was uncovered by Fitch. After an exceptionally high rate of early defaults was observed for 2006 year loans, an audit was performed on a sample of subprime loans originated that year. The audit found evidence of fraud in the overwhelming majority of loans sampled (Fitch 2007), including 16% where identity fraud was indicated.

Black (2009) notes that creative accounting typically plays a major role in supporting control frauds and believes it played an important role in the GFC. A high-profile example is provided by Lehman, which hid the true extent of its leverage using a repurchase arrangement (Valukas 2010) that removed assets from the balance for a short period of time at the end of quarters, so that it would not appear in published financial statements. Black (2010) stated that the New York Federal reserve was aware of some of Lehman’s accounting manipulations, made adjustments to assets for their own evaluations, but did not require Lehman to adjust its published financials. Black suggested that this was by intent, that, “the Fed didn’t want Lehman and other SDIs (Systemically Dangerous Institutions) to sell their toxic assets because the sale prices would reveal the values Lehman (and all the other SDIs) placed on their assets were inflated with worthless hot air.”⁴¹

In 2004 Fannie Mae and Freddie Mac were investigated for using derivatives to smooth earnings and hide losses. Crum (2004) reports that Fannie used the “Accumulated Under Other Comprehensive Income” (AOCI) technique to hide losses from the prepayment of mortgages. Crum also reports that Fannie Mae had a history of failing to disclose the true extent of its losses from interest rate swaps. Sowell (2009) reports that members of congress intervened on behalf of Fannie Mae and Freddie Mac on numerous occasions to prevent regulation and intervention to reign in accounting irregularities and excessive risk taking (such as lowering of underwriting standards, use of derivatives and extremely high leverage). Seymour (2008) claims that the accounting problems at Fannie were 19 times those of

⁴⁰ Levin (2010), page 7.

⁴¹ Black (2010), page 12.

Enron but received relatively sparse press coverage. Because Fannie is a significant underwriter of mortgages (recently 90% of the secondary market and 50% of the total mortgage market according to Seymour) these irregularities allowed it to make a significant contribution to the housing bubble. In 2008 (see Figure 3.3) Fannie and Freddie were placed in conservatorship by the U.S. government.

In this section we have presented evidence that the mortgage banks, GSEs such as Fannie Mae, investment banks, and credit rating agencies had ample information to determine the low quality and high risk of subprime loans before the crisis became one. Evidence suggests that accounting rules were used to hide losses and high-risk investments. The failure to properly evaluate and account for the mortgage-based securities was egregious. Documentary accounts and eyewitness evidence suggest that the failure was not due just to ineptness, but to greed and fraud.

Figure 3.3 Fannie Mae Stock Price Before/After Bankruptcy⁴²



During the period in which the S&L crisis was developing, insiders who caused the crisis influenced the political process to support legislation favorable to the frauds, to prevent regulations from being enforced, and to interfere with criminal investigations. The issue of the role of legislators and the regulators will be addressed more extensively in the next section of the paper.

⁴² Graph courtesy of <http://finance.yahoo.com/>.

4. THE MADOFF PONZI FRAUD

As noted by Povel et al. (2005), the general wisdom is that financial frauds tend to occur during bubbles and be revealed when the bubble bursts. The Madoff Ponzi scheme fits this model, in that it was perpetrated during the 1990s and 2000s and collapsed in late 2008 as the financial crisis created a demand for cash by investors. A question raised by both Markopolos (2009, 2010), the Madoff whistleblower, and numerous others (Helyar et al. 2009) is “should the regulators and the managers of funds that invested in Madoff have known?” With respect to the SEC, Markopolos suggests the answer should be an emphatic “yes.” Using data from one of the Madoff feeder funds, Francis and Prevosto (2010) present a number of simple descriptive statistics and graphs that could be used to assess the reasonableness of Madoff’s claimed returns. Some of the statistical results they present are:

- Histograms of the Madoff returns compared to other assets shows a distribution unlike any of the other assets (including bonds and stocks).
- Descriptive statistics of the Madoff returns (mean, standard deviation, and skewness) deviated sharply from those of other assets.
- A tabulation of the percent of months with negative returns showed that the Madoff fund had a fraction of the negative returns compared to other assets.
- Scatterplots of the Madoff returns versus the returns of the S&P 100 showed virtually no correlation, when a positive correlation should have existed. (Madoff’s fund allegedly was invested in the S&P 100 along with some options to limit both the downside and upside returns and therefore there should have been a correlation).

The reader is encouraged to review the graphs and descriptive statistics in Francis and Prevosto (2010). In addition, a few additional statistics will be presented in this paper. In Table 4.1, which was motivated by Markopolos (2009, 2010), we note that the Madoff fund has both a higher mean return and a lower standard deviation of return than the other asset categories. A statistic known as the Sharpe ratio⁴³ is used to measure the return of an investment compared to its risk as measured by the standard deviation of the return. Markopolos (2010) noted that the apparent Sharpe ratio for the Madoff fund was well outside of the range of expectations. One of Markopolos’s “red flags” was that a Madoff fund whose returns he reviewed had an extraordinarily high Sharpe ratio. Figure 4.1 presents the distribution of excess returns from a Madoff feeder fund and four other asset categories.

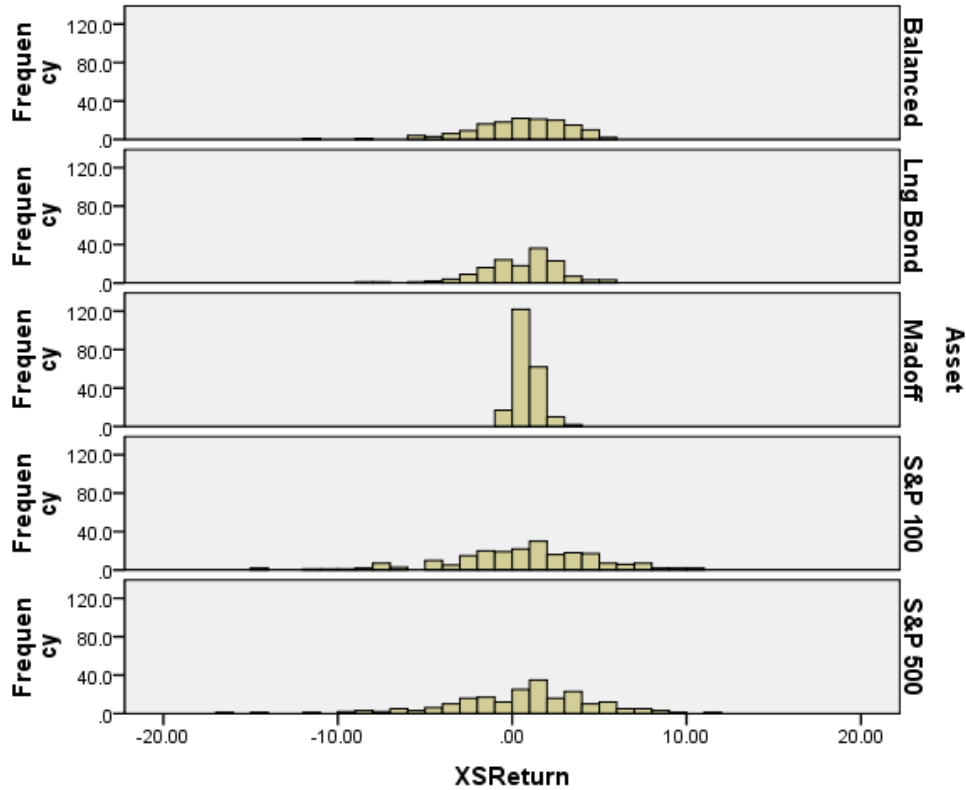
⁴³ The Sharpe ratio is a risk-adjusted return that measures the excess return, or the return excess of a risk-free rate, relative to the standard deviation of a return series (Maginn and Tuttle, 1990).

The asset categories used in the graph and tables here are the same as those used in Francis and Prevosto and are:

- The Madoff feeder fund returns are from the Fairfield Sentry Fund. This fund is referenced by Markopolos (2010) and is referenced on the book's resource Web site www.noonewouldlisten.com.
- The S&P 500. Because it contains 500 stocks instead of the 30-35 in Madoff's fund, it should have lower volatility (standard deviation) than the Madoff data.
- The S&P 100. This is the index Madoff claimed his fund tracked. Because it contains 100 stocks instead of the 30-35 in Madoff's fund, it should have lower volatility (standard deviation) than the Madoff data.
- A Balanced Fund that contains a mixture of equities and income producing investments. One would expect to have lower volatility than an equity index (S&P 100).
- A long-term bond fund. One would expect low volatility for this fund.

Figure 4.1

Distribution of Excess Return by Asset Type⁴⁴



The histograms in Figure 4.1 depict the excess returns for the various asset return series. The excess return is defined as the one-month return for the asset minus the one-month return on a three-month Treasury Bill. The distribution of the Madoff returns stands out as being very different from those of the other series. For each of the series above, the mean excess returns and return standard deviation were computed and were used to compute a Sharpe ratio. These are presented in Table 4.1. Table 4.1 shows that the Madoff fund has a Sharpe ratio that is an order of magnitude or nearly so (in the case of the long bond fund) greater than that of the other investments. Markopolos (2010) claimed that this should have been an indication that the Madoff returns were “too good to be true.”

⁴⁴ The data underlying the calculations in this graph were obtained from <http://finance.yahoo.com/>.

Table 4.1 Sharpe Ratio

Asset Category	Mean	Std. Deviation	XS Return	Sharpe Ratio
(1)	(2)	(3)	(4)	(5)=(4)/(3)
Balanced	0.46%	2.84%	0.0049	0.05
Lng Bond	0.60%	2.40%	0.0054	0.12
Madoff	0.84%	0.70%	0.0084	0.75
S&P 500	0.55%	4.15%	0.0061	0.06
SandP100	0.57%	4.27%	0.0060	0.06

Note: Asset return series were downloaded from <http://finance.yahoo.com/>.

A number of other “red flags” were also noted by Markopolos and others (New York Attorney General Complaint, 2009) include:

- A very large hedge fund was using a small unknown accounting firm.
- All assets allegedly were sold by December 31 of each year and invested in treasuries.
- Madoff’s description of his strategy changed very little over time, while other investment managers needed to update strategies periodically.
- There was no evidence of the trades that Madoff purportedly made. For instance, it was a huge fund and sale of all assets at the end of the year would be noticed. Markopolos (2010) states that a Bloomberg terminal could have been used to quickly and easily to verify that trades claimed by Madoff were in fact made.
- After option costs, Madoff’s strategy could not have beaten T-Bill returns (Markopolos 2010; Forray 2009).

One of the things a Ponzi set-up needs to continue to exist is a high growth rate. Table 4.2 presents a scenario where the amount invested in a Ponzi fund more than doubles every year for 16 years, although the growth rate declines starting at year 13 and all growth stops in year 18. Even with a relatively high takeout rate for fees (to feeder fund managers) and cash redemptions (30% in this scenario) the assets of the fund can continue for years. The Ponzi scenario is compared to the alleged cumulative return of the Madoff fund in Figure 4.2. Note that the Ponzi scenario and the Madoff fund track each other quite closely for 16 years,⁴⁵ but once the growth rate drops below the fee/redemption rate, the two diverge sharply. When the Madoff returns are compared to those of a real asset, in this case the S&P

⁴⁵ The growth and redemption rates were intentionally selected to produce results that would be similar to the feeder fund.

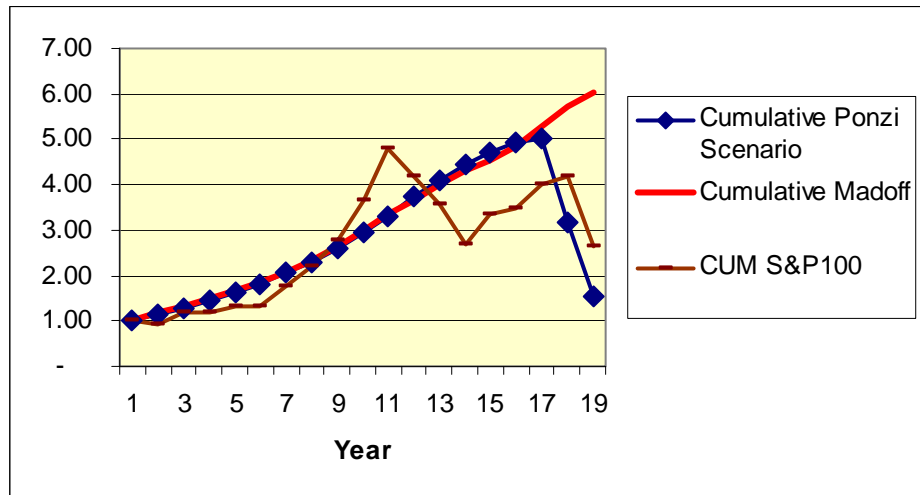
100, the Madoff fund displays a smooth, sharply rising increase (see Figure 4.2). This is another of the “red flags” Markopolos mentions.

Table 4.2 Ponzi Scenario Math

Period	Cumulative Amount in Fund	Gross Growth Rate	Fee & Redemption Rate	Net Growth Rate	Cumulative Ponzi Scenario
1	1,000.00	2.300	30%	1.61	1.00
2	1,127.00	2.300	30%	1.61	1.13
3	1,270.13	2.300	30%	1.61	1.27
4	1,431.44	2.300	30%	1.61	1.43
5	1,613.23	2.300	30%	1.61	1.61
6	1,818.11	2.300	30%	1.61	1.82
7	2,049.01	2.300	30%	1.61	2.05
8	2,309.23	2.300	30%	1.61	2.31
9	2,602.50	2.300	30%	1.61	2.60
10	2,933.02	2.300	30%	1.61	2.93
11	3,305.52	2.300	30%	1.61	3.31
12	3,725.32	2.25	30%	1.58	3.73
13	4,114.46	2.21	30%	1.55	4.11
14	4,453.37	2.16	30%	1.52	4.45
15	4,723.80	2.12	30%	1.49	4.72
16	4,910.43	2.08	30%	1.46	4.91
17	5,002.35	1.300	30%	0.91	5.00
18	3,186.49	1.000	30%	0.70	3.19
19	1,561.38	1.000	30%	0.70	1.56

Figure 4.2

Ponzi Scenario, Madoff Fund and Stock Index Cumulative Returns



A question posed at the beginning of this section is “should the SEC and hedge fund managers have known that the Madoff hedge fund was a fraud?” Markopolos (2010, 2009) and the New York Attorney General (2009) are among those who say “yes.” Some of the evidence has been briefly summarized above suggests that it would have been relatively easy to determine that the returns that Madoff claimed could not be real. If this is the case, then why did so many investment professionals and regulators fail to perform due diligence? In a Bloomberg special report, Helyar et al. (2008) suggest that many hedge fund managers did believe that the Madoff returns and or strategy were phony. Helyar et. al. found that at least some fund managers believed that Madoff was engaging in a type of fraud known as “front running.” That is, as Madoff had a widely used electronic trading operation, these managers believed that when an order came in Madoff “front ran” the order, or manipulated the bid ask spread to skim off extra profits for his hedge fund. Markopolos also describes a trip to Europe to discuss investments in a fund he managed. On the trip he learned that many of the wealthy European investors who had invested with Madoff believed that he was front running and were reluctant to invest funds with another manager, unless they could match the Madoff returns.⁴⁶ Arvedlund (2009) reports that during one of the rare investigations by the SEC, Madoff coached the management of the Fairfield Fund on strategies for responding to SEC questions.⁴⁷ They were instructed to say that Madoff was only executing strategies at their direction (even though Fairfield knew that they were just turning the funds

⁴⁶ When grilled by the management of his own company as to why he could not invent a product to match Madoff’s returns, Markopolos repeatedly insisted that it was impossible, as Madoff’s returns were not real (Markopolos, 2010).

⁴⁷ Arvedlund, page 214.

over to Madoff and had virtually no participation in the strategy). Madoff also warned that the SEC would likely be concerned that he was front running. The Fairfield management collaboration with Madoff on the SEC investigation was successful. Markopolos (2010) also reported learning that many professionals at investment banks and brokerages suspected the Madoff returns were fraudulent. For instance, AIG investigated making an investment in the Fairfield fund and declined after concluding that he was front running. Markopolos states, “The question I have struggled with...is why did so many people allow this fraud to continue for so long? The industry knew, there’s no question about that.”⁴⁸ Markopolos indicates that front running is a widely occurring abuse that is openly tolerated. “It has been my experience that front-running is common in the broker-dealer business. It’s a form of insider trading that the SEC tolerates because they know they can’t stop it. They would successfully catch two or three cases a year...Meanwhile they let thousands of cases to continue unmolested.”⁴⁹

Markopolos (2010, 2009) also describes his frustration resulting from his many encounters with the SEC that yield no meaningful results. Table 4.3, which is abstracted from his 2009 testimony,⁵⁰ presents a timeline of Markopolos’s efforts to persuade the SEC to act on the Markopolos fraud. Markopolos was able to determine in five minutes that the Madoff returns were phony. It took another four hours to prove it. Over the next eight years he approached the SEC five times. The SEC ultimately initiated an investigation (hence Madoff’s coaching of Fairfield management) but it was cursory and resulted only in citations for paperwork that was not properly filed. According to Markopolos (and others) the SEC is largely staffed with inexperienced people who hope to spend a few years at the agency and then work for the companies they are regulating. Most of the people are lawyers, and therefore there is a lack of expertise in relevant professions (accounting, statistics, finance, investments) needed to conduct a rigorous investigation in today’s environment. Markopolos, along with Patrick Byrne, (founder of the Web site [deepcapture.com](http://www.deepcapture.com)⁵¹) and others, believes that the SEC has been captured by the industry it regulates, and that it protects the predators. Markopolos even describes how the SEC created a whistleblower program, not to assist potential fraud whistleblowers but to allow companies to complain about “overzealous” enforcement.

⁴⁸ Markopolos 2010, page 176.

⁴⁹ Markopolos 2010, page 52.

⁵⁰ Markopolos 2009, pp. 27-29.

⁵¹ See www.deepcapture.com for more details on allegations of fraud not covered in this paper.

Table 4.3. Timeline from Markopolos Testimony

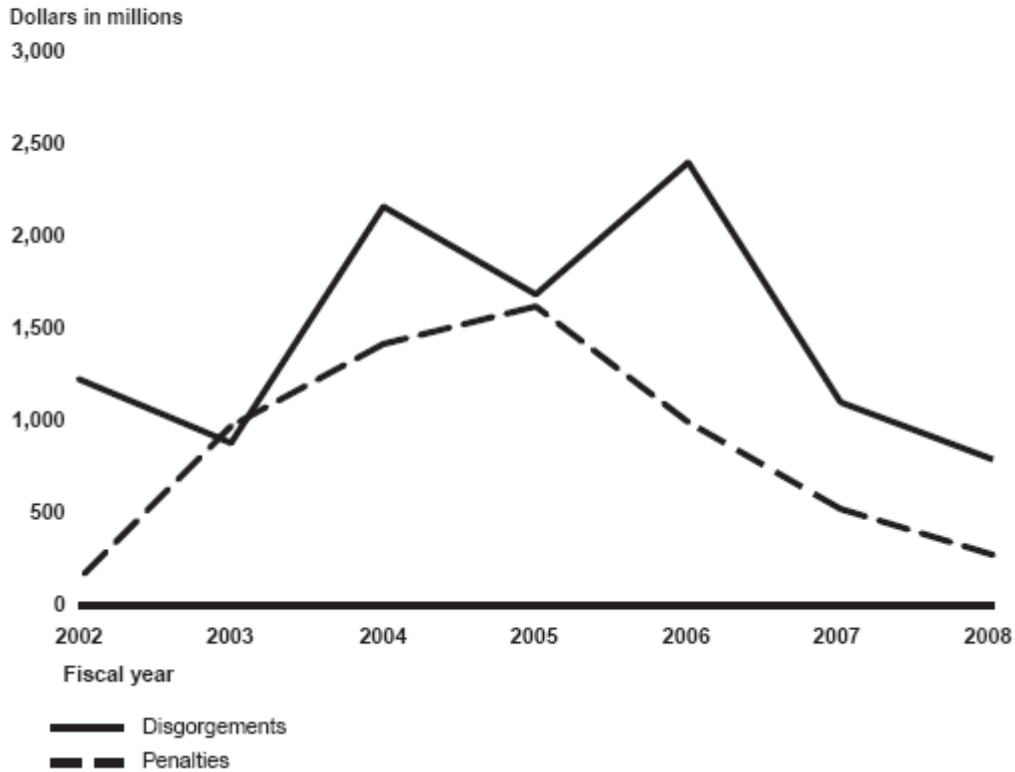
Date	Activity
Late 1999	Frank Casey “discovers” Bernie Madoff (BM). Rampart tasks me to reverse engineer BM’s strategy.
Early 2000	4 hours of research proves mathematically that BM is a fraudster.
May 2000	8-page submission to SEC Boston Regional Office’s Director of Enforcement.
Jan 2001	Michael Ocrant starts researching the BM story for <i>MarHedge</i> .
May 2001	Michael Ocrant publishes “Madoff Tops Charts; Skeptics Ask How.”
Sep 2001	SEC’s Ed Manion calls to ask me to re-submit the Madoff case.
Oct 2001	2nd SEC Submission consists of original 8-page May 2000 submission+ 3 additional pages + 2-page Investment Process Explained.
2002	Investigation continues: e-mail records lost.
June 2002	Key marketing trip to London, Paris, Geneva, and Zurich where I discover that Europeans are likely BM’s largest investors.
2003	Investigation continues: e-mail records lost
2004	Investigation continues: e-mail records lost.
June 2005	Frank Casey discovers that BM is attempting to borrow money at European Banks—the first indication that the scheme is running short of \$.
Oct 2005	SEC’s Ed Manion arranges for third case submission. I meet with Boston SEC Branch Chief Mike Garrity. SEC’s Mike Garrity investigates.
Nov 2005	SEC’s Mike Garrity puts me in contact with New York SEC. Third SEC Submission to SEC.
Dec 2005	I start to doubt NY SEC and contact <i>WSJ</i> Washington bureau.
Jan 2006	Integral Partners’ \$40 million derivatives Ponzi scheme goes to trial 5 years and 5 months after its discovery, causing us to further doubt SEC competence.
Sep 2006	Chicago Board Options Exchange Marketing VP tells me that several OEX option traders also believe that BM is a fraudster.
2007	Neil Chelo obtains Feb 28, 2007, portfolio of BM trading positions; portfolio shows no ability to earn a positive return.
June 2007	Frank Casey obtains Wickford Fund LP prospectus showing that BM is now so short of cash that he is offering a 3:1 leverage swap to obtain new funds.
June 2007	This prospectus is e-mailed to NY SEC..
July 2007	Neil Chelo obtains Greenwich Sentry LP Financial Statements for 2004-06; Auditors are different for each of the three years, which is very odd.
Aug 2007	Neil Chelo has opportunity to interview Fairfield Sentry’s head of risk management, who displays a startling lack of acumen.
Aug 2007	Hedge funds all have losses this month except for BM—he’s amazing!
2008	Global markets dive; entire investigating team loses interest and is busy with more pressing matters.
April 2008	Jonathan Sokobin, SEC’s Director of Risk Assessment, calls me per the recommendation of a mutual friend.
April 2008	I send Sokobin my last SEC submission and quit the investigation.
Fall 2008	Stock markets crumble; panicked investors rush to redeem.
Dec 2008	Madoff “confesses” and turns himself in after running out of cash to meet investor redemptions.

A GAO report concluded that a culture existed within the SEC that deterred the initiating of cases and demand for penalties when investigations confirmed fraud. The GAO reports that between 2002 and 2008, the number of investigative attorneys was reduced by 11.5%. Burdensome approvals were needed to pursue investigations. SEC attorneys could not enter negotiations for penalties without prior approval for the amounts. Figure 4.3 (from the 2009 GAO report) displays the trend of disgorgement and penalties. The graph shows a dramatic decline in amounts after 2005. This along with Markopolos's first-hand experience suggests a policy of tolerating fraud. Tibman (2009) reports that hostility to regulation was an SEC core conviction, and "as currently constituted the SEC is incapable of competent oversight."⁵² Further support that regulatory agencies ignored fraud for a long period of time, under both Democratic and Republican administrations is provided by Brooksley Born, a head of the CFTC under Clinton (Zacchino et al. 2009). Born warned about the dangers of derivatives, and tried to regulate them in the late 1990s. In a conversation with Alan Greenspan, she was told that he was opposed to regulating fraud. She also clashed with Lawrence Summers and was eventually pressured to resign because of her pro-regulatory stance. Her story suggests that regulator forbearance towards fraud existed for at least a decade before the financial crisis.

⁵² Tibman 2009, page 75.

Figure 4.3 From 2009 GAO Report on SEC titled, “Greater Attention Needed to Enhance Communication and Utilization of Resources in the Division of Enforcement”

Figure 1: Dollar Totals of Penalties and Disgorgements, Fiscal Years 2002 through 2008



Source: SEC

5. THE MATHEMATICS OF FRAUD

There is very little literature evaluating the costs versus benefits of financial fraud. Akerloff and Romer (2005) developed a theory of “looting” that shows that under some regulatory environments managers of financial institutions maximize their personal profits by “looting” the institution they manage. Unlike standard economic theory, the development of the model assumes that irrational markets can and do exist and that they can persist for long periods. The development also assumes that the government may wittingly or unwittingly support the perpetration of irrational behavior.

To motivate the theory, they develop a simple three-period model. It is a model of the value of a bank as loans are made and obligations that fund the banks investments, such as savings deposits and CDs are undertaken. At time zero a firm had liabilities L_0 , Assets A , and accounting net worth W , which in the simple model is supplied by the owner-managers. At times one and two they pay themselves dividends d_1 and d_2 (which denote all forms of

extracted wealth, whether legitimate or due to fraud). The bank also receives income $\rho_1(A)$ and $\rho_2(A)$ from its asset (i.e., loans). The looting model assumes the government will lend unlimited amounts to the company. In words the model is:

$$\text{Value at time } 0 = \text{Discounted period 2 net value} + \text{period 1 dividends}$$

$$\text{Final (Period 2) value} = \text{Period 2 Assets} - \text{Period 2 Liabilities}$$

$$\text{Period 2 value} = \text{period 2 income from assets} - (\text{period 0 Liabilities} - \text{period 1 income} + \text{period 1 dividends}) \text{ accumulated for interest} + \text{period 1 dividends}$$

$$\max(V_0) = \max \frac{(\rho_2(A) - (1+r_1)(1+r_2)[L - \rho_1(A) - d_1]}{1+r_2} + d_1$$

$$\text{subject to } 0 < cA_0 < W_0,$$

$$\rho_1(A_1) = \text{cash payments}, d = \text{dividends}$$

The government requires the company to maintain capital equal to cA . The formula can be reduced to show that a key decision variable for management is the assets purchased by the bank :

$$\max(V_0) = \frac{\rho_2(A)}{1+r_2} + \rho_1(A) - (1+r_1)L_0$$

$$\text{subject to } 0 < cA < W_1$$

$$d_1 < M(A)$$

$$d_2 < \max\{0, \rho_2(A) - (1+r_1)[(1+r_1)L_0 - \rho_1(A) + d_1]\}$$

Assume the managers are the equity owners (in the case of the S&Ls ownership was often concentrated). Assume the government imposes a maximum $M(A)$ on the dividends the company management can pay.

The owners maximize their “equity,” which can be different from the true economic value:

$$\max(E) = \frac{d_2}{1+r_2} + d_1, E = \text{owner's equity}$$

The government allows management to pay itself $M(A)$, an amount that may be greater than or less than V . According to Akerloff and Romer if $M(A)$ exceeds market value V , the management is incited to invest in negative return assets in period 1, and default in period 2. If necessary, it will borrow in period 1 to fund management dividends.

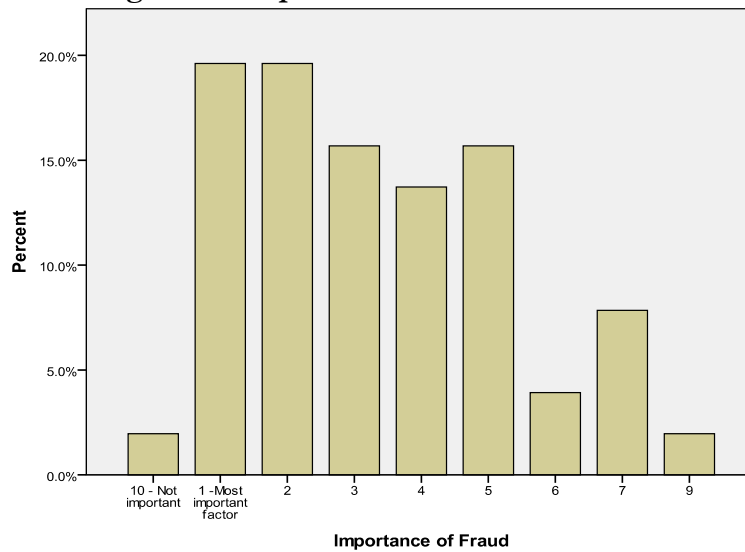
This differentiates looting from moral hazard, where managers expose their company to excessive risk, but anticipate a positive payoff. Akerlof and Romer offer several examples of looting. One of them is the Texas ADC loans where Akerloff and Romer maintain that no reasonable management would expect a positive return. Black (2010) believes the subprime crisis is also an example of looting, as the underwriters of mortgages with names such as liar loans and NINJA loans likely expected the loans to be unprofitable. Believing that through securitization the risk was laid off on others, the lack of profitability did not matter, but the substantial fees and compensation did.

6. THE FINANCIAL FRAUD SURVEY

In this section the results of an Internet survey on financial fraud are presented. The survey respondents are colleagues and friends of the author, who were contacted by e-mail. The sampling method used is not random, thus survey results may be biased. Due to the way respondents were solicited, approximately 50% of the respondents worked in the financial services industry. Nonetheless, some interesting results were obtained that may provide insight into how U.S. residents feel about financial fraud and what they think should be done to address it. The survey had six questions. Fifty-one people responded to the survey. The questions are shown in Appendix 1.

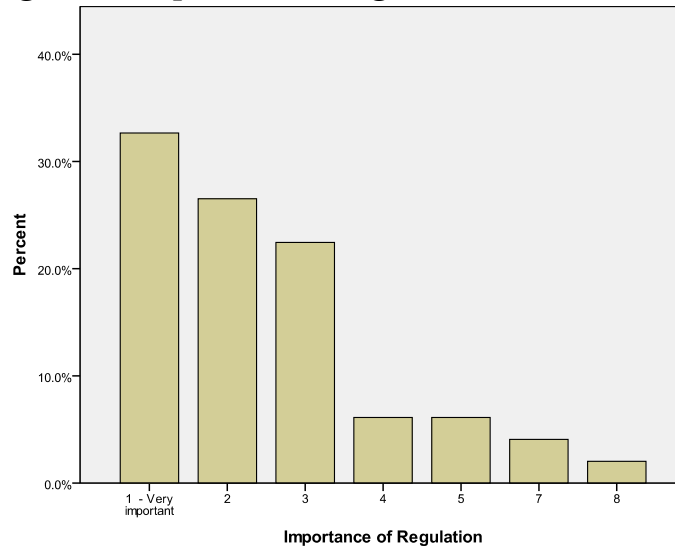
Question 1 ranks the importance of fraud on a scale from 1 to 10 with 1 being highest. The average score was 3.5, suggesting a concern about the role of fraud, but a belief that other factors are more important.

Figure 6.1 Importance of Fraud in Financial Crisis



Question 2 asked respondents how important they thought regulators were in the financial crisis. The respondents tended to rank the regulators very high and as more important than fraud. Over 30% of respondents ranked regulators as #1 in importance versus under 20% for fraud and over 50% ranked regulators #1 or #2. One respondent commented, “They [regulators] were important because they did not do their job and did not understand the markets well enough to see what was happening with the derivatives, hedge funds, etc. They were also important because of how Freddie/Fannie situation was used (abused?).” A number of other people mentioned poor regulation of Fannie and Freddie. Several respondents also mentioned that they thought credit rating agencies performed badly; one respondent mentioned that the credit rating agencies were an even more important cause than regulators.

Figure 6.2 Importance of Regulators in Financial Crisis



Question 3 asked respondents if they were a victim of financial fraud in the last five years. Approximately 23% said yes, with about 6% having been the victim of securities fraud. Though the survey sample was not random, this result indicates a significant minority of people have first-hand experience with financial fraud.

Table 6.1 Were you a victim of financial fraud?

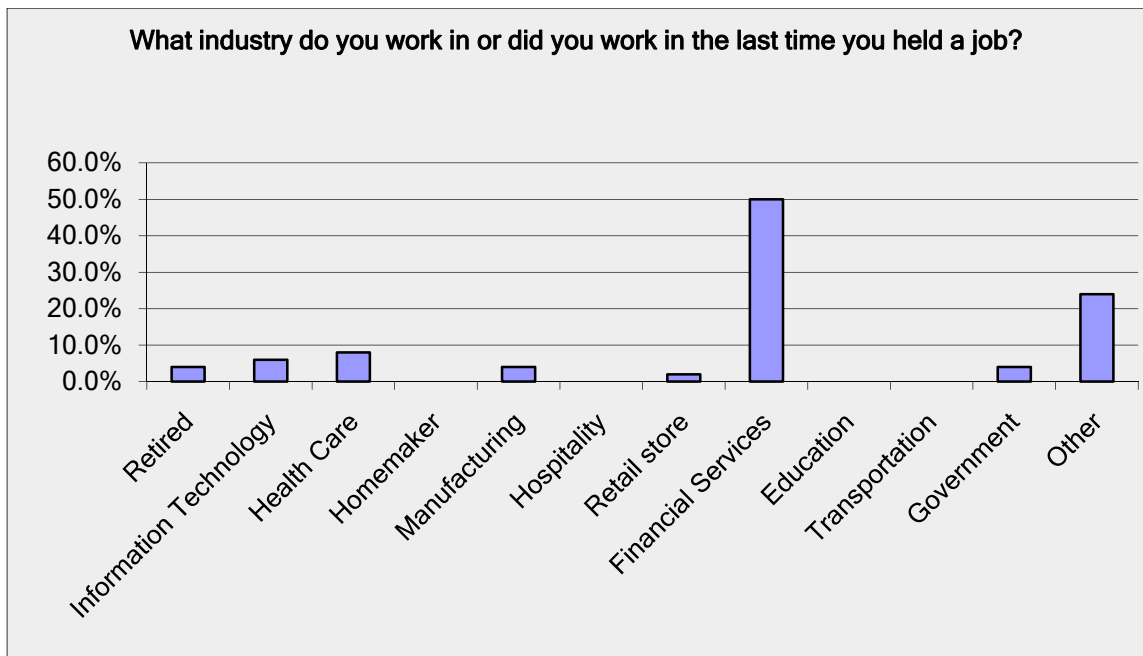
Were you or someone in your family, or a friend the victim of financial fraud in the last 5 years (i.e., in the period leading up to the crisis and its aftermath)?		
Answer Options	Response Percent	Response Count
yes - mortgage fraud	0.0%	0
yes - securities or stock fraud	5.9%	3
yes - other financial fraud	17.6%	9
not sure	13.7%	7
No	64.7%	33
Additional comment		6
<i>answered question</i>		51
<i>skipped question</i>		0

Question 4 asked if the respondent knew anyone who had committed financial fraud. Approximately 10% of respondents know someone who committed fraud in the past five years. One of the respondents who answered yes commented that “financial law enforcement is almost non-existent.”

Table 6.2 Do you know someone who committed financial fraud?

Within the past 7 years, do you personally know an individual who committed financial fraud, whether or not they were charged with a crime?		
Answer Options	Response Percent	Response Count
Yes	9.8%	5
No	80.4%	41
not sure	11.8%	6
Additional Comment		3
<i>answered question</i>		51
<i>skipped question</i>		0

Figure 6.5 What industry do you work in?



Finally, respondents were asked what solutions they recommend to prevent financial fraud and corruption. Approximately two-thirds of respondents provided a write-in answer to this question. A number of people elaborated on various ways to more effectively and efficiently regulate financial institutions. These included eliminating the revolving door between regulators and the regulated and instituting oversight independent of the Fed and financial institutions. A respondent opined, “Our regulators are almost all political appointees (mostly lawyers), are generally clueless, and easily corrupted—anything else is an improvement.” Several people wanted to restore prior laws from the 1990s that imposed

greater restrictions on financial institutions; presumably this included the Glass–Steagall Act that prohibited investment banks from owning banks. One person mentioned the older laws “prohibited gambling on mortgage-backed securities.” Some respondents, however, were specifically concerned that more regulation would be counterproductive and that previous regulatory additions intended to deter fraud, especially Sarbanes Oxley, created a lot of extra effort without impacting the commission of fraud. In addition to regulators, lawmakers and the Federal Reserve were also fingered for contributing to the crisis.

7. RESULTS AND DISCUSSION

Sections 4 and 5 of this paper showed that abundant data was available to determine that:

- there was a housing bubble
- mortgages were deteriorating
- mortgage fraud was occurring and was rapidly increasing
- pools of subprime mortgages were granted high-quality ratings that they did not deserve
- Madoff was committing fraud

Rating agencies, the banks, and the SEC ignored this data. An S&P e-mail indicates that employees were specifically instructed not to request data. Section 5 supplies evidence that many fund managers suspected that Madoff was committing fraud, but they believed that the fraud would benefit them. Numerous authors, journalists, and investigators supplied evidence that many people realized that subprime mortgages and the related pools of mortgages (collateralized debt obligations) were unprofitable and that a significant increase in mortgage fraud was occurring.

Akerloff and Romer’s theory of looting helps explain why the dominant economic paradigm with respect to financial fraud that deems regulation unnecessary, has repeatedly been refuted by the empirical data. Looting, as opposed to managing a business prudently, can be profitable. Looting may be legal (though it probably should not be). The author believes it can be viewed as a form of corruption. Akerloff and Romer show that profit-maximizing managers may pursue unprofitable business, even when it bankrupts their company and harms their customers and other stakeholders. Looting is profitable because the managers extract a large reward for themselves before the insolvency is recognized. The risk of looting rises under weak regulatory regimes where the risk of prosecution is low.

When looting occurs on a large scale, through Gresham's law, it comes to dominate an industry and a systemic risk develops. Looting occurred during the S&L crisis. The S&L looting involved cooperation between bank managers, their service providers such as auditors, and the government. Members of congress were actively involved in passing legislation that prolonged the fraud and interfered in law enforcement investigations of the perpetrators of fraud. The evidence in this paper also suggests that looting, i.e., devising and selling inherently unprofitable products, was a key cause of the GFC. Thus, a crucial component of the success of frauds in S&Ls was corruption of the legislative and regulatory process.

Interference with legislation helped to create the conditions for the GFC. In 1990s, the legislative process was used to eliminate last barriers (i.e., Glass Steagall eliminated with the passage of Gramm-Leach-Bliley) to reckless behavior by financial services companies. Changes to the Commodities Futures laws allowed derivatives such as the CDOs and CDSs that caused the crisis, to trade in the over-the-counter market exempt from federal regulation. Legislation also prohibited states from regulating these risky derivative products. Also federal government interference with enforcement of state's predatory lending laws removed barriers to development of debt products designed not to be paid off.

Some of the regulatory functions were outsourced to credit rating agencies, who failed to provide proper surveillance of mortgage quality. In addition regulatory agencies such as the SEC appeared to be reluctant to investigate cases of fraud, especially when high-profile members of the Wall Street elite were involved. The FBI, even though it recognized a mortgage fraud "epidemic" as early as 2004, was not given resources to pursue those committing the fraud.

8. CONCLUSIONS

In 1934 the results of the Percora investigation, a senate led investigation into the causes of the 1929 stock market crash were published. The investigation was high profile and received intense coverage by the press. The investigation found the fraud played a major role in the crash (Geisst 2005). One response was the Glass-Steagall Act, which separated banking, investing, and insurance. It was intended to remove the conflicts of interests that arise when the three functions exist within the same company. It was also intended to temper the political influence of some of the large financial conglomerates. Another response was the formation of the Securities and Exchange Commission, which was invested with authority to regulate and prevent fraud. Levin (2010) pointed out that some of

the corporations investigated by Pecora's commission were also participants in the GFC. Unfortunately, by 2000 Glass-Steagall was eliminated and the evidence suggests that the SEC was no longer providing meaningful regulation.

Systemic risk is a risk that affects a financial system, such as the savings and loan industry, that has the potential to affect a nation's economy (in the case of the S&L crisis) or the global economy in the case of the GFC. This paper presented evidence that fraud played a significant role in both crises. William Black is one of only a very few academics calling for routine monitoring for fraud and suggests that the SEC needs a chief criminologist. He points out the SEC is a law enforcement agency, but it is predominantly staffed with lawyers and economists with little expertise in fraud. He believes that the task of detecting fraud is relatively simple, as "red flag" indicators of fraud are well-known and the information required is relatively easy to gather and review. Black claims (2009) that the subprime-related frauds were cruder than the S&L frauds and therefore easier to prevent.

In August 2009 and May 2010, ERM-II (Enterprise Risk Management Institute International) held workshops on systemic risk. Participants discussed causes of the GFC, its impact on insurance companies, whether insurance companies can be vectors for systemic risk, and what changes to systemic risk regulation should be made. In general participants felt that insurance companies were unlikely to cause a systemic crisis, though a vocal minority argued that complacency is unjustified, as an insurance company, AIG, played a key role in the current crisis. They felt that the fact that it was a banking subsidiary, not the insurance operation that was responsible, does not negate its contribution. Vaughn⁵³ suggested that insurance regulators will close the loophole that allowed an AIG subsidiary to take on excessive risk and post inadequate reserves without disclosing the exposure to insurance regulators. As noted in Section 3, there is evidence that fraud played a role in the AIG debacle.

Vaughn also suggested that the insurance industry deserves a place in the discussion about systemic risk regulation, as the industry has been significantly affected by the GFC. As noted by Klein et al. (2009), life insurance companies were more affected than property and casualty companies through their variable annuity products and through investment portfolios more exposed to toxic mortgage products. While the workshop participants focused more on managing the financial industry's exposure to excessive risk-taking through regulation, a regulator with the Federal Housing Finance Board⁵⁴ emphasized the role of

⁵³ Terry Vaughn, president of the NAIC, in a presentation at the May 2010 ERM-II workshop.

⁵⁴ Dr Stephen Hiemstra, May 2010 ERM-II workshop.

fraud.

The author believes that actuaries are risk management experts who deserve a role in discussion about the causes and remedies to the financial crisis. The evidence presented in this paper suggests that fraud regulation needs to be a key component of Systemic Risk Regulation. The SEC needs a “chief criminologist,” i.e., someone experienced in fraud detection and prosecution. More FBI resources are needed to investigate and prosecute financial fraud. When the subprime bubble burst, the FBI had only a fraction of the resources it possessed during S&L crisis. Regulators must search for and prosecute fraud. Increasing the emphasis on enforcement and on detecting fraud before it creates a system-wide crisis can be accomplished without any new legislation, though legislative changes in the late 1990s and early 2000s appears to have removed some barriers to fraud. The evidence presented in this paper suggests that if fraud is not addressed, future crises will occur.

Acknowledgment

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9. REFERENCES

1. Ahrens, Frank, “Enron Had Complained About Fired Broker; UBS Employee Issued Warning on Stock,” *The Washington Post*, Mar 27, 2002; A.08.
2. Akerlof, George, and Paul Romer, “Looting: The Economic Underworld of Bankruptcy for Profit,” *Brookings Papers on Economic Activity*, Vol. 1993, No. 2 (1993), pp. 1-73, <http://www.jstor.org/stable/2534564?origin=JSTOR-pdf>.
3. Altman, Edward, and Vellore Kishore, “Almost Everything You Wanted to Know About Recoveries on Defaulted Bonds,” *Financial Analysts Journal* 52, No. 6, Nov/Dec. 1996, pp. 57-64.
4. Arvedlund, Erin, *Too Good to be True: The Rise and Fall of Bernie Madoff* (New York: Penguin, 2009).
5. Barnett-Hart, Katherine, “The Story of the CDO Market Meltdown: An Empirical Analysis,” Honors Thesis, Harvard College, 2009.
6. Barth, J., et al. “A Short History of the Subprime Mortgage Market Meltdown,” Milken Institute, 2008.
7. Barth, James, *The Great Savings and Loan Debacle*, (Washington, DC: AEI Press, 1991).
8. Bitner, Richard, *Greed, Fraud and Ignorance A Subprime Insider's Look at the Mortgage Collapse*, (Colleyville, TX: LTV Media LLC, 2008).
9. Black William, “Epidemics of Control Frauds Lead to Recurrent, Intensifying Bubbles and Crisis,” (April 15, 2010). Available at SSRN: <http://ssrn.com/abstract=1590447>.
10. Black, William, “Public Policy Issues Raised by the Lehman Bankruptcy Examiner,”

- Statement to U.S. House of Representatives Committee on Financial Services, April 20, 2010.
11. Black, William, "Why Greenspan's and Bush's Regulatory Failures Allowed a 'Criminogenic Environment,'" paper presented at the 18th Annual Minsky Conference of The Levy Economics Institute of Bard College, April 2009.
 12. Black, William, "Why Regulators Must Fight 'Control Fraud' Like Public Health Specialists," (January 14, 2010). Available at SSRN: <http://ssrn.com/abstract=1536527>.
 13. Black, William, Interview by Bill Moyers, *PBS Bill Moyers Journal*, April 23, 2010, <http://www.pbs.org/moyers/journal/04232010/watch.html>.
 14. Black, William, *The Best Way to Rob a Bank is to Own One*, (Austin, TX: University of Texas Press, 2005).
 15. Brumbaugh, Dan, and Catherine Galley, "The Savings and Loan Crisis: Unresolved Policy Issues," Chapter in *The Savings and Loan Crisis: Lessons from a Regulatory Failure, The Milken Institute Series on Financial Innovation and Economic Growth*, 2004, Volume 5, Part 2, 83-102, DOI: 10.1007/1-4020-7898-6_5.
 16. Calavita, Kitty, Henry Pontell, and Robert Tillman, *Big Money Crime: Fraud and Politics in the Savings and Loan Crisis*, (Berkeley, CA: University of California Press, 1997).
 17. Dastrup, S., and R. Carson, "The Housing Price Bubble: Data Mining to Explain Variations in the Fall Across Metropolitan Areas," paper presented at Salford Data Mining Conference, August 24, 2009.
 18. Demyanyk, Yuliya and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," SSRN paper (December 5, 2008). Available at SSRN: <http://ssrn.com/abstract=1020396>.
 19. Demyanyk, Yuliya, "Quick Exits of Subprime Mortgages," *Federal Reserve Bank of St Louis Review*, March/April 2009, pp. 79-93. Available at <http://research.stlouisfed.org/publications/review/09/03/Demyanyk.pdf>.
 20. Eisinger, Jesse, and Jake Bernstein, "The Magnetar Trade: How One Hedge Fund Helped Keep the Bubble Going," ProPublica, April 9, 2010. Available at <http://www.propublica.org/article/the-magnetar-trade-how-one-hedge-fund-helped-keep-the-housing-bubble-going>.
 21. Forray, Susan J., "The Rat without a Tail," *Contingencies*, Sept./Oct. 2009, pp 32-38. Available at <http://publications.milliman.com/publications/pc-published/pdfs/the-rat-without-tail.pdf>.
 22. Fox, Loren, *Enron: The Rise and Fall*, (Hoboken, NJ: John Wiley and Sons, 2003).
 23. Frieden, Terry, "FBI Warns of Mortgage Fraud Epidemic," CNN, Sept. 14, 2004.
 24. Galbraith, James K., "Who Are These Economists, Anyway," *Thought & Action*, Fall 2009.
 25. Geisst, Charles, *Undue Influence: How the Wall Street Elite Put the Financial System at Risk*, (Hoboken, NJ: John Wiley & Sons, 2005).
 26. General Accounting Office, "Securities and Exchange Commission: Greater Attention is Needed to Enhance Communication And Utilization of Resources in the Division of Enforcement," Report to Congressional Requesters, March 2009.
 27. Gorton, Gary B., "The Subprime Panic," Yale ICF Working Paper No. 08-25, (September 30, 2008). Available at SSRN: <http://ssrn.com/abstract=1276047>.
 28. Harrington, Scott, "The Financial Crisis, Systemic Risk, and The Future of Insurance Regulation," Essay in "Issue Analysis," National Association of Mutual Insurance Companies, September 2009, http://www.naic.org/documents/topics_white_paper_namic.pdf.

29. Helyar, J., K. Burton, and V. Silver, “Madoff Enablers Winked at Suspected Front-Running,” Bloomberg, Jan 27, 2009, <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=au4Y7Cudw2Xo>.
30. “The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance,” Fitch Ratings, November 28, 2007, www.fitchratings.com. Available at http://www.mortgagebankers.org/files/News/InternalResource/58467_TheImpactofPoorUnderwritingPracticesandFraudinSubprimeRMBSPerformance.pdf.
31. Ingram, David, “The Law of Risk and Light,” *Risk Management*, March 2010. Available at <http://www.soa.org/library/newsletters/risk-management-newsletter/2010/march/jrm-2010-iss18-ingram.pdf>.
32. Ingram, David, “Your Mother Should Know,” Essay in *Risk Management: The Current Financial Crisis, Lessons Learned and Future Implications*, December 2008, <http://www.soa.org/library/essays/rm-essay-2008.pdf>.
33. Ivry, Bob And Jody Shenn, “How Lou Lucido Helped AIG Lose \$35 Billion With CDOs Made By Goldman Sachs,” Bloomberg, Mar 31, 2010. Available At <http://www.Bloomberg.com/news/2010-03-31/How-Lou-Lucido-Helped-Aig-Lose-35-Billion-With-Cdos-Made-By-Goldman-Sachs.Html>.
34. SOA/CIA/CAS Joint Risk Management Section, “Risk Management: The Current Financial Crisis, Lessons Learned and Future Implications,” December 2008. Available at <http://www.soa.org/library/essays/rm-essay-2008-toc.aspx>.
35. Klein, R, G. Ma, E. Ulm, X. Wei, G. Zanjani, “The Financial Crisis, Lessons Learned for Insurers,” sponsored by Joint Risk Management Section, 2009, <http://www.soa.org/research/research-projects/finance-investment/research-fin-crisis.aspx>.
36. Levin, Carl, “Statement to Senate Permanent Committee on Investigations Hearing on Wall Street and the Financial Crisis: The Role of High Risk Home Loans,” April 13, 2010.
37. Lewis, Michael, *The Big Short: Inside the Doomsday Machine*, (New York: W. W. Norton Co., 2010).
38. Maginn, John and Donald Tuttle, *Managing Investment Portfolios: A Dynamic Process*, Second Edition, (New York, Boston: Warren, Gorham and Lamont. 1990).
39. Markopolos, Harry, “Testimony of Harry Markopolos, CFA, CFE, Before the U.S. House of Representatives Committee on Financial Services,” Wednesday, February 4, 2009, 9:30 AM, <http://financialservices.house.gov/markopolos020409.pdf>.
40. Markopolos, Harry, *No One Would Listen: A True Financial Thriller*, (Hoboken, NJ: John Wiley and Sons, 2010).
41. Muolo, P. and M. Padilla, *Chain of Blame: How Wall Street Caused the Mortgage and Credit Crisis*, (Hoboken, NJ: John Wiley and Sons, 2008).
42. “A New Approach for Managing Operational Risk: Addressing the Issues Underlying the 2008 Global Financial Crisis,” Report prepared by OpRisk Advisory and Towers Perrin, Sponsored by the SOA/CIA/CAS Joint Risk Management Section, 2009, <http://www.soa.org/files/pdf/research-new-approach.pdf>.
43. *The People of the State of New York, by Andrew M. Cuomo, Attorney General of the State of New York, Plaintiff, against J. Ezra Merkin and Gabriel Capital Corporation, Defendants*, April 6, 2009. Available at <http://online.wsj.com/public/resources/documents/WSJ-20090406-MerkinComplaint.pdf>.
44. *Plunder: The Crime of Our Time*, DVD, Directed by Danny Schechter, 2009.

45. Povel, Paul, Rajdeep Singh, and Andrew Winton, "Booms, Bust and Fraud," 2007, *The Review of Financial Studies* 20(4):1219-1254, doi: 10.1093/rfs/hhm012.
46. Prins, Nomi, *It Takes A Pillage: Behind The Bailouts, Bonuses And Backroom Deals From Washington To Wall Street*, (Hoboken, NJ: John Wiley And Sons, 2009).
47. Rudolph, Max, "Should you have a Chief Skeptical Officer," in *Risk Management: The Current Financial Crisis, Lessons Learned and Future Implications*, December 2008, <http://www.soa.org/library/essays/rm-essay-2008-rudolph.pdf>.
48. Seymour, Julia, "Networks Downplay \$42 Million in 'Outrageous' Bonuses, 'Unlimited' Bailout of Fannie, Freddie," Jan 6, 2010, Business & Media Institute. Available at http://www.mrc.org/bmi/articles/2010/Networks_Downplay__Million_in_Outrageous_Bonus_es_Unlimited_Bailout_of_Fannie_Freddie.html.
49. Sowell, Thomas, *The Housing Boom and Bust*, (New York: Basic Books, 2009).
50. "Systemic Risk Defined," Property Casualty Insurance Association of America, 2009, www.pciaa.net.
51. Taleb, Nassim, *The Black Swan: The Impact Of The Highly Improbable*, (New York: Random House, 2007).
52. Tibman, Joseph, *The Murder Of Lehman Brothers: An Insider's Look At The Global Meltdown*, (New York: Brick Tower Press, 2009).
53. Valukas, Anton, "Report of the Anton R. Valukas, Examiner," United States Bankruptcy Court, March, 2010.
54. Wacek, Michael, "Derivatives, AIG and the Future of Enterprise Risk Management," in *Risk Management: The Current Financial Crisis, Lessons Learned and Future Implications*, December 2008, <http://www.soa.org/library/essays/rm-essay-2008-wacek.pdf>.
55. Walker, Brent, "Walking Through Moral Hazard Minefields," Paper presented at the 2009 Institute of Actuaries of Australia Biennial Convention, April 2009.
56. Wang, Shawn, "Risk Intelligence and Risk Indices," paper presented at ERM-II Systemic Risk Workshop, May 11-12, 2010.
57. Weiss, Mary "Systemic Risk and the U.S. Insurance Sector," National Association of Insurance Commissioners, Feb, 2010, http://www.naic.org/documents/cipr_weiss_systemic_risk_100223.pdf.
58. Zacchino, N. and R. Scheer, "They Shot the Messenger," *Ms Magazine*, Fall 2009.

Abbreviations and notations

ADC, acquisition, development and construction,
CDO, collateralized debt obligation
CDS, credit default swap
ERM, enterprise risk management

GAO, General Accounting Office
SEC, Securities and Exchange Commission
SDI, Systemically Dangerous Institutions

Biography of the Author

Louise Francis is a Consulting Principal at Francis Analytics and Actuarial Data Mining, Inc. She is involved in data mining projects as well as conventional actuarial analyses. She has a BA degree from William Smith College and an MS in Health Sciences from SUNY at Stony Brook. She is a Fellow of the CAS and a

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Financial Fraud

*** 1. On a scale of 1 to 10 with 1 being most important and 10 least important, how important do you think Fraud and Corruption were in causing the financial crisis?**

	1 - Very important	2	3	4	5	6	7	8	9	10 - Not important
Importance of fraud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***2. Were you or someone in your family, or a friend the victim of financial fraud in the last 5 years (i.e. in the period leading up to the crisis and its aftermath)?**

- yes - mortgage fraud
- yes - securities or stock fraud
- yes - other financial fraud
- not sure
- no

Additional comment

***3. Within the past 7 years, do you personally know an individual who committed financial fraud, whether or not they were charged with a crime?**

- yes
- no
- not sure

Additional Comment

4. On a scale of 1 to 10, how important do you think regulatory

agencies were in causing the financial crisis?

	1 - Very important	2	3	4	5	6	7	8	9	10 - Not important
Importance of regulators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. What solutions do you recommend to minimize financial fraud and corruption?

6. What industry do you work in or did you work in the last time you held a job?

- Retired
- Information Technology
- Health Care
- Homemaker
- Manufacturing
- Hospitality
- Retail store
- Financial Services
- Education
- Transportation
- Government
- Other

List Other