Predicting Sustainable Corporate Performance

The Integrity Index™
Case Study

The Two Faces of Enron

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Predicting Sustainable Corporate Performance

THE INTEGRITY INDEX

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The authors use Enron as a case study for advancing a method of game theory called Selectorate Theory to predict sustainable corporate performance as an example of the application and validation of The Integrity Index. The theory explains how structures within publicly-traded companies affect the ability of leaders to maintain their position within the company, why some companies are more prone to unsustainable corporate performance, and how the level and focus of self-interest defines the culture that can impact the structural integrity of the company and its ability to sustain its performance. The original dataset used in the validation of The Integrity Index included companies in the S&P 500 over an eight year period. The Selectorate Theory model has proven to be 73% accurate in predicting unsustainable performance at least two years in advance and had proven the point at which there is an 84% chance the company will have to manipulate their earnings to sustain their performance. 100% of the companies rated below 453 (out of a possible score of 1000) were ultimately accused of having committed securities fraud.
THE INTEGRITY INDEX CASE STUDY

THE TWO FACES OF ENRON

“You can’t manage what you can’t measure.”

Dr. W. Edwards Deming

In December 2001, the fifth largest corporation in the United States filed for bankruptcy. Its demise came virtually without warning. Over a ten year period, ending December 31, 2000, Enron would present investors with a total return of 1,415%. Compared to the S&P 500 meager 383% return, Enron was considered the darling of Wall Street. Much of Enron’s rapid growth had come as a result of its trading of derivatives with Wall Street firms such as BearStearns, Lehman Brothers, and GoldmanSachs. Despite being named the “Most Innovative Company” for six years in a row by Fortune Magazine, suddenly Enron imploded much the same way BearStearns and Lehman Brothers did only last year. This begs us to ask the question –

How do we predict sustainable performance?

Risk is inherent in any business. Business models require us to accept, manage and mitigate risk to the greatest extent possible in order for us to sustain our performance. In order to do so, we must be able to measure the risk. As the father of total quality management said, “You can’t manage what you can’t measure.” This leads us to ask the question which every CEO should be asking–

What risk does culture and internal structures play in the ability to sustain our performance?

In 1996, Ken Lay, then Enron’s CEO and Chairman of the Board, knew something was changing as energy trading became more of the central source of the company’s revenue. While the world began to focus on the external face of Enron – success based solely on external metrics – accolades and rapid rise in stock price, Ken Lay began grappling with the internal face of Enron – a changing culture. In early 2000, as the executive management team began determining a new vision for the company, Ken Lay’s vision was that Enron would become “The Most Respected Company.” Jeff Skilling, Lay’s successor, on the other hand, suggested that Enron would become “The Coolest Company on the Planet,” as he envisioned a pair of giant sun glasses on the top of Enron’s 50-story office building in downtown Houston. The difference in their individual visions is but one of the many examples that will illustrate the different leadership styles and cultures that developed within Enron from 1993 until its downfall in 2001.

As Enron’s culture became more aggressive in pursuit of better and better earnings to support an increasing stock price, Ken Lay watched the accolades grow in number as Fortune Magazine hailed Enron the Most Innovative Company for six years in a row. Ken Lay held a Ph.D. in economics. Modeling and metrics were the foundation for his leadership. While the accolades and stock price provided Wall Street with a measure of Enron’s success, Ken Lay was asking an essential question for which no metric existed.

Is our culture strong enough to sustain our performance?
Recognizing the failure of the current metrics to predict Enron, BearStearns, or Lehman’s downfall, or WorldCom, RiteAid, or General Electric’s securities fraud, Lynn Brewer founded The Integrity Institute in 2004 to predict and promote sustainable corporate performance. Based upon her personal experiences at Enron, her own failure to tell Ken Lay she had suspected bank fraud at the hands of the CFO in 1998, and ultimately realizing when she met with Ken Lay just two weeks before his untimely death, he never had the tools necessary to manage the culture effectively as there was no measure of the risk that Enron’s culture was not healthy enough to sustain its performance. The lack of a predictable metric at the time of Enron’s failure proved to be at the core of Enron’s downfall. In 2009, Cindy Olson, a member of Enron’s Executive Committee, the former head of Global Human Resources, and the foremost historian on Enron joined The Integrity Institute based upon the belief that The Integrity Institute’s model for predicting sustainable performance will provide every CEO with an actionable measure of risk which she could not provide to Ken Lay during her 23 years with the company.

The Integrity Institute uses a proprietary model based on game theory to predict sustainable corporate performance at least two years in advance. The Integrity Institute’s mission is to launch commercially viable subscription-based forecasting tools that provide meaningful indicators and actionable processes to mitigate risks for internal and external stakeholders. In 2010, The Integrity Institute will use its own proprietary predictive model to launch the first-ever Integrity Index™ – an external metric designed specifically to rate all public companies on the three US stock exchanges on their ability to sustain their performance.

The Integrity Index model (the “Integrity Index”) is based upon a variety of social science theories, including Selectorate Theory, and statistics which allows us to understand whether the structures in a company are sufficient to keep employees engaged while at the same time reducing the risk of securities fraud. The Selectorate Theory Model (the “Model”) is driven by the foundational understanding that all human beings are driven by self-interest – this includes everyone from CEOs to receptionists. Generally speaking, our self-interest comes in one of two forms: 1) Passion or 2) Legacy. For Mother Teresa, her self-interest was passion for the children of Calcutta; for suicide bombers, their self-interest could be the legacy of being a martyr. Self-interest is as unique as the individual. For some it can be the passion of working for a company that does great things for the community or passion for the lifestyle their income provides. Likewise, for some it can be the legacy we leave our children, or the legacy of being named the CEO of a Fortune 500 company. The Model does not “judge” moral issues of right and wrong or good and bad. It simply identifies the structures required to support sustainable performance.

The Model proves, contrary to popular belief, the self-interest of CEOs and 16(b) Insiders is not driven by greed and hubris; it is driven by a common thread among all employees – they simply want to keep their job. This self-interest then drives the pressures and decisions facing CEOs. Among the greatest of those pressures is meeting the targets Wall Street establishes as the quarterly earning potential of the company. Miss the target and the CEO risks losing his/her job as institutional investors may become dissatisfied with the stock’s performance and their ROI. To sustain his/her position, the CEO must maintain the support of institutional investors. To achieve this objective, the company (CEO) must distribute “Public
Goods” (increased share price or dividends to shareholders) sufficient to maintain the support required to keep his/her job. For instance, in the case of Carly Fiorina’s role as CEO at Hewlett-Packard, she ultimately lost her job because the stock price failed to increase and Wall Street had lost all faith in her. Because the self-interest of investors was not met with an increase in the distribution of “Public Goods,” Fiorina was ultimately fired by the board of directors.

The ability to increase the distribution of Public Goods requires a company sustain its performance. This is where the health of the corporate culture can make or break a CEO’s ability to achieve his/her strategic objectives. An unhealthy culture makes meeting those objectives nearly impossible as efficiencies break down with infighting and land-grabbing or power struggles. Too few CEOs focus on the significance of corporate culture as a requirement for them to keep their job, and why should they – as long as they can meet the earnings target. However, the Model proves an essential element – in order to sustain the performance required to keep their job, a CEO must have the support of employees and Insiders which requires an increase in the distribution of “Private Goods” (increased compensation). If employees become demanding, due to an unhealthy corporate culture, as was the case at Enron, the ability to maintain the support necessary becomes too costly if compensation requires excessive cash. Many companies ultimately resort to increasing the Private Gods by offering or increasing stock options to Insiders which only delays the inevitable if the CEO is unable to increase the share price and thus the value of the stock options. Despite the best intentions of the CEO, it becomes a proverbial house of cards.

**Culture, Culture, Culture**

Culture is a dynamic, ever-changing element of institutions. Whether it is the culture of our political, banking, religious or capital market institutions, structural integrity requires a culture that will sustain its existence or else it will fall like the Roman Empire. Governance, management, and compensation structures are designed to provide the right balance between oversight, direction and incentive for members of the institution. In the face of a changing culture, these structures can be diminished or if not strong enough in the first place, can allow inadvertent changes in the culture that can impact the long-term sustainability of the company without the CEO or board’s knowledge until it is too late.

In public companies, meeting the targets of quarterly earnings is a primary requirement for CEOs to keep their job. The intensity of the CEO’s focus on quarterly earnings can have an indirect and yet dynamic, if not devastating, impact on the overall health of the corporate culture. In order for “members” or employees to remain actively engaged in the institution or company, there must be sufficient Private Goods distributed (e.g. compensation, benefits). If employees become disengaged or disenfranchised due to diminished compensation (e.g. value of stock options or salary), the leader may not be able to achieve the strategic objectives required to meet their quarterly earnings target.

Although compensation, direct or indirect, can become a driver of employee behavior, power (even perceived power) can be a driver of certain cultural behavior. Depending upon how the influence of power within the corporation is viewed, if the balance of power is reduced to an exclusive few, whether within
the c-suite or individual business units, it can further impact the culture of the corporation as employees who feel “left out” begin to look for ways to enrich themselves or may ultimately decide to simply leave the company – taking with them the knowledge gained and/or trade secrets to their next employer who just happens to be your biggest competitor.

As the narrow focus of quarterly earnings trickles down, if 16(b) Insiders feel their job is at risk, there can be a propensity to overstate revenue or understate costs, if necessary for the company to meet its quarterly earnings. This can occur often times without the CEO knowing, despite the belief that the CEO knows or should know absolutely everything that occurs within the corporation. In fact, many will do so in support of the CEO because if the CEO loses their job, the Insider’s own job may be at risk as a new CEO could decide to bring in a new senior management team.

As in political institutions, corporations have coalitions. The group which selects the leader/CEO and has a say in the leader/CEO keeping his or her job is considered the Selectorate coalition. In a public company this would be the board of directors and, to a greater extent, the institutional investors. Once in a position of power, there is always opposition – internally there are people who want to succeed the leader, while the external opposition could be a corporate raider or large private equity investment firm who is stimulated to act if a drop in the stock price reduces the ROI or creates the opportunity or threat of a hostile takeover.

In each instance, the opposition can be considered a threat to the leader maintaining his position. His strategy must be to build support for his agenda in order for him to keep his job. To meet this objective, the leader must have a group of supporters who has greater power or influence than those of his opposition. This group is called the Winning coalition. The benefits or compensation provided to this coalition depends upon the amount of support necessary to sustain his position and the power and ability of the individuals within the Winning coalition to influence others. In essence, in both the Selectorate and Winning coalitions, the leader must satisfy the self-interest of the members of the coalition by distributing “Private” or “Public” Goods through compensation, power, or return on investment. The game begins as the leader seeks to sustain his position of power, hold his opposition at bay, and provide a greater return on investment than his competition which leads us to the two faces of Enron.

**The Two Faces of Enron**

Enron had two faces – the external face of accolades, awards, and stock price and the internal face of its employees, most of whom contributed to Enron’s success in one way or another over the years, all of whom watched as the two faces of Enron’s leadership divided its culture to a point where the company’s structural integrity was no longer sufficient to withstand market forces.

For a very long time, Enron managed to succeed based upon its “external beauty” until its “internal ugliness” became obvious and the honeymoon with Wall Street came to an abrupt end. That is when investors suddenly claimed they had been duped, somewhat like Cinderella’s carriage which turned into a pumpkin at the stroke of midnight. Enron was not a fairy tale and its employees did not go to work every day to manipulate markets and steal from investors – quite the opposite. Enron, like most companies,
wanted to “change the world.” Author Malcolm Gladwell describes this phenomenon in his article in the New Yorker Magazine on January 8, 2007 entitled “Open Secrets” (Enron, Intelligence and the Peril of Too Much Information). While not the subject of this paper, Gladwell rightly argues it was not that Enron hid the truth, but that it was openly transparent and despite the risk, people wanted what Enron was selling – for better or for worse. The purpose of this paper is not to defend or criticize Enron but to provide a better understanding of how the two faces of Enron (or any company for that matter) was created and introduce a model that allows us to remove our rose colored glasses and finally see clearly that which has often been hidden even from CEOs until it is too late.

Enron was not unique in its structure – a public company, traded on the New York Stock Exchange, until late 2001. The company’s Selectorate coalition consisted of a board of directors, all of whom had stellar reputations, and very large institutional investors, like Janus and the California Public Employees Retirement System (CalPERS) which is the United States largest pension fund. The Winning coalition consisted of the best and brightest employees with MBAs who had graduated from Harvard, Yale, and Princeton and worked on Wall Street. Meeting the self-interest of these coalitions seemed to require one thing . . . rapid growth in earnings. Ultimately, Enron’s demise was predictable as the demands of these two groups exceeded Enron’s ability to sustain its performance to meet their needs. In the end, the brazen self-interest of the CFO caused him to find a way to benefit at a rate greater than Enron’s traders, by creating his own Ponzi Scheme, outside the purview of the board of directors, in pursuit of his own brazen self-interest. There was only one problem, the Ponzi Scheme was dependent upon the CFO’s ability to exploit Enron’s underperforming assets, which ultimately required him to commit securities fraud by transferring those assets to his external hedge fund. Unfortunately, the structures within Enron had leant themselves to the creation of an aggressive culture where the CFO’s personal agenda was all too easy for him to achieve. To validate the application of the Model to The Integrity Index, we analyzed over 400 companies so far, and were able to identify the weakening of the structural integrity of the company. The Index, based upon the Model as an example, would have provided a smoking gun to Enron’s Board of Directors and CEO Ken Lay long before the CFO was able to commit the fraud.

Externally, Enron had a face that Wall Street loved – rapid growth in earnings allowing the Selectorate coalition to remain satisfied with the leadership. As we will discuss within this paper, that external face was often at conflict with the internal face of the two leadership styles that created the culture. One leader was concerned with the change in culture brought about by the traders, while the other promoted the aggressive culture of trading necessary to produce the results and benefits demanded by the various coalitions. The ultimate result was a company that was not sustainable because the culture was not unified in its support of the leadership and strategic direction necessary to sustain its performance.

Throughout the history of Enron, there were meta-coalitions built and destroyed as companies were acquired, mergers occurred, and leaders rose through the ranks – each with their eye on the role of succeeding Ken Lay as CEO. In 1993, it was Jeff Skilling and Rebecca Mark who were at war over the top spot. That war would last from 1993 until 2000 when Rebecca Mark conceded to Jeff Skilling. Ultimately,
Skilling would manage to dethrone nearly everyone who ever held the title of vice chairman, believing they would overthrow him in his quest to build his legacy as Enron’s CEO.

By 1996, Jeff Skilling was becoming a force to be reckoned with. His focus on trading revenues and building new businesses supported the earnings Wall Street demanded but created a cut-throat culture. Although Ken Lay had concerns about the shift in Enron’s culture under Jeff Skilling’s leadership, Wall Street appeared to validate Jeff Skilling’s leadership skills, as the external metrics continued to provide Enron’s Board of Directors with the assurance that Jeff Skilling was doing all the right things by leading Enron into new businesses. For those of us inside Enron, we had the rare opportunity to experience a palatable cultural shift that had a significant impact to Enron’s ultimate sustainability.

The purpose of this paper is to present a case study for a new model that predicts sustainable corporate performance at least two years in advance by measuring the structural integrity of a company’s culture and the level of risk present in its structures to determine whether a company can sustain its projected growth. For this, we present a compelling case that proves culture is a measurable risk that can be managed by presenting the two leadership styles of Ken Lay and Jeff Skilling, both of which shaped the culture of Enron, to a point, under Jeff Skilling, where the performance was no longer sustainable. From those who knew them best, Lay’s self-interest was driven from his passion to create a company where all employees could use their “God given” talent to accomplish things they never imagined, whereas Skilling’s self-interest was driven from his legacy or ego and always by the metrics dictated by the outside world.

We should point out that the culture at Enron was not unique. General Electric faces a similar set of circumstances. Jack Welch was driven by the self-interest of legacy (similar to Jeff Skilling) whereas Jeff Immelt appears to be driven by the self-interest of passion for his company, employees, stakeholders, environment, etc. (similar to Ken Lay). We might add that General Electric uses a very similar formula for performance review designed and recommended by management consulting firm McKinsey. Known fondly within the company as “Rank and Yank” for its forced ranking, this system that breeds fear among employees that they may lose their job which the Integrity Index model identifies as a driver of behavior and creates unnecessary risk within the culture.

Fortune Magazine reported in 2006 that Jack Welch, often admired for his aggressive style (similar to Jeff Skilling), was no longer the quality of leader required to sustain a company’s performance. The cover article said “Welch’s rules for winning don’t work anymore.” The Old Rules of Jack Welch outlined below are eerily a mirror reflection of Jeff Skilling – who by the way had little regard for Welch. The New Rules, outlined by Fortune, mirror Ken Lay’s “rules.”
New Rules vs. Old Rules

1. Agile is best; being big can bite you. vs. Big dogs own the street.
2. Find a niche, create something new. vs. Be No. 1 or No. 2 in your market.
3. The customer is king. vs. Shareholders rule.
4. Look out, not in. vs. Be lean and mean.
5. Hire passionate people. vs. Rank your players; go with the A’s.
6. Hire a courageous CEO. vs. Hire a charismatic CEO.
7. Admire my soul. vs. Admire my might.

When management expert Jim Collins (author of “Good to Great” and “Built to Last”) was asked about Jack Welch, he said two profound things: 1) “Jack Welch did not make GE great, GE was already great.” and 2) “Jeff Immelt will have to manage down what Jack Welch managed up.” Apparently Jeff Immelt found that to be more difficult than expected because in 2009, General Electric was found to have committed securities fraud beginning in 2001 – the year Welch retired. The company was ordered to pay a $50M fine to the Securities and Exchange Commission, spending more than $200M in legal and accounting fees, and losing $170B in market capitalization. While Ken Lay died before he was able to restore his reputation, Jack Welch, who’s own reputation was tarnished by scandal, is now attempting to restore his authority as a leader with his 2009 comments to the Financial Times “On the face of it, shareholder value is the dumbest idea in the world. Shareholder value is a result, not a strategy . . . your main constituencies are your employees, your customers, and your products.” Welch, no longer at risk of losing his job as CEO of General Electric, seems to be acknowledging on some level he managed for short term profits manipulating or managing earnings in pursuit of shareholder value.

As a former member of Enron’s Executive Committee and the head of Enron’s Global Human Resources, Cindy Olson has put together a formal case study (relying upon her two decades of experience and inside knowledge of Enron) that proves the validity and value of The Integrity Index™ Model as an enhancement to the current corporate performance metrics. This revolutionary approach to predicting sustainable performance succeeds where other metrics fail. The paper examines the key elements the Model uses to predict unsustainable performance as they existed at Enron – which was among the original data set used in the validation used for this paper as an example in the application of The Integrity Index. Olson gives perspective that only a 16(b) Insider and senior executive can provide as to how decisions were made at the highest levels within the company and the impact they had on the culture. It should also be noted here that Olson, upon the death of Ken Lay, remains as the standing historian for the company, being the highest executive that lived through the creation of Enron, through all of the mergers and growth of the
new businesses and ultimately the fallout from the companies downfall including the many investigations, trials and convictions. Within the Model, she explains how the result ultimately caused the structural integrity of Enron to be weakened to the point that the CFO was able to commit securities fraud, out of his own brazen self-interest, without anyone, including the auditors, knowing, except for a few mid-level executives. Assisting in the technical correlation of the Model to The Integrity Index elements was Professor Ryan Kennedy of the University of Houston who oversees model design and development of The Integrity Index for The Integrity Institute.

Olson outlines in the paper the fact that like most companies, Enron relied upon experts, like McKinsey, Towers Perrin, Arthur Andersen, and the company’s outside counsel, Vinsen & Elkins, to recommend to management many of the structures that the Model in fact identifies as weaknesses leading to unsustainable performance. Additionally, Enron spent millions of dollars implementing the SAP business intelligence solution designed specifically to mitigate the risks, The Integrity Index model identifies as predictors of unsustainable performance. However, Olson rightly argues that strategies created independent of one another and/or the wrong technology can create the silos of information that often can unintentionally impact the future performance of a company by weakening the culture without the experts knowing. The value of The Integrity Index model, when launched, will be is its integrated approach to predict the impact these strategies can have collectively on producing unsustainable results or worse yet, in the case of Enron, identifies the structural weaknesses that were exploited by a CFO who engaged in self-dealing behavior.

Unfortunately without reliable metrics, the Board of Directors, senior executives (except for the self-dealing CFO) and investors were blindsided. Had The Integrity Index existed, Enron’s Board of Directors would have had a reliable predictive metric that would have identified the structural weaknesses in sufficient time in which to make the structural changes required to manage Enron’s culture to reduce the risk of securities fraud at the hands of the CFO.

The purpose of this case study is to demonstrate the practical application in advancing game theory by converting the Model into The Integrity Index as a predictive measure of sustainable corporate performance. The translation of analytical results of the initial data set is included in Appendix A and Appendix B demonstrates the correlation of the value of The Integrity Index model in proving the diminished culture and structure of companies in that 100% of the companies which scored 453 or less were ultimately accused of having committed securities fraud. A white paper outlining the methodology used in validation of the Selectorate Theory Model can be found in Appendix C.

INTRODUCTION

As the head of Global Human Resources for what was once the 5th largest corporation, I believe corporate culture is the primary driver of a company’s performance. With a degree in accounting, I understand how underperforming assets can drain a company’s resources and
define its balance sheet. However, if employees are encouraged to and rewarded for acquiring assets for short term gains that ultimately underperform then the long-term sustainability of the company’s performance can be at risk. If employees are rewarded for violating their trading limits and making trades that have no legitimate business purpose except for manipulating the markets then there is something terribly wrong with the culture. I can assure you as the “Chief Compensation Officer,” such behaviors at Enron, if rewarded, were done so without the full extent of these structures being understood by Human Resources, Ken Lay and the Compensation Committee of Enron’s Board of Directors.

I have had plenty of time since leaving Enron to reflect on the problems that existed, as well as how we could have prevented the events that caused Enron to fail. I hope to present within this paper a solution which I know would have provided the information necessary for Enron’s CEO and Board of Directors to understand the quantifiable impact our structures and culture had on our sustainability. The key would have been to provide such information in a timely manner allowing for corrective action to be taken before it was too late.

Like any large international company, silos of information existed within Enron, as coalitions were created that promoted a win-at-all-cost culture. Culture is not created overnight and for a period of nearly two decades I watched Enron go from a values-based company lead by Ken Lay to an earnings-driven company lead by Jeff Skilling. I’m not saying that you have to sacrifice earnings for values. Quite to the contrary, CEOs will now be able to integrate values and earnings as The Integrity Index identifies the structural integrity of the structures and culture to mitigate risks (whether at a cultural or structure level) that may be impacting a company’s ability to sustain its performance. I have gained perhaps the best understanding of the leadership required to sustain a company’s performance and how a culture is shaped by its leader because of the experience I had within Enron. Reporting to and knowing both Skilling and Lay was a unique experience giving me a clear view of the “Two Faces of Enron.” Having said that, I believe the argument presented in this paper provides the evidence that any CEO and/or Board of Directors requires to determine when the structure and culture of the organization is having a negative impact on their company’s performance before it is too late.

As a 16(b) Insider at Enron, I can assure you that I and my colleagues at the senior management level were surprised as the rest of the world that our CFO had run an external Ponzi Scheme, as much as the world was surprised by Bernie Madoff. When those of us inside Enron suddenly and unexpectedly learned that our results had been falsified by our CFO we made every attempt to prevent a run on the bank, including calls by Ken Lay to the President of the United States. Similar to the sudden liquidity crises that hit the Wall Street banks, Enron was faced with a liquidity crisis. Unlike the Wall Street banks, the Bush administration decided to let Enron fail similar to the way they handled BearStearns and Lehman Brothers. What we now know is that BearStearns, Lehman Brothers, Enron, the companies that were “saved” by the
government and even companies that watched and corrected the situation before they imploded, had structures, systems and cultures in place which resulted in unsustainable performance.

In 2002, Lynn Brewer wrote, “Look to Enron to foretell the future.” I echoed that sentiment in my OpEd piece in the Houston Chronicle on October 4, 2008¹, “The current economic crisis is a repeat of Enron, only on a bigger scale.” Even President Obama admits not much has changed in chasing the deals. First it was Enron and the rest of Wall Street has followed.

Inside every company is a well-intentioned CEO relying on well-paid, top executives, employees and expert consultants to do their jobs and to advise them, or accounting firms to identify when they are at risk of committing securities fraud. CEOs also rely upon credit rating agencies and their fundamental models to recognize weaknesses that may exist. Wall Street analysts who pride themselves as being the smartest guys in the room attempt to find cracks in the foundation of public companies with their models. Even the media plays a role in the investigation of problems when the regulators fail to do so. With all of this scrutiny we must ask ourselves why does history repeat itself?

The purpose of this paper is not to defend Enron but to provide insight from my personal experiences I gleaned from 23 years at the company and the 8 years of fallout from its demise. I believe that we can learn from our mistakes and I believe that The Integrity Index model will provide a solution that will measure and quantify how a company’s structures and culture impacts the sustainability of its performance before it is too late.

BACKGROUND

My career with Enron spanned over nearly two decades during which time I rose to hold perhaps two of the most powerful positions inside Enron – I served on Enron’s Executive Committee and headed Enron’s Global Human Resources. From both a tangible and intangible perspective, I came to understand the key performance drivers upon which Enron relied and which drove its business. While many remember Enron for its failures, I remember Enron for its successes, which is why I was as surprised as anyone to learn that our CFO had perpetrated securities fraud. Along with everyone else I have found myself asking the question – how could this have happened?

Of course, when a CFO or Bernie Madoff is determined to commit fraud, he doesn’t tell everyone – he keeps it quiet. He enlists or buys off those he needs to in order to perpetrate his

crimes and lies to those who he believes will stand in his way of achieving his objective. With the exception of a handful of mid-level executives, no one knew of, engaged in, or benefited from the fraud committed by Enron’s self-dealing CFO. For those working in collusion with the CFO, their individual financial gain was enormous; for those who would never engage in such behavior, the CFO left us in the dark through a series of lies to Wall Street and insiders.

Speaking for myself and my colleagues at the senior level, we all believed we were paying our external consultants (and we paid them very large sums of money) to recommend structures and accounting treatment so that investors in our company had confidence that what we were doing was not only legal and met accounting standards but they were appropriate for our organization. Coupled with the outside scrutiny of analysts, we believed that any structural weaknesses that would have resulted in a risk of fraud being committed, including that carried out by the CFO, should have ultimately been identified by the highly paid auditors, consultants or the outside analysts. Given there was absolutely no collusion on the part of Enron’s consultants, it means the CFO was just better at hiding the truth than the consultants were at finding it. This is why the Model as an example in the application of The Integrity Index is such a revolution because it not only identified the securities fraud; it predicted it one year before it actually occurred.

As law abiding citizens, with insufficient metrics, we believed the external accolades confirmed Enron was a company that had achieved enormous success including being named Fortune Magazine’s “Most Innovative Company” for six years in a row and one of the “Best Places to Work.” If that wasn’t enough evidence, rapid growth in our stock price affirmed our success.

By the end of 2000, Enron employed nearly 21,000 employees worldwide. The question is not whether Enron was a good company or a bad company, but how is it that all of the internal and external metrics missed the mark. The Model is the only valid metric I have seen that actually predicted Enron’s outcome as far back as 1993. Although Enron momentarily regained its strength within The Integrity Index when the Model is applied as an example, within a few years, by 1995, Enron’s rating began to fall again and by 1998, it was clear that Enron did not possess the essential governance structures to sustain its performance into 2000 – despite its stock price reaching $90 before it was split. I am certain that had The Integrity Index existed at the time, based on the Model, our CFO could not have perpetrated the crimes he did. For this reason, I present what I believe to be a compelling argument as to why advancing social science theories and statistics such as the Model, will make The Integrity Index the single greatest evolution in corporate performance analysis.

In the spirit of full disclosure, I want to point out that I came to consider Ken Lay among my most cherished mentors which is why I feel not only qualified but obligated to find a solution that could have not only saved Enron but will save other CEOs who may find themselves in the
same predicament as Ken Lay . . . wondering how did this happen? For this reason, in 2009, I joined The Integrity Institute because I know The Integrity Index is the answer. Let me start by graphically demonstrating Enron’s position within The Integrity Index, had it existed between 1991 and 1999.

It is important to note that at the two times (1993 and 1998) that the United States’ largest pension fund (CalPERS) invested $250M and $500M respectively, not in Enron stock, but in the special purpose entity or off the balance sheet partnership that was at the core of Enron’s downfall (JEDI), Enron’s score within The Integrity Index predicted Enron’s performance was unsustainable. The Integrity Index rating could have saved CalPERS millions of dollars, as 100% of the companies which scored below 453 in the validation of The Integrity Index, in the original sampling of the S&P 500 ultimately are alleged to have committed securities fraud to artificially sustain their performance.
Before I go into further detail as to how and why the Model works, I want to provide some insight as to what was happening within Enron. First let me say, while the results do not surprise me based upon the culture at Enron and the dramas that unfolded as I was rising through the ranks, I was surprised on the Model’s ability to predict the securities fraud that was ultimately committed by the CFO. While I would admit Enron’s culture was aggressive, I would never have suspected that you could quantifiably measure the periods of time when our aggressive culture was contributing to our downfall.

On January 30, 1992, the Securities and Exchange Commission informed Enron that they had approved our use of mark-to-market accounting which was intended to provide a “fair value” of energy related commodities. Enron was the first non-financial company to be approved for mark-to-market accounting by the SEC. This accounting change opened the door for Enron to drive revenues from trading, maximizing and growing its profits. Virtually overnight, Enron was filled with Wall Street traders who recognized the potential of creating markets which had never been traded before. In addition, Enron was pursuing international development projects under the leadership of Rebecca Mark. It was during this time frame that a cultural war was igniting between the trading division lead by Jeff Skilling and the asset development division lead by Rebecca Mark.
By 1993, after experiencing nearly two years of a very successful trading business, Ken Lay began to realize the significance of these cultural changes. Kurt Eichenwald, author of *Conspiracy of Fools* recognizes it in his book:

> In 1993 the fuse was lit. Enron would soon be pursuing wildly contradictory strategies. One brought in huge earnings but little cash, and depended on Enron’s credit ratings to survive. The other would devour cash while producing next to no earnings for years, potentially putting the credit rating at risk. Enron was on a collision course with itself.

It was in 1993 that Enron’s Integrity Index score took a sudden drop indicating a shift in the structure. Inside the company, compensation structures became a major point of contention between Jeff Skilling’s trading group and Rebecca Mark’s international asset group.

By 1994, Enron rebalanced its structures as salaries came in line with earnings as the war between Skilling and Mark waged on. A Department of Labor audit in 1995 also helped to bring salaries into balance, but around that same time frame, Enron’s culture was driving changes in its structure causing its Integrity Index score to drop by approximately 15%. Not to be left behind, Andrew Fastow, who had been trading financial derivatives, sought to be recognized for his contribution to Enron’s revenue by being appointed as the CEO of the new retail business (later known as Enron Energy Services or EES).

By 1996, Enron purchased Portland General Electric – bringing in yet another strong trading culture to the mix with what was already forming. Making the integration of the cultures all the more difficult was PGE was based in Portland, Oregon and while a few traders moved from Houston to Portland, none of the traders were willing to move from Portland to Houston. This caused yet another divide in the culture between Houston and Portland. The inability to integrate these two cultures ultimately created the platform for the manipulation of power prices at the hands of those employees in Portland who felt the need to prove themselves to Corporate. Unfortunately, while Enron managed its trading risk books, the management of the cultural divide was becoming more difficult, given the revenue being generated by Portland and Houston’s desire to beat what it saw as the competition – Enron’s West Power Trading Desk. Meanwhile Ken Lay was being pursued by AT&T as the new CEO, a position which he ultimately turned down based upon his passion for the employees, customers and investors in Enron. By the end of 1996, Rich Kinder was leaving Enron and the COO position was vacant.

In 1997, a major asset deal that Enron had been developing in Teeside, England was near completion. As the liquefied natural gas (LNG) plant was nearing completion, the market price of the commodity dropped to a low causing Enron to have to take a significant loss on its trading books. Jeff Skilling’s group of traders blamed the failure on Rebecca Mark’s asset group for taking longer than expected for the newly constructed gas plant to come on line. The loss was a huge hit for Enron financially. Looking for revenue became a major objective requiring
the use of aggressive accounting methods approved by Arthur Andersen. By end of December 1997, to cover the loss, Andrew Fastow used an off-the-balance sheet partnership referred to as Kitty Hawk Funding to secure a loan from Bank of New York that allowed Enron to book revenue using mark-to-market accounting. Unbeknownst to anyone, the revenue generated to prepay the loan was artificially inflated. Later that year, Fastow was appointed CFO of Enron, shortly after Jeff Skilling’s appointment to the corporate COO position vacated by Rich Kinder.

By early 1998, comfortable with the placement of Jeff Skilling as COO, Ken Lay began to focus his efforts outside the company. He lead the Houston United Way Campaign, helped the city of Houston build a new baseball stadium (which ultimately was named Enron Field), chaired the Economic Council Conference in Tokyo and served as Chairman of the Texas Governor’s Business Council serving George W. Bush as Governor of Texas, and was working on George W. Bush’s Presidential election fund raising campaign. Enron also kicked off a worldwide advertising campaign with the first ad running at the Super Bowl that year. All of those things were pursued by Ken Lay as a part of Enron’s branding strategy to let the world know who Enron was as the push came to deregulate retail power to allow consumers a choice and competition. The ad campaign also allowed us the ability to attract the best talent in the world. In addition, it is critical to note that Ken Lay formed an internal “Vision and Values” committee with the objective of driving his values within the organization. Having successfully united the culture that resulted from the merger of InterNorth and Houston Natural Gas, Ken Lay clearly recognized without a set of defined values, Enron would not be able to maximize the value it could offer to its customers and shareholders.

By 1999, Jeff Skilling figured out a way to move Rebecca Mark into a role that cleared the way for him to be the next CEO of Enron. Although she remained a board member of Enron Corp., as the CEO of Enron’s new water subsidiary, her power to give pushback was drastically diminished, allowing Jeff Skilling’s culture to become fully developed. From this point, the employees of Enron viewed Jeff Skilling as the clear winner to succeed Ken Lay as CEO and from a management perspective, Jeff Skilling was making most of the day to day decisions and the culture was changing rapidly as the short term focus of the traders became the driving force of compensation.

In 2000, to offset the enormous bonuses given to traders, Jeff Skilling worked with McKinsey (and my team in Human Resources) to create a compensation model for the executives consisting of vice president and above that would be designed similar to a partnership, like McKinsey. This structure provided enormous stock option grants that allowed for immediate vesting of stock.

By 2001, Enron’s culture had driven structural changes that could no longer sustain the company’s performance. In a matter of nine short years, from the time Enron was approved to
use mark-to-market accounting in 1992 and December 2001, the company had become unbelievably successful using the metrics that existed at the time. Unfortunately, by that time, The Model identifies the structures and culture had put Enron at risk and that our performance was clearly no longer sustainable. However, those of us who remained at Enron, despite the downturn in our stock price remained optimistic as Ken Lay returned to the position of CEO when Jeff Skilling suddenly announced his resignation on August 14, 2001.

I began my career at what would ultimately become Enron in 1979 and lived through the merger of two very different cultures that existed at InterNorth and Houston Natural Gas in 1985. Ken Lay had successfully lead Enron through many changes that had occurred in the company since that time and I along with most employees that had been along on that roller coaster ride believed that the worst was over and we could withstand anything. However, reflecting back, I believe that Ken Lay was concerned in 1996 that the culture shift occurring in the 1990s was of bigger concern than the 1980s because it was associated with the most successful, growing part of our business – trading. At the time, Enron Corp. operated primarily as a holding company for the various business units, including Enron Capital & Trade Resources (ECT) which was Enron’s trading division responsible for all of the marketing, sales, and pricing of energy commodities. As the head of “back-office” operations, I was responsible primarily for the operational performance of Enron’s trading subsidiary and I reported directly to Jeff Skilling, who was at the time, President of ECT.

As the leading “people” person at Enron, Ken Lay had always maintained an interest in my career as I moved from Omaha in 1986, shortly after the merger of Houston Natural Gas (which Ken Lay headed) and InterNorth (based in Omaha). The merged companies became known as Enron which was based in Houston, Texas, while the company maintained a presence in Omaha. Despite my background in accounting and the linear thinking of calculating numbers, I too have always been a people person which is why ultimately I would rise to head Global Human Resources and Community Relations at Enron. But in 1996, as the head of operations for Enron’s trading unit, Ken Lay asked me a key question which gave me insight into what he believed the impact our traders were having on the culture of the rest of the company. I think he was truly concerned but was unable to quantify the impact of that changing culture. He knew in my position that I would know how the traders (who were seen as the primary source of the company’s revenue) treated other employees (who were seen solely as support for the traders). My answer, in retrospect, probably said more about how much the traders had subversively changed the culture than I realized at the time. “They are kind of rough but they make a lot of money for us.” I said.
It is important to point out a key fact that few remember, except those of us who had survived the merger between Houston Natural Gas and InterNorth, the culture at Enron during its early days, after the merger, was horrendous to say the least. The blending of the two cultures was like blending a family – it was horribly painful and took years to correct. Ken Lay knew I had been through the painful experience of the merger with the rest of the employees and that I had perspective that by 1996, few had, since very few employees from Omaha had actually transferred to Houston. The infighting and “land-grabbing” that occurred was horrendous and to be honest, it is a wonder that Enron did not fail at that time but I believe that speaks to Ken Lay’s leadership qualities and values. He had not only successfully merged two companies from different geographic locations, he had successfully financed the merger, despite taking on enormous debt, and he had succeeded where 90% of mergers fail – he had managed to blend two diverse cultures – each with their own self-interest. Ken Lay was seen as an “outsider” or corporate raider – yet the employees of Omaha, including myself, came to trust Ken Lay’s ability to create a healthy culture.

I had watched Ken Lay masterfully heal the culture the way I doubt very few leaders could have, given the circumstances. I believed, as I imagine so too did Ken, that if we had survived 1985, we could survive anything – we were wrong. The culture was significantly worse than 1985, as the brazen self-interest of traders had turned Enron into a company where “power broker” became a double entendre for trading megawatts of power and the power most employees believed the traders wielded within the company. However, in the end, in August, 2001, more than 3000 employees, only a few of whom remembered the cultural pains of the merger in 1985, stood in awe of Ken Lay, giving him a standing ovation, at the all-employee meeting following Jeff Skilling’s departure, knowing if anyone could save Enron and repair the company’s battered culture – it was Ken Lay. Sadly, the market’s lack of faith in Ken’s ability to turn the company around was really a statement as to the lack of faith in Enron’s employees more than anything. While I don’t blame the markets, I realize without The Integrity Index, the market chose to cut and run. Having said that, I must also admit that Enron’s Integrity Index at the time, was indicative of a company that was severely handicapped and was likely too far along in its battle with cancer to be saved. However, had The Integrity Index existed in 1996, Ken Lay would have taken the corrective action long before it was too late. He would have sought the help necessary to ensure Enron’s long-term success. He had done it before and he could have done it again.

Ken Lay’s question that day in 1996, my answer, and my inability, without any quantifiable metric, to stop the cultural erosion has haunted me since the Enron implosion because ultimately it was the aggressiveness of the traders that drove a culture where our dependence upon the revenue generated by traders and the aggressive (but not illegal) accounting became essential in meeting our earnings projections and driving our stock price. Ultimately, I believe
the self-interest and jealousy among employees of the personal financial gain of our traders was a destructive force within the culture as well and more importantly, the driving force that caused the CFO to feel a sense of entitlement that would drive him to enrich himself and commit securities fraud.

It has taken me ten years to find the metric Ken Lay was looking for – what every CEO wants to know – Is our culture strong enough to sustain our performance? I would come to learn as I was promoted to head human resources that what Ken needed was measurable proof as to just how big of a risk our culture and structures were to our future, which I unfortunately was never able to provide him prior to his death. I am convinced The Integrity Index will prove to be the single greatest predictor of unsustainable performance. The greatest value of The Integrity Index is not in diagnosing the problems within the structure but rather providing sufficient time and opportunity for CEOs to make the necessary changes given the ability to predict unsustainable performance at least two years in advance.

Shortly after that luncheon in 1996, Ken Lay asked me to join the corporate team to help him build and strengthen the Enron brand and culture. It was clear to me that Ken wanted Enron to have a culture based on the values he espoused. I have learned that values statements, while guidelines, cannot alone sustain the performance of a company if the commitment to live those values is not practiced within the strategy no matter how lofty the vision and values of the company are. Enron’s stated values were:

**Respect**

*We treat others as we would like to be treated ourselves. We do not tolerate abusive or disrespectful treatment. Ruthlessness, callousness, and arrogance don’t belong here.*

**Integrity**

*We work with customers and prospects openly, honestly and sincerely. When we say we will do something, we will do it; when we say we cannot or will not do something, then we won’t do it.*

**Communication**

*We have an obligation to communicate. Here, we take the time to talk with one another…and to listen. We believe that information is meant to move and that information moves people.*

**Excellence**

*We are satisfied with nothing less than the very best in everything we do. We will continue to raise the bar for everyone. The great fun here will be for all of us to discover just how good we can really be.*

In 1999, I was appointed to Enron’s Executive Committee and was promoted to head of Enron’s Global Human Resources. I also co-chaired Enron’s Vision/Values’ Committee with another woman named Beth Tilney. In these roles, both Beth and I had concerns about the growing divide between the asset-based culture that supported the values of Ken Lay and the trading
culture that supported the values of Jeff Skilling as it became clear Jeff Skilling was the person that would soon replace Ken Lay as CEO. Although Beth and I both voiced our concerns to Ken Lay, we found it hard to quantifiably demonstrate the impact the culture was likely to have on Enron’s long-term performance because the external metrics, such as the countless accolades by reputable business magazines, positive recommendations by Wall Street analysts, a strong credit rating, and Enron’s stock price continued to climb in the exuberance of the dot.com era. I’m afraid, without a reliable metric to counterbalance the exuberance, we were simply perceived as two women who didn’t care for Jeff Skilling’s management style. Without metrics, we faced a losing battle to demonstrate how the very culture that was making enormous amounts of money for Enron was also destroying the company’s future.

Today, as I understand Model and specifically Enron’s score, I know, had The Integrity Index existed, we would have been able to demonstrate to Ken Lay the underlying components that contributed to the likelihood that Enron would not be able to sustain its performance. I also know from first-hand experience and knowledge that had The Integrity Index existed, there is no doubt in my mind that Ken Lay and Enron’s Board of Directors would have insisted that we determine how we could improve our score as we had done with all of the Fortune Magazine indices that we used as indicators of our success.

As we continue with the theme of the two faces of Enron, we see the company’s Integrity Index scores told a story that was very different from the external metrics seen as “indicators” of Enron’s future success.
The Integrity Index graph above, when compared to the chart below of the events and accolades, provides us with a stark contrast that must be considered. The events and accolades, shown below, made Enron look attractive to employees and investors who were unaware of what was predictable – Enron’s future was at risk.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Stock Price 12/31/1999 - $43.57</td>
</tr>
<tr>
<td>2000</td>
<td>Stock Price 12/31/2000 - $83.55</td>
</tr>
<tr>
<td>2001</td>
<td>Stock Price 12/31/2001 - $0.57</td>
</tr>
<tr>
<td></td>
<td>3rd Year – Enron named</td>
</tr>
<tr>
<td></td>
<td>Fortune Magazine’s Most Innovative Company</td>
</tr>
<tr>
<td></td>
<td>4th Year – Enron named</td>
</tr>
<tr>
<td></td>
<td>Fortune Magazine’s Most Innovative Company</td>
</tr>
<tr>
<td></td>
<td>5th Year – Enron named</td>
</tr>
<tr>
<td></td>
<td>Fortune Magazine’s Most Innovative Company</td>
</tr>
<tr>
<td></td>
<td>6th Year – Enron named</td>
</tr>
<tr>
<td></td>
<td>Fortune Magazine’s Most Innovative Company</td>
</tr>
<tr>
<td></td>
<td>Total Employees 17,900</td>
</tr>
<tr>
<td></td>
<td>Houston’s New baseball field named Enron Field</td>
</tr>
<tr>
<td></td>
<td>Earnings per share (EPS) increased 69% from 97-2000</td>
</tr>
<tr>
<td></td>
<td>Enron ranked 2nd in Quality of Management according to Fortune</td>
</tr>
<tr>
<td>Event</td>
<td>Details</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>20% Employees with Advanced Degrees</td>
<td>Enron issues 12M shares of Common Stock</td>
</tr>
<tr>
<td></td>
<td>Corporate Giving is 1% of EBIT</td>
</tr>
<tr>
<td>Enron forms a Vision and Values Task Force</td>
<td>Enron ranked 4&lt;sup&gt;th&lt;/sup&gt; in Employee Talent according to Fortune</td>
</tr>
<tr>
<td></td>
<td>Enron ranked 5&lt;sup&gt;th&lt;/sup&gt; in Quality of Products/Service according to Fortune</td>
</tr>
<tr>
<td>Enron breaks ground on new corporate headquarters</td>
<td>Enron hires 6,200 new employees</td>
</tr>
<tr>
<td>Joe Sutton named Vice Chair</td>
<td>Enron ranked 7&lt;sup&gt;th&lt;/sup&gt; on Fortune 500 list</td>
</tr>
<tr>
<td>Nelson Mandela named recipient of Enron’s Humanitarian Award</td>
<td>Enron ranked 18&lt;sup&gt;th&lt;/sup&gt; on list of Most Admired Companies</td>
</tr>
<tr>
<td>Azurix, Enron’s water subsidiary, is launched.</td>
<td>Enron ranked 24&lt;sup&gt;th&lt;/sup&gt; on Best Companies to Work For according to Fortune</td>
</tr>
<tr>
<td></td>
<td>Enron ranked 22&lt;sup&gt;nd&lt;/sup&gt; on Best Companies to Work For according to Fortune</td>
</tr>
<tr>
<td></td>
<td>Enron ranked 29&lt;sup&gt;th&lt;/sup&gt; as Fastest Growing Companies according to Fortune</td>
</tr>
<tr>
<td>Enron Oil and Gas sold</td>
<td>New Power Company formed/ AOL/ IBM</td>
</tr>
<tr>
<td></td>
<td>Enron ranked 62&lt;sup&gt;nd&lt;/sup&gt; on Fortune’s Global 500 list</td>
</tr>
<tr>
<td>Enron Oil and Gas sold</td>
<td>Ken Lay brings Michael Milken to Management Conference</td>
</tr>
<tr>
<td></td>
<td>Blockbuster and Enron announce 20 year broadband content delivery deal</td>
</tr>
<tr>
<td>Enron named Company of the Year by Financial Times of London</td>
<td>2/21/01 - Jeff Skilling named CEO</td>
</tr>
<tr>
<td>Enron terminated deal with Blockbuster</td>
<td>Enron terminates deal with Blockbuster</td>
</tr>
</tbody>
</table>
Enron’s consistent ranking among the “Most Admired Companies,” allowed us to continue to attract the best and brightest employees, all of whom were extremely talented and certainly responsible for Enron’s success. As Enron continued to rise within the external metrics, the internal employee surveys demonstrated to us that the enthusiasm for Enron grew as the stock price rose, yet between 2000 and late 2001, as the stock price dropped, those employees who felt the company was well managed dropped significantly.

As the culture of Enron began to be divided between traders (who were seen as driving revenue for the company) and non-traders (who were seen as draining revenue from the company) resentment grew. As the gap between these two factions widened, the two faces of Enron became profound to Beth Tilney and myself, as the employee survey results began to display the discontent. While compensation remained high for all of Enron’s employees, in part because of stock options, soon no matter what employees made – if it wasn’t as much as the traders, jealously caused dissatisfaction with their own compensation and ultimately eroded any cohesiveness within the culture.
As the internal employee survey results below show, the satisfaction of employees rose and fell with the stock price which supports the theory of self-interest as the primary motivating factor.

<table>
<thead>
<tr>
<th>Pulse Survey Results</th>
<th>1996</th>
<th>1999</th>
<th>2000</th>
<th>Aug 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Price</td>
<td>$43.31</td>
<td>$43.57</td>
<td>$83.55</td>
<td>$42.00</td>
</tr>
<tr>
<td>Decisions communicated well</td>
<td>40%</td>
<td>41%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Feel Free to voice Opinion</td>
<td>29%</td>
<td>29%</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td>Acts on Suggestions of Employees</td>
<td>28%</td>
<td>45%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>Communication is good</td>
<td>34%</td>
<td>30%</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Challenge Status Quo</td>
<td>37%</td>
<td>42%</td>
<td>47%</td>
<td>47%</td>
</tr>
<tr>
<td>Treated with Respect</td>
<td>58%</td>
<td>69%</td>
<td>73%</td>
<td>60%</td>
</tr>
<tr>
<td>Company is well managed</td>
<td>58%</td>
<td>64%</td>
<td>67%</td>
<td>42%</td>
</tr>
<tr>
<td>Information Believable</td>
<td>59%</td>
<td>59%</td>
<td>74%</td>
<td></td>
</tr>
<tr>
<td>Supervisor Encourages Team</td>
<td>61%</td>
<td>70%</td>
<td>73%</td>
<td></td>
</tr>
<tr>
<td>Overall Paid Fairly</td>
<td>65%</td>
<td>53%</td>
<td>52%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pulse Survey Results (continued)</th>
<th>1996</th>
<th>1999</th>
<th>2000</th>
<th>Aug 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied with Pay</td>
<td>62%</td>
<td>52%</td>
<td>53%</td>
<td></td>
</tr>
<tr>
<td>Satisfied with Benefits</td>
<td>68%</td>
<td>81%</td>
<td>82%</td>
<td></td>
</tr>
<tr>
<td>Recommend Enron as place to work</td>
<td>61%</td>
<td>67%</td>
<td>72%</td>
<td>59%</td>
</tr>
<tr>
<td>Employees feel commitment to ENE</td>
<td>44%</td>
<td>61%</td>
<td>65%</td>
<td>64%</td>
</tr>
<tr>
<td>I would invest my money in ENE</td>
<td></td>
<td></td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>I have talent not utilized</td>
<td></td>
<td></td>
<td>70%</td>
<td>54%</td>
</tr>
</tbody>
</table>

By August 2001, as Enron’s stock price fell virtually overnight, it was apparent after Jeff Skilling’s abrupt resignation that Enron was in for a challenge to maintain its reputation. Our external face was severely bruised and we were now taking our pulse internally with the “Lay it on the Line” survey to determine whether we were also at risk of losing our talent which was
essential to our survival. We conducted an internal survey and identified where employees had concerns. Those internal results are shown below:

<table>
<thead>
<tr>
<th>“Lay it on the Line” Survey (Run after Skilling resigned) Top five issues of concern to employees</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop in Stock Price</td>
<td>60%</td>
</tr>
<tr>
<td>Internal Employee Morale</td>
<td>50%</td>
</tr>
<tr>
<td>PRC (Performance Review Committee)</td>
<td>50%</td>
</tr>
<tr>
<td>External Reputation and image</td>
<td>40%</td>
</tr>
<tr>
<td>Walking the talk of Integrity and Respect</td>
<td>30%</td>
</tr>
</tbody>
</table>

Earlier in 2001, an external survey had been conducted by our Public Relations group that showed how the outside world viewed Enron compared to a year earlier. This survey showed that Enron was seen as more self-serving and arrogant and less ethical and trustworthy. Enron was no longer the company that Ken Lay had built. Below are those results:

| 2000 vs. 2001 – The extent you think of Enron: |
|---|---|---|
| | More | Uncertain | Less |
| Entrepreneurial | 28.50% | 37.80% | 23.70% |
| Innovative | 38.80% | 35.70% | 24.60% |
| Self Serving | 41.90% | 38.60% | 7.50% |
| Ethical | 17.00% | 45.10% | 28.10% |
| Trustworthy | 14.90% | 39.00% | 36.90% |
| Concerned for Communities | 34.50% | 44.90% | 10.40% |
| Arrogant | 39.10% | 32.40% | 13.30% |
While we pursued our efforts to obtain relevant metrics that would lead Ken Lay to a quantifiable understanding as to how the culture was shifting, clearly survey results tended to follow the value gained from stock options which were available to all employees. To demonstrate my point, little did I know the most telling metric may have actually come too late. Below is the comparison of 2000 to 2001 in the internal whistle blowing reports prepared by our Internal Audit Department, that neither myself, nor Ken Lay, had seen prior to Lynn Brewer showing them to us in 2006. Although the number of reports is not significant, the dramatic increase in 2001 indicates that the apparent tolerance for misdeeds had dropped as precipitously as Enron’s stock and employees were beginning to raise red flags to the Chief Controls Officer, Rebecca Carter-Skilling. Unfortunately, those reports prepared in the fall of 2001 by internal audit do not appear to have ever been shared with either Ken Lay or myself prior to Enron’s implosion.

In the end, from my perspective, both as a member of Enron’s Executive Committee and as the head of Global Human Resources, I can attest to Ken Lay’s surprise, as much as my own that Enron’s end had come virtually without warning. What surprised me and I wish Ken Lay were alive to see what The Integrity Index would have told us . . . Enron’s future was predictable – not because the CFO was corrupt but because the very things we believed we were doing right – providing lucrative stock options to our employees – turned out to be a motivator of destructive behavior in pursuit of higher stock value. As we look at the drill down into the drivers of Enron’s Integrity Index rating, we see that the Model identified structures within Enron, recommended or approved by expert consultants, that allowed the cultural shift to breed corrupt behavior of a few to destroy the long-term value of the company and its ability to
sustain its performance. Unfortunately, not even our consultants could tell us what the Model could have.

**A NEW MODEL FOR PREDICTING SUSTAINABLE CORPORATE PERFORMANCE**

The Model is driven from the primary understanding that all human behavior is driven by self-interest which on its face is not bad; however, personally speaking I can assure you that the self-interest of Ken Lay was very different than that of Jeff Skilling. By their very nature, they were two different individuals with different values. While both were brilliant, Ken Lay was driven from internal self-worth, whereas Jeff Skilling was driven from external metrics of self-worth. As Enron’s two faces of leadership became more apparent, the culture shifted from the values of Ken Lay to the values of Jeff Skilling (shared by the traders). We find that Ken Lay’s leadership style promoted an inclusive culture and Enron’s Integrity Index score reflected this whereas Jeff Skilling’s style promoted an exclusive culture where revenue drove rewards and Enron’s Integrity Index score dropped as Jeff Skilling rose in prominence within the company. Let me be very clear here – I am not saying that Jeff Skilling’s management style was in any way criminal; it was simply a radical shift from the culture that Ken Lay had created for the company.

Certain cultures demand certain governance structures and a culture developed under a leadership style similar to Jeff Skilling would require very different structures than a culture under Ken Lay’s leadership. The Integrity Index model uses quantitative measures to determine when the governance structures are no longer sufficient to promote sustainable performance. When structures become weakened, the ability to offset brazen self-interest is diminished. The chart below highlights four areas of concern for Enron that might have alerted managers to the potential for fraud prior to 2001. As Ryan Kennedy, Assistant Professor at the University of Houston, translates the elements of the Model that predicts those areas that creates weaknesses and increases risk that can lead to unsustainable performance.

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As prepared by Bruce Bueno de Mesquita and Alastair Collins

**PERFORMANCE**
Analytical / Technical Comment: There is some indication that, around 1993, Enron adopted a structure of compensation for shareholders that relied less on dividends and more on share prices. While this only gives a weak indication of fraud potential in the Enron case, such a structure places heavy emphasis on meeting or exceeding market expectations. It also does not require that the company have cash on hand to pay shareholders. This gives managers an incentive to potentially commit fraud to hide disappointing performance and keep share prices high. It may also give an early indication that share prices have reached unsustainable levels that cannot be supported by the company's actual performance.

Author's Comment: It should be noted that the external analysts all recommended Enron as a buy or strong buy until days before the implosion. In fact Forbes.com reported:

Despite many reports to the contrary, all of the four Wall Street analysts testifying said they felt no pressure either from their own firms or from Enron to tout the stock. Rather, they all believed, based on public information and their own analyses, that Enron's 'core business' was sound and profitable and that its business model was 'portable' beyond buying and selling energy to other markets. The analysts say they reached their conclusions separately. But, even in a universe where two-thirds of the recommendations are "buy," the mathematical odds of a dozen analysts all reaching the same conclusion independently are less than one-in-100.2

This speaks directly to the value of The Integrity Index to achieve success where other metrics fail. Like the analysts, The Integrity Index uses publicly available data to achieve its rating. Studies have found over and again that humans tend to “underestimate” the quality of their analysis which provides a solid case for the value of a predictive computer model such as The Integrity Index. The false positives generated through the validation of the computer model actually demonstrate the Model’s ability to work better than designed – thereby predicting unsustainable performance three or more years in advance – rather than two.

Additionally, while much of Enron’s performance, beginning in 1993 was driven by its accounting methodology of mark-to-market, most of which involved derivatives (similar to the Credit Default Options (CDOs) that largely contributed to the economic crises of 2007), Arthur Andersen not only provided consulting services for the financial transactions but audited the accounting methodology of those transactions. Andersen also signed off on all major accounting entries prior to them being reflected in Enron’s books. Ultimately, the quality of Arthur Andersen’s audit was called into question when it was discovered that the transactions designed by the CFO did not meet the requirements of Generally Accepted Accounting Principles (GAAP) and the 3% transfer of risk.

2 Congressional Hearings; “Enron Analysts: We Was Duped”; Ackerman, Dan Forbes.com; 02/27/02
Enron’s downfall came when the structural weaknesses, all of which The Integrity Index identified, were exploited by the CFO in his pursuit of brazen self-interest while he was lying both to Arthur Andersen and the Chief Accounting Officer. It should also be noted, when one seeks to perpetrate securities fraud for their own self-interest, they are looking out for themselves and thus rarely invite anyone to the party who will quash their efforts.

Although Ken Lay and those of us in human resources may have noticed a shift within the culture, we had no metrics (other than the surveys) to counterbalance the external metrics, such as countless accolades, Wall Street analysts’ recommendations, and rapid growth in our stock price. These metrics would ultimately leave us blindsided as the structural weaknesses were exploited by the CFO. It is my opinion as well as most of my colleagues who knew Ken Lay best that Ken Lay and the other board members relied upon these same metrics which appear to have had as much influence on our success as well as our failure when the metrics ultimately proved unreliable. In my opinion The Integrity Index would have provided the necessary warning signal for those of us inside the company that Wall Street analysts and Arthur Andersen were missing the mark. And certainly would have provided our consultants with a far better understanding as to the impact the structures we were creating would have had when integrated across the organization.
COMPENSATION FOR INSIDERS

Analytical / Technical Comment: One of the clearest indicators for fraud potential in Enron was the compensation structure for company insiders. Beginning in 1993, Enron's compensation for its senior management and directors began relying less on salary and more on stock options and perquisites. These forms of compensation tie management compensation to maintaining share prices, providing incentives to cover disappointing news that might adversely affect the stock. The focus on share prices may also cause managers to ignore, or not to seek out, information that adversely affects share prices. Additionally, much like dividends, a focus on non-salary payments may be an early indication that the company's share price is at unsustainable levels and/or that the company lacks the cash assets for salary increases commensurate with publicly reported performance.

Author's Comment: It should be noted that in late 1999 and 2000, the compensation structures of Enron Insiders (and the entire company for that matter) were designed by Skilling, based on recommendations by McKinsey, and validated by Towers Perrin. Enron’s target compensation level was the 90th percentile and we relied upon Towers Perrin’s research data to achieve this objective. The structures were approved and adopted by Enron’s Board of Directors once we had achieved the objectives set by the Board based upon the validation of Towers Perrin. Like many companies, we incentivized executives with a low base salary, and then applied a measured bonus structure based upon a performance review system in part designed and recommended by McKinsey.

In order to compete with other firms in attracting talent in the dot.com era, Enron generously offered stock options. Although the Enron Employee Stock Option Plan (ESOP) allowed for a grant of 2% of the base salary of employees in stock options for each year of employment during the Plan, with the strike price established at the beginning of the plan or at the time of their hire, whichever came later, the Model relies upon compensation of Insiders which was significantly more (5x to 6x base salary) which was granted in options to vice presidents and above, a small group of approximately 200 employees. The level of options, like the bonuses, was based upon performance reviews. As Enron’s stock price rose rapidly, more employees were more than happy to accept options as a form of compensation and benefited dramatically from the immediate profit realized when the options were exercised.

While the world is just becoming aware of excessive executive compensation by Wall Street firms, this practice has been going on since the days of Enron. In fact, it was the very firms that are now under scrutiny for paying large bonuses that Enron competed with for talent. So while I cannot argue with the outcome of The Integrity Index and the predictive capacity of the Model to recognize the role compensation for Insiders plays in predicting unsustainable performance, it is important to note Enron’s level of compensation was established based upon research by
Towers Perrin’s analysis of market practices which included a comparison of Wall Street firms. In fact, in light of the unsustainable performance of Wall Street firms, with whom Enron competed, I can only argue in support of the value The Integrity Index plays as the Model once again has proven to predict another wave of unsustainable performance by publicly traded companies.

**COMPENSATION TO SHAREHOLDERS**

*Analytical / Technical Comment:* There is some weak indication of problems in Enron's compensation to shareholders – measured by the number of shares provided by the company and larger-than-expected levels of market capitalization. Stock splits increase the liquidity of shares, and generally broaden shareholder ownership. This decreases the ability of shareholders to organize and exercise collective oversight. This, in turn, makes fraud more likely. A larger-than-predicted level of market capitalization provides an early indication that share prices may be unsustainable, and management efforts to maintain the stock price will more likely involve fraud by someone at some level.

*Author’s Comment:* While I cannot argue against maximizing shareholder wealth and Enron’s rapid growth in its share price certainly contributed to significant shareholder wealth, what this variable outlines is the influence “internal” shareholders had in the share price. Enron’s own employees developed transactions specifically designed to drive share price higher to increase their compensation received not as an employee but as a shareholder holding stock options. While many consider shareholders external to the company, clearly the influence of internal shareholders cannot be underestimated especially if one of those shareholders is a self-dealing CFO.

While share price is often the driver of the level of attention a public company receives, such compensation to shareholders based upon stock price is never seen as bad unless it is artificially inflated, of course. The Model’s ability to predict unsustainable performance provides insight into when the share price may be artificially inflated or unsustainable as was the case at Enron. Although I was shocked to see the Model identify that somehow Enron’s stock price was an indicator of unsustainable performance, now I understand why stock price alone should not be relied upon as the primary indicator of future success.

**OVERSIGHT STRUCTURE**

*Analytical / Technical Comment:* The only area where Enron appears to have performed extremely well consistently over time was in the structure of its oversight or board. The Model analyzes a variety of factors, including the amount of money given to external directors. When an external director is paid a minimal salary, he/she is unlikely to dedicate much effort in oversight functions. On the other hand, where the external director is lavishly compensated for
attending board meetings, there is a danger of the external director becoming co-opted by management and no longer providing oversight.

This variable is common in many governance models as it provides a frame of reference. Where there are a larger number of external directors, they have a higher capacity to provide oversight and this lowers the propensity for fraud. The larger the proportion of stock held by institutional owners, the lower the likelihood of fraud. As the CEO’s primary “self-interest” according to Selectorate Theory is maintaining his/her job, low levels of stock ownership concentration among insiders decreases the risk that a CEO will be removed.

Author's Comment: It does not surprise me that Enron scored extremely well in this variable of the Model because our Board was all outsiders, with the exception of Ken Lay. Despite their esteemed reputation and experience, they were caught blindsided like others when our CFO committed securities fraud. Clearly when the Board convened, their own reputations would have given no rise for concern. Like the rest of senior management (except for the self-dealing CFO), the Board wondered “How could this have happened without any warning?” Enron’s Board of Directors paid an enormous amount of personal wealth to satisfy the claims against them which may in and of itself offer the incentive for directors of all public companies to consider the value of The Integrity Index to provide insight as to what they may be missing in their capacity as fiduciaries.

MANAGEMENT STRUCTURE

A management structure that consists of a larger than expected number of officers and directors, and which has a larger number of officer and directors receiving stock, may indicate an incentive for fraud. This is because, as predicted by Selectorate theory, a larger number of insiders make it more difficult for the company to provide salary-based rewards. As compensation for company Insiders relies increasingly on growing the company’s performance and meeting market expectations, incentives for fraudulent reporting increase. Conversely, incentives for seeking adverse information about sectors that appear to perform well decreases.

Author’s Comment: It should be noted that beginning in 1991, the management structures at Enron were reviewed with and discussed in great deal with McKinsey, which played a pivotal role in Enron’s strategy and operations until the very end. Over the next 10 years, the structures were approved and adopted by Enron’s board of directors based upon the recommendations of McKinsey. This very fact increases the importance of The Integrity Index as an external metric that provides the only integrated and holistic methodology of understanding the cumulative impact and/or the correlation these decisions can have on the ultimate structural weaknesses given the Model’s predictive capabilities. McKinsey who is among the best strategic /
management consultants now admits the value of predicting outcomes using Selectorate Theory as was first published in the McKinsey Quarterly, 2001 Number 2.

CONCLUSION

Having known Ken Lay professionally and then personally; having worked personally with the consultants to establish compensation practices, and; having served on Enron’s Executive Committee, I am certain that Ken Lay found himself in the position of so many CEOs entrusting those around him to tell him the truth. When Lynn Brewer discovered in 1998, what she believed to be bank fraud committed by our CFO, she felt disempowered to bring such knowledge to the attention of anyone within Enron after having been told by her immediate supervisor to remain silent, because she believed she would have been fired. Her assumption was probably accurate, given what we now know about attempts by the CFO to fire Sherron Watkins when she revealed her concerns to me in 2001. It wasn’t until two weeks before his untimely death that Lynn Brewer met with Ken Lay and informed him what she knew – long after he was in a position to do anything about it. Sadly, the culture at Enron, to which I discuss within this paper, contributed to the failures at Enron. Our cultural handicap not only allowed our own Bernie Madoff to rise through the ranks but disallowed a channel for those who recognized problems to voice their concerns. The value of The Integrity Index is its ability to overcome a company’s cultural “handicap” by identifying structural weaknesses and quantifiably measuring the risk such a handicap may have on a company’s ability to sustain their performance.

What has surprised me most about the Model is it identifies areas where the decisions we made with the best of intentions and with the expertise of external consultants, proved to actually destroy value. Enron employees seemed all too thrilled to receive stock in lieu of increasing base salary compensation given the upside growth of Enron’s stock. The variables used by the Model indicate that given the other parameters, this decision actually allowed Enron to appear healthier than it was and may have actually weakened the company’s ability to sustain its performance – not because it is inherently wrong to reward employees but because compensation taken in the form of stock causes a company to appear to have more cash flow than it actually does and at the same time encourages behavior focused on increasing the stock price. However, when compensation paid out does not rise congruent with the stock price, it is among the leading indicators the Model identifies as one of the ways a company may attempt to hide the real condition of the company’s cash position.

In 1999-2000, I worked closely with Jeff Skilling to increase the compensation for all officers of the company at the vice president and above level. A significant amount of our compensation for a rather small group of 200 employees was based in stock options that vested immediately. While it should come as no surprise, for those of us at Enron – success was everything. Not
unique to Enron was the external pressure placed on the company that we had to beat Wall Street’s quarterly projections and the stock price had to continue to rise. Unfortunately, the very compensation structures we put in place, encouraged short term behavior and rewarded employees who asked “How can this be done?” rather than “Can this be done at all?” In fact, it was at this time Enron engaged in a nationwide commercial advertising campaign based around our innovative approach to everything we did – “Ask not why. . . Ask why not.”

While compensation alone is not sufficient to destroy a company, when combined with other elements of governance structures, the Model provides a clear understanding as to where weaknesses can cause the company to become vulnerable. In the case of Enron, because other factors were at play, the CFO was ultimately able to steal from Enron through a variety of financing vehicles created out of his own self-interest. Meanwhile others became as aggressive as the law and rules would allow with accounting and financing designed to help Enron appear healthier than it was through its rising stock price and ever growing list of external metrics – both of which have proven to consistently be unreliable measures of future success.

Had The Integrity Index been available in 1996, it is my strong belief that Ken Lay would have had sufficient data to understand the structures in place at Enron were not sufficient to sustain its performance, particularly given its aggressive culture. The Index would have provided the quantifiable measures necessary to identify weaknesses that allowed the CFO to exploit the structures that ultimately destroyed the company. Unfortunately, there was nothing either externally or internally at the time that gave us a clue that we were on a path to self-destruction except for the external survey done in 2001 that used qualitative data obtained from our customers and competitors. Unfortunately, by that time, it was obviously too late.

While Enron is one of a dozen companies whose performance was ultimately found to be artificially inflated and thus unsustainable in the early 2000s, nearly 10 years later, our capital market once again hangs in the balance, likely filled with dozens of companies like Enron who are finding ways to report earnings as high as possible to meet external targets which is precisely what the Model has identified as the foundational motivation of senior executives in pursuit of keeping their jobs.

Until now no one has presented a reliable metric that can predict unsustainable performance, which is why I am personally committed, as are many of my former Enron colleagues, to bring The Integrity Index to market. Speaking from personal experience, The Integrity Index is at least a first step to rebuilding the investor trust that firms like Enron and others destroyed – not intentionally – but because we all simply trusted metrics that were then, as they remain now, unreliable . . . yet we continue to rely upon them. I believe that is what Einstein called the definition of insanity.
While The Integrity Index model will not identify who or where a company’s own “Bernie Madoff” may be working, it will provide a far better understanding as to how great the risk is, that if such a person is operating as the CFO of the company, his/her behavior may be having an impact on the company’s ability to sustain its corporate performance. Most importantly, The Integrity Index model will define the structures necessary to offset that risk that brazen self-interest can lead to unsustainable performance. The essential benefit of The Integrity Index is that it provides sufficient time for CEOs to make strategic decisions before there is a proverbial run on the bank as there was at Enron.

Having been at Enron from beginning to end, and having had a close personal and professional relationship with the CEO, I know that Ken Lay intuitively knew – the health of Enron’s culture was essential to the company’s long-term sustainability. Unfortunately, the old adage “If you can’t measure it, you can’t manage it” drove us to rely upon that which could be measured – external metrics from accolades to stock price driven by smart people whose models were insufficient to predict what The Integrity Index, based upon the Model, did – Enron’s performance was unsustainable which can only lead us to accept that the current methodology is insufficient and the time has come for advancing the science of corporate performance analysis.

Perhaps the greatest value of The Integrity Index has yet to be proven. Once, launched, application of The Integrity Index could range from an investigative tool by the SEC to an audit quality assessment tool by the PCAOB. In the case of enforcement actions by the SEC, we find that using the Model, 100% of those companies which scored below 453 were later alleged to have committed securities fraud. The Model actually predicted or identified the fraud 2 to 12 years ahead of the SEC filing an enforcement action. In the application of audit quality given the apparent failure of accounting firms to detect or predict the fraud that lead to enforcement action by the SEC, certainly The Integrity Index could be used as a risk metric for accounting firms. Finally, The Integrity Index ultimately provides a real measure of risk from D&O to E&O to actual reputation risk products for insurance providers.

The predictive capabilities of The Integrity Index will provide CEOs with the ability to change direction when necessary, it will provide boards of directors with the ability to change leadership when necessary, and it will provide the market assurance that if a company hits bumps in the road, if their Integrity Index score is strong then, fear will be minimized and crises management will be unnecessary. If, however, the company’s Integrity Index score has had a sudden drop or a consistently low score, then the leader will have the opportunity to demonstrate his/her ability to become a sustainable leader. The Integrity Index will provide the information necessary for both internal and external stakeholders to make informed decisions – something neither Ken Lay, nor the market had available to them at the time Enron failed and history will no longer have to repeat itself.
The white line above reflects the relative trajectory of Rite Aid’s stock price while the company’s Integrity Index rating (indicated by the red bars) was dropping. The drop in The Integrity Index score (1996 and 1997) predicted the company’s performance was unsustainable - **2 years in advance** – while investors continued to invest unwittingly in the company.
The white line above reflects the relative trajectory of Waste Management’s stock price while the company’s Integrity Index rating (indicated by the blue bars) was dropping. The drop in The Integrity Index score (1996 and 1997) predicted the company’s performance was unsustainable - **2 years in advance** – while investors continued to invest unwittingly in the company.
The comparison above demonstrates an industry comparison for the airline industry between Alaska, Continental and Northwest Airlines. The Integrity Index scores, while consistent for Alaska Airlines, demonstrate both Continental and Northwest took corrective action to sustain their performance.
Paging Network was sold to Arch Paging on 11/13/2000 after credit downgrade from C- to D & forced into Bankruptcy by creditors.

Note: A consistent low rating in The Integrity Index for two years in a row (1995 and 1996) would predict the likelihood the company’s performance is unsustainable – 4 years ahead of the change in control.

According to the 10K filed by the Company for FYE 12/31/98 - in September 1997, the Company settled the consolidated securities class action lawsuits relating to the restatement of their financial statements. In September 1998 the Company consummated the Court-approved settlement and paid $30 million in cash to the class plaintiffs.

Note: A dramatic drop in the company’s Integrity Index score in 1995 for two consistent years (1995 and 1996) would predict the indicates the likelihood the company’s performance is unsustainable – 2 years ahead of the restatement.
In May 2009, a jury found in a securities fraud action entitled Lawrence E. Jaffee Pension Plan v. Household International, Inc., filed in August 2002, that from March 23, 2001 (the date of Statement No. 14, with respect to which two of the defendants were found to have acted knowingly), the allegedly misleading statements inflated Household’s share price by as much as $23.94. In the third quarter of 2002, the company took a $600 million charge and restated its financial statements for the preceding eight years, and in October 2002, the company announced that it had entered into a $484 regulatory settlement regarding its lending practices. On November 14, 2002, the company announced that it was to be acquired by HSBC Holdings. The Integrity Index score, based upon the Model, predicted the securities fraud between 1993 and 1995.
Appendix B
The Model is designed to predict whether a company’s performance is sustainable at least two years in advance. The Model has proven to be 73% accurate in its predictive capabilities. Application, validation, and translation of the Model into The Integrity Index model has proven that 100% of companies whose Integrity Index score falls below 453 are ultimately alleged to have committed securities fraud. Although securities fraud is a clear indication that a company’s performance is unsustainable, the purpose of The Integrity Index is simply intended to be a risk metric that provides sufficient opportunity for changes in strategic direction for Senior Management, the Board of Directors and investors. Below are The Integrity Index scores for those companies which scored less than 453 in the original data set comprised of the S&P 500. Of the Top 10 largest frauds (reflected in Table 8, pg. 44 of Appendix C), the only company which was alleged to have committed securities fraud that scored above 453 was Cisco Systems which scored 610.82 (1994); 518.21 (1996); and 619.83 (1998). The fraud was alleged to have occurred in 1999.

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<td>1997</td>
<td>100.00</td>
</tr>
</tbody>
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**Bank of America**

**BANK OF AMERICA - 03/15/04:** The SEC settled with Bank of America for securities fraud charges arising from arrangements to permit timing of certain Nation Funds mutual funds and for facilitating market timing and late trading to certain customers. Bank of America has agreed to pay a total of $375M in fines.

Bank of America was ordered to pay more than $141 million to a dozen institutional plaintiffs in connection with its 1998 sale of $648 million in securities by the furniture company Heilig-Meyers, at the time a darling of Wall Street.

Bank of America, directly or indirectly, violated Section 14(a) of the Securities Exchange Act of 1934 ("Exchange Act") [15 U.S.C. § 78n(a)] and Rule 14a-9 thereunder [17 C.F.R § 240.14a-9]. Unless permanently restrained and enjoined, Bank of America will again engage in the acts and transactions set forth in this complaint or in acts and transactions of similar type and object.

Source: www.SEC.gov

NOTE: The Integrity Index predicted the securities fraud in 1996 (2 years in advance of the occurrence of securities fraud and 6 years in advance of the SEC action).
BOSTON SCIENTIFIC - 08/22/2000: The SEC revealed that Boston Scientific had materially overstated its net income, and understated net losses, in quarterly and annual reports for the periods ended March 31, 1997, through June 30, 1998. In 1997 and 1998, Boston Japan recorded thousands of false sales collectively totaling more than $75 million. As a result, Boston Scientific materially overstated its net income and/or understated its net losses for all four quarters in 1997, the fiscal year ended December 31, 1997, and the first two quarters in 1998, by amounts ranging from 10% to 46% of net income.

Source: www.SEC.gov

NOTE: The Integrity Index predicted the securities fraud in 1994 (3 years in advance of the occurrence of securities fraud and 6 years ahead of the SEC action).
CENDANT - 02/28/2001: SEC Charged Walter A. Forbes and E. Kirk Shelton, Former Top Officers of CUC International Inc. and Cendant Corp., with directing and profiting from massive financial fraud for the period 1995-1997 alone, pre-tax operating income reported to the public by CUC was inflated by an aggregate amount of over $500 million.

Source: www.SEC.gov

NOTE: The Integrity Index predicted the securities fraud in 1993 (2 years in advance of the occurrence of securities fraud and 7 years ahead of the SEC action).
CHAMBERS DEVELOPMENT - 2/27/96: The SEC alleged between 1989 through 1992, Chambers understated its expenses and overstated its earnings because it improperly capitalized certain costs. As a result, the company issued press releases and filed with the Commission registration statements and periodic reports on Forms 10-K and 10-Q that contained materially false and misleading financial statements and other financial information. Chambers stock ceased to be publicly traded when Chambers became a wholly-owned subsidiary of USA Waste Services, Inc. on June 30, 1995.

Source: www.SEC.gov

NOTE: The Integrity Index identified the securities fraud in 1990 (Concurrent with the occurrence of securities fraud and 6 years in advance of the SEC action).
**COMPARATOR SYSTEMS - 05/31/96**: The SEC complaint alleges that Comparator Systems issued false and misleading financial statements for the fiscal years ending June 30, 1994 and June 30, 1995 and for the first three quarters of fiscal year 1996, which grossly inflated the company's assets throughout that period. The Complaint further alleges that Rogers, Hitt and Armijo caused Comparator to file these false financial statements for the purpose of enabling Comparator common stock to remain listed for trading on the National Association of Securities Dealers' Automated Quotation ("NASDAQ") SmallCap Market System and to facilitate the sale of Comparator common stock to the public.

*Source: www.SEC.gov*

NOTE: The Integrity Index identified the securities fraud in 1994 *(Concurrent with the occurrence of securities fraud and 2 years in advance of the SEC action).*
**ENRON - 10/02/02:** The SEC announced that starting in at least early 1997, CFO Andrew Fastow, Michael Kopper, and others devised a Scheme to defraud Enron's security holders through transactions with certain Enron SPEs. Some of these SPEs were not eligible for off-balance-sheet treatment because the SPE and supposedly independent third-party investors were controlled by Fastow, Kopper, and others, the outside equity requirement was not met, and the third-party "investment" was not truly at risk. Thus, these SPEs should have been consolidated onto Enron's balance sheet. Further, Fastow, Kopper and others used their simultaneous influence over Enron's business operations and the SPEs as a means to secretly and unlawfully generate millions of dollars for themselves and others.

*Source: [www.SEC.gov](http://www.SEC.gov)*

NOTE: The Integrity Index predicted the securities fraud in 1996 *(1 year in advance of the occurrence of securities fraud and 6 years ahead of the SEC action).*
**HOUSEHOLD INTERNATIONAL - 03/19/03:** The SEC charged Household International with filing false and misleading accounting statements. In the third quarter of 2002, the company took a $600 million charge and restated its financial statements for the period between 1994 and 2002.

*Source: www.SEC.gov*

NOTE: The Integrity Index predicted the securities fraud in 1993 (1 year in advance of the occurrence of securities fraud and 10 years in advance of the SEC action).
**INFORMIX** - 11/21/01: The SEC alleges that, at the end of July 1997, Informix's financial staff and independent auditors discovered the secret side agreements CEO, Phillip White was concealing. Informix ultimately restated its 1996 financial statements to reflect substantial decreases in its earnings and income caused by, among other things, discovery of the two side agreements White concealed and various other side agreements. Informix's amended 1996 Form 10-K revealed that, instead of earning net income of $97.8 million as Informix originally reported, Informix suffered a net loss of $73.6 million in 1996. IBM acquired the database business from Informix Software for $1B in 2001 – by 2007 IBM had lost 80% of Informix users.

*Source: www.SEC.gov*

NOTE: The Integrity Index predicted the securities fraud in 1993 (**3 years in advance of the occurrence of securities fraud and 8 years in advance of the SEC action**).
MEDAPHIS - 08/11/97: The Medaphis fraud was a case of financial statement fraud. The fraud started when the company materially misrepresented their 1995 fourth quarter results to meet earnings expectations. The 1995 year end results that were released directly matched analyst expectations, as well as having record high operating results. The company continued the fraud by materially overstating their net income in the first two quarters of 1996. They eventually admitted that the results in 1995’s fourth quarter were materially false and misleading due to improper and deceptive accounting practices. This stunned the entire investment community as they were led to believe Medaphis a solid investment.

Source: www.SEC.gov

NOTE: The Integrity Index identified the securities fraud in 1995 (Concurrent with the occurrence of securities fraud and 2 years in advance of the SEC action).
NETWORK ASSOCIATES - 06/16/94: Network Associates filed false and misleading annual and quarterly reports and financial statements, and securities registration statements, with the Commission from the second quarter of 1998 through the first quarter of 2001. On October 31, 2003, Network Associates restated its financial results for the third time in five years. The 2003 restatement affected seven years of reported financial results – beginning in 1997 through the second quarter of 2003. For 1998 alone, the restatement decreased originally reported revenues by approximately $562 million, or 57 percent. As a result of the restatement, the total revenues for the period decreased by $291 million.

Source: www.SEC.gov

NOTE: The Integrity Index identified the securities fraud in 1998 (Concurrent with the occurrence of securities fraud and 6 years in advance of the SEC action).
ORACLE - 03/14/96: From 1991 until March 1994, Oracle willfully engaged in the business of offering and selling Oracle securities to the general public. During this period, Oracle continuously offered its securities. Oracle willfully used interstate telephonic communication and the mails to facilitate the offer and sale of Oracle securities. No registration statement has been in effect or filed with the Commission with respect to the securities offered and sold by Oracle. As of March 1994, Oracle had offered and sold Oracle securities to at least 41 individuals and entities, raising an amount in excess of $1.2 million. He arranged the offer and sale of the Oracle securities. In view of the above, Oracle willfully violated Section 17(a) of the Securities Act, Section 10(b) of the Exchange Act, and Rule 10b-5 thereunder.

Source: www.SEC.gov

A securities fraud class action was also filed for securities of Oracle Corporation between 12/15/01 & 03/01/01, against Oracle and one of its founders, CEO and Chairman J. Ellison, for violations of the federal securities laws arising out of defendants' misleading statements concerning the Company's operations and prospects for Q3 2001 and beyond. Taking advantage of the inflation in Oracle stock, Oracle's Chairman dumped almost $900 million of his own Oracle stock at artificially inflated prices of as much as $32 per share, in what the largest insider trading in the history of the U.S. financial market.

Source: http://www.legalcasedocs.com/120/246/246.html#item28

NOTE: The Integrity Index identified the securities fraud in 1991 (Concurrent with the occurrence of securities fraud and 5 years in advance of the SEC action).
RITE AID – 06/21/02: Rite Aid overstated its income in every quarter from May 1997 to May 1999, by massive amounts. When the wrongdoing was ultimately discovered, Rite Aid was forced to restate its pre-tax income by $2.3 billion and net income by $1.6 billion, the largest restatement ever recorded. The complaint also charges that CEO Martin Grass caused Rite Aid to fail to disclose several related-party transactions, in which Grass sought to enrich himself at the expense of Rite Aid's shareholders.

Source: www.SEC.gov

NOTE: The Integrity Index identified the securities fraud in 1997 (Concurrent with the occurrence of securities fraud and 5 years in advance of the SEC action).
**SUNBEAM - 09/03/02:** The illegal conduct began at year-end 1996 with the creation of inappropriate accounting reserves, which increased Sunbeam's reported loss for 1996. These "cookie-jar" reserves were then used to inflate income in 1997, thus contributing to the false picture of a rapid turnaround in Sunbeam's financial performance. In addition, to further boost income in 1997, the Company recognized revenue for sales, including "bill and hold sales," that did not meet applicable accounting rules. As a result, for fiscal 1997, at least $60 million of Sunbeam's reported $189 million in earnings from continuing operations before income taxes came from accounting fraud. Sunbeam's improper accounting and channel stuffing in 1997 created the prospect of diminished results in 1998.

*Source: www.SEC.gov*

**NOTE:** The Integrity Index identified the securities fraud in 1996 (**Concurrent with the occurrence of the securities fraud and 6 years in advance of the SEC action**).
**WASTE MANAGEMENT** - 03/26/02: The SEC charged executives with a systematic Scheme to falsify and misrepresent the company’s financial results between 1992 and 1997.

*Source: www.SEC.gov*

NOTE: The Integrity Index predicted the securities fraud in 1990 (*2 years in advance of the occurrence of securities fraud and 12 years in advance of the SEC action*).
**XEROX** – 04/11/02: From at least 1997 through 2000, Xerox Corporation ("Xerox") defrauded investors. In a scheme directed and approved by its senior management, Xerox disguised its true operating performance by using undisclosed accounting maneuvers -- most of which were improper -- that accelerated the recognition of equipment revenue by over $3 billion and increased earnings by approximately $1.5 billion.

*Source:* [www.SEC.gov](http://www.SEC.gov)

**NOTE:** The Integrity Index identified the securities fraud in 1997 *(Concurrent with the occurrence of securities fraud and 5 years in advance of the SEC action).*
Using the Selectorate Theory Model as an example of The Integrity Index application represents a significant advancement in corporate performance analysis. Although The Integrity Index model relies and incorporates a variety of social science theory and statistics, when using Selectorate Theory developed by a group of the world’s foremost game theorists to predict sustainable corporate performance, we see from the above chart that represents the analysis of the original data set developed in the attached white paper, we see that the Model predicted 8 out of 10 of the largest cases of securities fraud at least two years in advance. The attached white paper available on the Internet outlines the mathematical equations used in calculating the results using Selectorate Theory. The translation of the results using Selectorate Theory into The Integrity Index and color variation was performed by The Integrity Institute.
The Political Economy of Corporate Fraud: A Theory and Empirical Tests

By

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September 2004
Abstract

Guided by a theory of governance known as the selectorate theory (Bueno de Mesquita et al, 2003), we examine how governance structures within publicly traded companies affects corporate performance, the ease with which corporate executives lose their jobs for poor performance, and the incentives of executives to misstate corporate performance to protect their jobs. Firms are classified according to the number of individuals who have a say in who should lead them (the selectorate) and the size of the group of supporters a leader needs to gain or maintain control (the winning coalition). Using publicly available data, we develop measures of these concepts within the corporate setting and show that these governance structures influence corporate performance and compensation packages used to reward management and stockholders. We compare compensation packages and reported performance with those expected given governance structures. Deviations from expectations provide predictors of fraudulent reporting that allow for discrimination between firms that subsequently commit fraud (within two years) and those that do not.
I Introduction

Cases of fraudulent corporate reporting by managers who then cash out their holdings are widely thought to corroborate the risk highlighted in principal-agent models of the firm.\(^1\) The risk is that inadequate governance-constraints free managers to expropriate the investments of financial backers (Coase 1937; Jensen and Meckling 1976; Fama and Jensen 1983a, b; Baumol 1959; Marris 1964; Williamson 1964; Grossman and Hart 1988; see Schleifer and Vishny 1997 for review). Yet, to our knowledge the principal-agent framework has thus far not been shown to account for or adequately predict accounting fraud. Alexander and Cohen (1996) and Baucus and Near (1991), to be sure, examine how corporate performance and governance influences the likelihood that firms engage in economic crime, but they do not focus specifically on accounting fraud. Hansen, McDonald, Messier and Bell (1996) use a neural network to attempt to predict accounting fraud but, as is the nature of neural network models, they do not provide micro-foundations for their predictions.

In developed equity markets with adequate legal protection for investors, we believe that securities fraud (also referred to as accounting fraud) is typically the result of management trying to preserve shareholder value in order to protect their jobs in the face of poor performance rather than as a result of a desire to defraud investors per se.

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\(^1\) For instance, both President George W. Bush in his weekly radio address (June 29, 2002) and Federal Reserve chairman Allan Greenspan in testimony before Congress (New York Times, July 17 2002, p. A17) called for curbs on greed and in a recent Harris Interactive poll 90% of the public thought the recent collapses of such companies as Enron and Worldcom were the result of unfettered management greed (Roper Center 2002).
Building on this assumption, we model the likelihood of fraudulent reporting as a function of each corporation’s reported performance; ownership oversight; and institutionally induced incentives to govern truthfully. We then test key propositions and offer out-of-sample evidence of the potential of the model discussed here—referred to as the selectorate model (Bueno de Mesquita, Smith, Siverson, and Morrow [hereafter BdM2S2] 2003)—to predict fraudulent corporate reporting among publicly-traded US firms.

The paper proceeds as follows. Section II explains the model. Like others, we focus on the principal-agent relationship between shareholders and firm managers (Berle and Means 1932, Schleifer and Vishny 1997). However, we diverge from the standard view that the agency problem arises because unconstrained managers maximize their compensation at the expense of shareholders (Fama and Jensen 1983a, b; Aggarwal and Samwick 1999). Rather, we assume that the primary interest of managers is to retain their jobs and that the agency problem arises because of this motivation. Job retention is thought to be primary because managers value their long-term income stream over short-term gains and because they attach value to exercising control (Caplow 1968; Holmstrom 1999). The selectorate model shows how variations in internal governance structures influence the tradeoff between management’s urge to increase its compensation and its desire to retain its corporate leadership position.

Others, of course, consider job retention as a potential motivator of actions by firm managers. Jensen and Ruback (1983) drew attention to the costs for firms associated with efforts by unsuccessful managers to retain their jobs. Jensen and Meckling (1976) and Fama (1980) investigated how the contractual risk of termination creates incentives
for managers to try to produce good corporate performance. While studies, such as Weisbach (1988), Yermack (1996) and Denis et al (1997), find evidence that poor performance increases the risk of CEO turnover, executive dismissal remains relatively uncommon. These studies highlight the role of management structure and firm ownership in shaping the threat of dismissal. Dismissals for poor performance are relatively rare. Weisbach (1988) estimates that if firms are ranked by stock return performance then, even in the lowest decile of firms, the CEO turnover rate is only 6.1%. As Jensen (1993) observes, boards of directors are generally captured by management, making it difficult for boards to dismiss managers. Warner, Watts, and Wruck (1988) demonstrate, however, that boards are willing to dismiss managers when faced with truly bad performance. These results are reinforced by Martin and McConnell (1991) in the context of corporate takeovers. As we emphasize, one reason for committing fraud is to cover up the firm’s true record to avoid dismissal. If fraud is perpetrated successfully, it goes undetected and so few dismissals are observed. Only when circumstances preclude a successful cover-up is fraud likely to be uncovered. Dismissal follows once the truly disastrous circumstances of the firm come to light. Whether discovered ex post or not, the threat of dismissal can be the primary ex ante motivation for management’s conduct.

Thus, a feature of the selectorate model is to highlight how and when the threat of termination following poor corporate performance encourages management to commit fraud rather than report the true record of the firm. Unlike the model proposed here, previous studies have not investigated the endogenous relationship between internal corporate governance structures, job security, and compensation in the face of incentives to misreport results.
Section III describes the data we use based on a random sample of publicly traded firms in the United States, as well as all publicly traded American firms alleged to have committed securities fraud over the period from 1989-2001. In Section IV we use the data to test propositions derived from the model. The evidence supports the proposition that senior managers who depend on a large coalition to retain their jobs are more likely to engage in fraudulent reporting than are managers who govern with the support of a small coalition. We also find that highly diffuse ownership and highly concentrated ownership both make fraud less likely, while intermediate levels of concentration of ownership substantially increase the risk of fraud. The results on ownership concentration reinforce empirical findings by McConnell and Servaes (1990) and theoretical implications derived by Stulz (1988) regarding corporate performance, albeit in a rather different context from that of the selectorate model.

The model implies and the evidence supports the expectation that in periods leading up to the commission of fraud, senior managers are under-compensated relative to expectations given the firm’s governance structure and reported corporate performance. This finding undermines the view that there is a straightforward link between greed and fraud. The empirical analysis highlights a specific pattern of dividend payments, executive compensation, and growth in market capitalization that is indicative of firms that are likely to commit fraud.

In Section V we report the out-of-sample predictive capabilities of the model. We show that it can be a reliable tool for identifying the risk of fraud in specific firms, providing one to two years of early warning. In fact, the subset of firms in our highest ex ante risk category were subsequently alleged to have commit fraud over eighty percent of
the time while those in the lowest ex ante risk grouping subsequently are alleged to have committed fraud less than 2.5 percent of the time. Section VI provides conclusions.

Section II The Model

The essential features of any organization’s governance structure can be depicted within a two-dimensional space where one axis is the size of the organization’s selectorate (S) and the other dimension is the size of its winning coalition (W), W < S. The selectorate is the set of people responsible for choosing the leadership – for convenience referred to here as the CEO of a firm – and with the prospect of themselves gaining access to special privileges or benefits as a result of their support for the incumbent or a new management team. The winning coalition is the subset of the selectorate whose support is essential for the leadership to remain in its position of authority. In the CEO’s quest to keep his or her job, these two political institutions – W and S – influence corporate policies and the risk of misreporting financial results.

The focus of the game is political competition for control of the firm. The incumbent corporate leader, L, attempts to defeat challenger C who seeks to become CEO. Both the challenger and CEO offer an allocation of private (g) and public (x) goods subject to the budget constraint: gW + px ≤ R. R represents the resources (revenues) corporate leaders can allocate, g is the provision of private goods that are benefits only to those “inside” the firm’s governance structure (e.g. senior management, members of the board of directors), with W being the size of the coalition who receive these goods, x is the provision of public goods; that is benefits equally received by each

2 For technical convenience, we assume there is an infinite pool of potential challengers so the incumbent faces a different rival in each period.
share held by the owners of the firm, and $p$ is the price of providing public goods. The public goods, $x$, include such things as dividends and growth in market capitalization. While the provision of $x$ benefits all shareholders, it does not satisfy the non-rival aspects of true public goods. However for ease of language we refer to these non-excludible benefits as public goods. We also abuse notation by referring to $W$ as both the set of supporters in the winning coalition and the size of this set.

The selectors choose to retain the CEO or to replace her with a rival. Selectors, who could in principle be elevated to the board or senior management to form a new winning coalition, receive benefits from both private and public goods. In particular we assume selectors have additively separable, continuous, concave utility functions $V(x, g)$. We denote the partial derivatives of $V(x, g)$ with respect to $x$ and $g$ as $V_x(x, g)$ and $V_g(x, g)$, respectively. Corporate leaders receive a payoff of $\Psi > 0$ if they retain their job. This is the value they attach to exercising control. Additionally the leader receives benefits equivalent to the size of any resources she retains for her personal disposal. We can think of these retained resources as the CEO’s salary and other benefits. Deposed CEOs or rivals who fail to attain control receive a payoff of zero.

Additional to the material benefits of being CEO, we assume corporate leaders have different affinities (idiosyncratic likes and dislikes) towards each selector. Affinities play an important role in shaping the survival of leaders so we pause to discuss our assumptions and the incentives they create within the game.

We assume that initially a potential leader’s affinities are unknown and that each possible order of affinities over the pool of selectors is equally likely. In some specifications of the selectorate theory (BdM2S2 2002) we explicitly include these
affinities as part of players' payoffs. Here we treat them lexicographically and use them
only to break ties if all else is equal. Once a potential leader becomes CEO, affinities are
learned and become common knowledge. In all subsequent rounds the CEO forms her
coalition with those selectors with whom she has the greatest affinity. The revelation of
affinities reflects the risk of defecting to a challenger. An incumbent CEO can credibly
commit to including current members of her coalition in future coalitions; she is after all
already including her most preferred (highest affinity) selectors. In contrast, the
challenger realigns his coalition once his affinities are revealed. Hence while a selector’s
decision to join the challenger’s transitional coalition might be essential in the rival’s
ascendancy, the challenger can not guarantee that selector long term membership in his
coalition and the associated private goods paid to members of the coalition. As Weisbach
(1988 p.432) states it “Inside directors’ careers are tied to the CEO’s and hence insiders
generally are unable or unwilling to remove incumbent CEOs.”

a. The Game

The game is infinitely repeated, with all payoffs discounted by a common
discount factor $\delta$. The stage game is as follows:

1) The incumbent CEO (L) and rival (C) simultaneously announce compensation
schemes and coalitions. The CEO’s coalition ($W_L$) is the $W$ selectors with whom she has
the highest affinity. The CEO announces compensation of $g_L$ private and $x_L$ public goods.
The rival challenger announces a coalition ($W_C$) of size $W$ and compensation of $g_C$
private and $x_C$ public goods.
2) Selectors choose between the CEO and the rival. The CEO is replaced by the challenger if and only if fewer than W members of WL support the incumbent and W members of WC support the rival.

3) The affinities of the leader chosen in step 2 (be that the incumbent or the rival) are revealed and become common knowledge.

Proposition 1: There exists a Markov Perfect Equilibrium in which the incumbent CEO always survives spending m* resources to provide g* private and x* public goods (m*=x*p+g*W) and the challenger offers g private and x public goods (R= x p+ g W) in each period.\(^3\) These policy provisions satisfy the following four equations:

\[
\frac{1}{1-\delta} V(x^*, g^*) - V(x, g) - \frac{\delta}{1-\delta} W V(x^*, g^*) - \frac{\delta}{1-\delta} (1 - \frac{W}{\delta}) V(x^*, 0) = 0 \quad (1)
\]

\[
W V_x (x^*, g^*) - p V_g (x^*, g^*) = 0 \quad (2)
\]

\[
W V_{x} (x, g) - p V_g (x, g) = 0 \quad (3)
\]

\[
R - px - W g = 0 \quad (4)
\]

Proof and discussion: We start by characterizing optimal spending. Specifically, for any given level of spending, M, on a coalition of size W, we define \(^\wedge g(M,W)\) and \(^\wedge x(M,W)\) as the level of private and public goods that maximize the payoffs of a coalition member.

Formally, \(x(M,W), g(M,W) = \arg \max_{x \in R^+, g \in R} V(x, g)\) subject to the budget constraint \(M = W g + px\). The first order conditions of this maximization problem imply that

\(^3\) Here we do not examine the model in an incomplete information setting in which incumbent CEOs do not always retain their jobs because our interest is less in identifying when a CEO will be deposed than in identifying what CEOs can do to offset threats to their job retention.
WVₜ(x,g) = pVₜ(x,g). Equations (2) and (3) ensure both the incumbent and rival maximize the payoff to coalition members for the given level of resource expenditure. We define the indirect utility function associated with these optimal compensations as

\[ \nu(M, W) = V(\hat{x}(M,W), \hat{g}(M,W)) \]

and the value of receiving only the public benefits associated with this compensation scheme as

\[ u(M, W) = V(\hat{x}(M,W), 0). \]

By the deposition rule in step 2 of the stage game, to come to power the rival needs to convince at least one member of the incumbent’s coalition to defect. The rival then makes the best possible offer he can in order to persuade at least one current coalition member to defect to him. In the immediate period the challenger can do no better than offer to spend all resources optimally; that is, \( \hat{x}(R,W) \) and \( \hat{g}(R,W) \), providing \( \nu(R,W) \) rewards to his coalition. Should the rival succeed in displacing the incumbent CEO then in the next period he will provide \( g^* \) private goods and \( x^* \) public goods to the coalition of \( W \) selectors for whom he has the highest affinity. Since the rival’s affinities are not known and all possible affinity orderings are equally likely, the probability of any individual selector being included in the rival’s future winning coalition is \( \frac{W}{S} \). With probability \( 1 - \frac{W}{S} \) a selector is excluded from the rival’s future coalition. Therefore, the present value of the rival’s best possible compensation scheme is:

\[ \nu(R,W) + \frac{\delta}{1 - \delta} \frac{W}{S} \nu(m^*,W) + \frac{\delta}{1 - \delta} (1 - \frac{W}{S}) u(m^*,W). \]

The first term represents the best possible immediate compensation the rival can offer. The second represents the discounted value of being included in the rival’s
coalition in every future period. The probability of such inclusion is $\frac{W}{S}$. The third term is the discounted value of being excluded from the rival’s coalition in future rounds.

Exclusion occurs with probability $(1 - \frac{W}{S})$.

If the CEO is retained, then members of her coalition receive the immediate benefits of her compensation plus the net present value of receiving payoff of $v(m^*, W)$ in the form of $x^*$ public and $g^*$ private goods in each future period. Hence selectors in $W_L$ remain loyal to the CEO provided that:

$$V(x_L, g_L) + \frac{\delta}{1-\delta} v(m^*, W) \geq v(R, W) + \frac{\delta}{1-\delta} \frac{W}{S} v(m^*, W) + \frac{\delta}{1-\delta} (1 - \frac{W}{S}) u(m^*, W)$$

(5). This decision defines optimal voting in undominated strategies by coalition members.$^4$

The incumbent CEO does best while keeping her job by satisfying equation (5) with equality through optimal spending, equation (2). The stationarity of MPE implies that the CEO’s behavior in the current period is identical to behavior in future periods. Therefore,

$$\frac{1}{1-\delta} v(m^*, W) = v(R, W) + \frac{\delta}{1-\delta} \frac{W}{S} v(m^*, W) + \frac{\delta}{1-\delta} (1 - \frac{W}{S}) u(m^*, W)$$

(6).

Equation (6) is simply equations (1)-(4) written in terms of the indirect utility function. Since the CEO minimizes expenditures while maintaining office, the challenger can not improve his prospects of attaining the top job and the selectors choose optimally between candidates for the CEO position, equations (1)-(4) characterize a MPE.$^5$

---

$^4$ Those selectors outside of $W_L$ obviously vote for the challenger since this gives them increased immediate returns and the prospect of inclusion in future winning coalitions.

$^5$ The above model provides the simplest exposition of the selectorate theory. Elsewhere we relax the strict assumptions on the choice of coalition membership used here. We also
b. Institutional determinants of compensation and survival

Now we discuss the comparative static results utilized here. The first important comparative static indicates that the ratio of private to public goods is decreasing in the size of the winning coalition: \( \frac{d g^*}{dW} < 0 \). As \( W \) increases, corporate leaders direct more resources towards providing public benefits such as increased share price or dividends to stockholders. This result follows directly from equation (2).

The second comparative static examines \( R-m^* \), the difference between the total available resources, \( R \), and the amount of resources the CEO must spend to match the challenger’s best possible offer. It provides a metric of the ease of survival for CEOs. When \( R-m^* \) is large, the incumbent CEO can retain plenty of resources for her own discretionary purposes (Baumol 1959; Marris 1964; Williamson 1964; Grossman and Hart 1988). Having such discretionary resources cushions the CEO against exogenous shocks that might otherwise endanger her control of the corporation. In contrast when \( R-m^* \) is small, the CEO’s control of the firm is less secure as she has fewer resources available to compensate for short falls.

The ease with which CEOs can survive in office (\( R-m^* \)) is increasing in the size of the selectorate and is decreasing in the size of the winning coalition: \( \frac{d(R-m^*)}{dS} > 0 \)

extend the theoretical model to consider the endogenous generation of resources and examine the consequences of alternative deposition rules (BdM2S2 1999, 2002, 2003).
and \( \frac{d(R - m^*)}{dW} < 0 \). This indicates that CEOs who depend on a relatively large coalition of, say, directors, are at greater risk of deposition as a result of poor performance than are those who depend on a small coalition. As a consequence, the former group of CEO’s has the greatest incentive to misrepresent performance to preserve their jobs.

Selectorate size also influences the risk to a CEO’s tenure. When ownership is diffuse (S is large), such that current insiders have little prospect of also being insiders under new management, CEO’s jobs are relatively safe despite poor performance. However, as ownership becomes concentrated in fewer hands (S is small), such that current insiders are more likely to be included within a new management team, supporters become less loyal and CEO’s have increased incentives to misrepresent performance to protect their jobs.

Section III Data and Measurement

Our data set consists of 372 randomly selected US publicly traded firms plus 91 firms alleged to have committed fraud. Fraud allegations are based on firms investigated by the SEC for material misstatements in their financial reports. The compilation of cases was provided by Arthur Andersen, LLP for 1989-1999 and updated with comparable data from Stanford’s securities fraud web site maintained by Joseph Grundfest for 2000-2001.

\[ I = v(m^*,W) - v(R,W) + (\delta/(1-\delta))(1-W/S)(v(m^*,W) - u(m^*,W)) = 0, \]
\[ I_m = v_m(m^*,W) + (\delta/(1-\delta))(1-W/S)(v_m(m^*,W) - u_m(m^*,W)) > 0, \]
\[ I_W = v_W(m^*,W) - v_W(R,W) - (\delta/(1-\delta))(1/S)(v(m^*,W) - u(m^*,W)) + (\delta/(1-\delta))(1-W/S)(v_W(m^*,W) - u_W(m^*,W)) < 0, \]
\[ I_S = (\delta/(1-\delta))(W/S^2)(v(m^*,W) - u(m^*,W)) > 0. \]

By Cramer’s rule, \( dm^*/dW = -I_W/I_M > 0 \) and \( dm^*/dW = -I_W/I_M < 0. \)

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\[ 6 \] These comparative static results are most easily seen by rearranging equation (6) to produce identity \( I = v(m^*,W) - v(R,W) + (\delta/(1-\delta))(1-W/S)(v(m^*,W) - u(m^*,W)) = 0, \) with partial derivatives \( I_m = v_m(m^*,W) + (\delta/(1-\delta))(1-W/S)(v_m(m^*,W) - u_m(m^*,W)) > 0, \)
\( I_W = v_W(m^*,W) - v_W(R,W) - (\delta/(1-\delta))(1/S)(v(m^*,W) - u(m^*,W)) + (\delta/(1-\delta))(1-W/S)(v_W(m^*,W) - u_W(m^*,W)) < 0, \) and \( I_S = (\delta/(1-\delta))(W/S^2)(v(m^*,W) - u(m^*,W)) > 0. \) By Cramer’s rule, \( dm^*/dW = -I_W/I_M > 0 \) and \( dm^*/dW = -I_W/I_M < 0. \)
The unit of analysis is the company year, with that being the frequency of SEC mandated financial reports.

The dependent variable, Future Fraud, is coded as 1 in year t if the firm was subsequently alleged by the SEC to have committed securities fraud in year t+1 or t+2. Otherwise, Future Fraud is coded as zero. In the process of testing our theoretical perspective, we initially compare the compensation and performance of honest firms with policies within fraudulent firms. For these comparisons, we define fraudulent firms as those alleged to commit fraud in year t, t+1 or t+2.

The dataset over-represents the known instance of fraud since we use the population of such cases, but only a sample of firm-years. We have complete data for 1,395 observations, with 141 instances for which Future Fraud=1. As we use logit analysis for the principal tests of the predictive capacity of the model, the mix of sample and population does not alter the underlying estimated probability function though, of course, it does alter the actual predicted probability values. To partially correct for this, we will report predicted results based on the percentile in which predicted values fall.

In addition to the distributional issues already addressed, the dependent variable must also suffer from selection effects. The reported instances of fraud surely understate its true occurrence. Consequently, it is likely that our predictions include an unknown number of seemingly false positives; that is, cases for which the theory correctly predicts a high probability of fraud but with no allegation of fraud having been levied against the company. There is also a prospect of false negatives; that is, firm years predicted to have a low probability of fraudulent reporting with no allegation of fraud having been made against the firm but where there was an unknowable (to the observer) successful cover up.
of false financial statements. Firm managers would not commit fraud unless they had a sufficient belief that their actions would go undetected. Therefore, we must believe that the cases of alleged fraud are only a subset of all frauds. There does not appear to be any basis for making judgments about the distribution of false positives or false negatives.

Data regarding the independent variables are all constructed from publicly available information derived from 10K’s and proxy forms filed with the SEC and in a very few instances from annual reports. The data were coded from Edgar and from the Disclosure database.

Unfortunately, firms do not directly report coalition or selectorate size. We next examine how publicly reported measures of management structure and ownership serve as indicators for the number of supporters a CEO is beholden to (W) and the size of the pool from which these supporters are drawn (S). In general we rely on multiple indicators since no single measure alone completely captures the underlying theoretical concepts.

We start with indicators of coalition size-- that is the number of insiders whose support the CEO needs to maintain control of the company. Estimates of coalition size (W) are based on the following three indicators: (1) Number of Officers and Directors (#OfficersDirectors); (2) Number of Officers Receiving Stock (#StockOfficers); and (3) Number of External Directors (#Ex. Dir).

These indicators provide estimates of the number of individual who play a prominent role in supporting and implementing the CEO’s policies. The first measure is a direct count of the number of corporate officers and directors. Unfortunately, not all of these officers and directors need play a critical role in determining political control of the firm. Some might simply carry out functions on behalf of the firm in exchange for
monetary compensation, in much the same manner that regular employees work for the firm. The second measure, number of officers receiving stock, attempts to restrict the measure of coalition size to political insiders by counting only those executives with an important role within the politics of the firm that they receive stock options.

The third measure of coalition size is the number of external director. These individuals were part of the first measure. They are less likely to be important insiders relative to officers or internal directors so that for a given number of officers and directors, the more external directors, the smaller the winning coalition is likely to be.

To gain further leverage on the role of external directors in our estimates of fraud we include their compensation and their compensation squared. External directors who are paid little more than a nominal fee for attending meetings are unlikely to be corporate insiders. As their compensation increases it becomes likely that they are in the winning coalition. However, if external directors’ compensation is substantial (indicative of a private goods focus), then the theory suggests the winning coalition is quite small.

Although studies such as Weisbach (1988), Denis et al (1997) and Yermack (1996) have highlighted the importance of external directors relative to company insiders in shaping company performance and CEO retention, they have not considered this non-monotonicity and contingency based on compensation. Given the additional complexities that these contingencies imply, in our initial tests of private and public goods we restrict our attention to the former two measures only.

Because we investigate only publicly traded companies, the data necessarily reflect truncated variance on W. The largest winning coalitions in businesses are probably associated with partnerships, a set of companies that do not report the data
required for our estimates. In large accounting partnerships, for instance, this number can readily be in the thousands. This truncation in our data operates against the theory and so makes the tests particularly demanding in that there must be sufficient impact of small changes in coalition size to discern the predicted effects. Given that W is relatively small in our entire sample, much of the variance in the ease with which CEOs are deposed for poor performance stems from how the Selectorate size shapes the risk of exclusion from future coalitions (1-W/S).

The Selectorate (S) reflects the size of the pool from which a CEO could form her winning coalition. When the selectorate is large, the CEO has great discretion in whom to include in her coalition. This discretion means that coalition members under the current corporate leadership are reluctant to defect because they know that under new management they are not assured of the well-compensated executive or board positions they currently enjoy (Hermalin and Weisbach 1988, 1998).

We estimate Selectorate size (S) as: (1) The logarithm of outstanding shares (Ln(shares)); (2) Of total stock not held by small investors (the “man on the street”), the proportion held by the largest stockholder (Big Owner, (Big Owner)^2); (3) Concentration of shares held by officers, directors and institutions (Concentration, Concentration^2); and (4) The proportion of stock held by institutional investors relative to the number of individuals who own at least one percent of the company’s shares; that is, the proportion of large owners who are outsiders but have a large stake in the firm (Inst. Owner).

These measures deserve justification. The first measure is the order of magnitude of the number of outstanding shares. At first glance this variable might appear of little relevance since a one percent stake is still one percent whether it is as a result of holding
one of a hundred shares or 10,000 of a million shares. Yet the number of shares to issue is a strategic policy decision that has important implications. In addition to a firm repurchasing its own stock, or raising new capital through additional stock offerings, the most common reason for a change in the number of outstanding shares is stock splits. Stock splits, of course, do not alter the percentage of the firm owned by any given shareholder. Yet stock splits are frequently followed by an increase in share prices (Grinblatt, Masulis and Titman 1984; McNichols and Dravid 1990). Many recent attempts to explain this phenomenon focus on stock splits as a signal of future performance (Peterson, Millar and Rimbey 1996). Additionally, stock splits also influence the liquidity of shares and hence the breadth of ownership (Dolley 1933; Barker 1956; Lakonishok and Lev 1987; Baker and Gallagher 1980).

It is worth pausing to examine, through stylized examples, why the number of outstanding shares influences selectorate size. While the number of shares in publicly traded firms is typically in the tens of millions, we start by considering an extreme case in which the company only issues 100 shares. With such a limited number of shares only a small number of extremely rich individuals or institutional investors could afford to purchase a share. Anyone seeking to become CEO must find support from within this pool of 100 supporters—the selectorate is relatively small. Since the typical firm in our sample has about 12 officers and directors, each shareholder has about a 12 percent chance of inclusion in a future coalition.

Suppose instead that the company issued one million shares owned by a million individuals. The selectorate is now many orders of magnitude larger. This makes the CEO’s problem of finding and maintaining 12 loyal supporters much easier since each
insider realizes that given the enormous pool of potential supporters he or she has only a negligible chance of receiving the valuable private compensations associated with board or executive positions under a new corporate leader. Given this massive selectorate, the CEO faces little risk of deposition even in the face of appalling performance.

The number of outstanding shares shapes the size of the selectorate. While the above examples illustrate the point, they are obviously unrealistic. Each share is not held by a separate individual. Ownership tends to be concentrated among a few individuals and institutions. In reality only these large owners have a significant prospect of coalition membership. The “man on the street,” owning only a handful of shares, has almost no prospect of board membership. In practice this means that the effective size of the selectorate is much smaller than the number of shares and depends strongly on the extent to which shares become concentrated. Our measures (2) through (4) are indicators of the effective number of individual or institutional investors who form the selectorate. As ownership becomes more concentrated, the selectorate becomes smaller. This contraction in the pool of potential candidates for board and executive positions makes insiders more willing to depose CEOs who perform poorly (Shleifer and Vishny 1986). It is this increased jeopardy that creates incentives to misrepresent performance.

Although increasing ownership concentration reduces selectorate size and hence increases the risk to under-performing CEOs, at high levels of share concentration the effects are offset as the CEO becomes the effective owner of the company. Just as a sole proprietor has no incentive to depose herself or misrepresent her performance, as ownership becomes extremely concentrated neither does the CEO. Of course this does not mean that the CEO needs to own 50% of the stock. A controlling share can be much
smaller if the remaining shares are distributed diffusely. To account for this non-monotonicity at high level of concentration, we included quadratic terms for several of our concentration measures. There is considerable extant evidence regarding this non-monotonicity in ownership concentration (Stulz 1988; McConnell and Servaes 1990; Wruck 1989; Morck, Shleifer and Vishny 1988).

The selectorate theory predicts that governance institutions affect corporate policy and compensation packages. Public goods are goods that are attributable to all shareholders. We have two such measures: dividends (as a percentage of market capitalization) and market capitalization. Private goods are those benefits received only by winning coalition members. Again we use multiple indicators for this concept: (1) Perquisites (non-salary) compensation paid to internal directors, (2) external directors and senior management (Perqs); (3) Cash payments to external directors (Ex. Dir. Cash, (Ex. Dir. Cash)^2); and (4) The proportion of allocations that go to private goods (Private Ratio). As previously discussed the second measure-- cash payments to external directors -- has a contingent influence on the number of external directors. The final variable measures private goods as a proportion of both private and public rewards, where private goods are measured as salary and other compensation for internal directors, external directors and senior management and public goods are measured as market capitalization.

In addition to these variables, we also include in our analyses two stock options indicators (Stk. Opt. Int. Directors and Stk. Opt. Executives) that measure how many options are received by internal directors and by the top five senior managers as these
variables play a prominent role in current debate over firm governance. The details behind the construction of each variable are reported in the Appendix while Table 1 provides the summary statistics.

Tables 1 About Here

Section IV Empirical Tests of Corporate Performance

Before considering the probability that a company will commit fraud, we examine key hypotheses derived from the theoretical model. These tests are restricted to firms whose audits within two years of a given observation have not been alleged to be fraudulent. We do so to establish baseline expectations as to how firms behave. We will use these baselines to compare firms alleged to have committed fraud to their apparently more honest counterparts. Each of these tests includes fixed effects dummy variables for the year so that we control for general market trends.

a. Private and Public Goods

The selectorate theory indicates that private goods decline as the size of the winning coalition increases \( \frac{d g^*}{dW} \). The theory is ambiguous about the net effect of \( S \) on private goods allocations. The ambiguity arises because selectorate size influences how much the CEO gets in private benefits in a manner opposite to its impact on rewards to coalition members, a subtlety of the theory not explored here, but borne out in other investigations (BdM2S2 2003).

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7 For instance, Yermack (1997) provides evidence that managers time the release of corporate reports and grants of stocks to increase management’s take.
Table 2 shows two different specifications designed to test the effect that coalition size has on private goods as a proportion of overall rewards. Both tests use two variables to approximate coalition size: #OfficersDirectors and #StockOfficers. The first variable, the number of officers and directors, varies between 2 and 31. The number of officers who receive stock options, the second indicator, varies between 0 and 25. The correlation between the two indicators is 0.37 (N = 2,136). As we have no basis for preferring one coalition indicator over the other, we are interested in the hypothesis that they are jointly negative in their effect on private goods provision. This, in fact, is the case in each of the tests. For instance, the joint hypothesis test in the first model that both indicators of W are less than zero yields an F(2, 1545) = 6.62 which is significant at 0.0014.8

Table 2 About Here

How are we to interpret the substantive implication of this result? Imagine a corporation whose coalition increases by three members (about a one standard deviation). The average firm allocates about four percent of its total benefits to private rewards to senior officers and directors. Increasing the size of the winning coalition by three members reduces these private payments from 4 percent to about 3 percent.9

8 The correlation between our third indicator of W, #Ext. Dir and #Off. Dir. is 0.82 (N = 2136). Specifying any two of the three indicators of W in the regression with Private Ratio as the dependent variable produces two negative coefficients and a highly significant result for the test that they are jointly negative.

9 There is also indirect evidence in the literature that corporate governance structures influence the relative value of private and public goods. Barclay and Holderness (1989, 1992) find that large blocks of shares trade at premium prices relative to smaller stock quantities. Presumably, only large stockholders have a realistic chance of future membership in the winning coalition. This evidence is reinforced by comparisons of shares that grant only dividend rights with those that also grant voting rights. Voting shares offer their owners the chance to enter the winning coalition, thereby gaining access to private goods, and they trade at higher prices (Lease, McConnell and Mikkelson 1983, 1984; DeAngelo and DeAngelo 1985; Zingales 1995). Although these differences
In addition to the two variables used to specify $W$, table 2 offers two models based on different ways of estimating the impact of selectorate size.\textsuperscript{10} The first uses the logarithm of total outstanding shares. In contrast the second model focuses on the lagged logarithm of outstanding shares and also changes in the number of shares relative to the previous year. We see later, when we explore additional measures of selectorate size, that changes in the structure of company ownership can significantly influence corporate actions. Neither of the selectorate indicators in models 1 and 2, nor alternative measures reported later, alter the impact of coalition size on private goods allocations.

The second hypothesis draws attention to whether shareholder value is increasing or decreasing over time. We examine the change in market capitalization as a function of coalition size. The theory showed that as coalition size increases CEOs place a greater emphasis on public rather than private goods ($d(\gamma/\pi)/dW<0$). They also retain fewer discretionary resources and expend more resources to provide rewards ($d(R-m)/dW<0$). Further, though not modeled here, BdM2S2 (2003) show that endogenously generated resources increase as coalition size increases ($dR/dW>0$).\textsuperscript{11} The theory predicts that corporate leaders who depend on a large coalition must be more attentive to overall corporate performance than those who answer to a small coalition.

Probably the best indicator of overall corporate performance is the rate of growth in market capitalization. To measure this growth we compare the logarithm of market

\textsuperscript{10} When we examine fraud we expand the number of ways of estimating selectorate size. For the sake of brevity we do not report all of the alternative indicators of $S$ in table 2 as selectorate size is not the focus of the hypotheses.

\textsuperscript{11} Ryngaert (1988), Malatesta and Walkling (1988), DeAngelo and Rice (1983) and Jarrell and Poulser (1988) show that such measures as poison pills to deter takeovers and supermajority rules that make replacing the management team more difficult reduce company value.
capitalization in year t with its value in the prior year. The inclusion of year fixed effects in these regressions is particularly important to control for bull or bear market conditions. We are interested in the marginal impact on growth associated with variation in coalition size. Extant studies, Morck, Shleifer and Vishny (1988) for instance, have already demonstrated a link between profitability and governance structure. However, the literature is not unanimous in its conclusions. Yermack’s (1996) paper finds that increasing board size reduces firm value, as measured by Tobin’s Q.\textsuperscript{12}

Models 3 and 4, reported in table 2, show that coalition size is an important independent determinant of growth in market capitalization. In fact, the substantive impact of increasing the size of W by three members is to increase growth in market capitalization by about 10 percent. Again the inclusion of different selectorate measures does not materially alter the effect of the winning coalition’s size.

Thus far we have discussed growth in market capitalization and the proportionate allocation of private goods. Firms can also reward shareholders with dividends. Models 5 and 6, shown in table 2, assess the effect of coalition size on dividends as a proportion of dividends and market capitalization. The theory provides no guidance about how public rewards are divided between dividends and monies reinvested to spur growth in market capitalization. Coalition size does not materially influence dividends although, as we saw, it influences growth. Tests on the combined value of dividends and market capitalization show that increasing coalition size sharply increases the total value of public rewards.

\textsuperscript{12} Himmelberg, Hubbard and Palia’s (1999) reanalysis of Demsetz and Lehn’s (1985) study of the impact of management on firm value, as measured by Tobin’s Q, shows that the inclusion of fixed effects for each firm to model unexplained heterogeneity reduces the statistical impact of governance institutions on performance. We observe a similar result if we repeat our analyses with fixed effects. However, this result is unsurprising as our time series are generally short, on average 3.2 years, many companies experience little change in our measures of W.
b. Deviations from Expected Performance

When a company fails to perform up to expectation, CEOs have incentives to take actions to protect their now-at-risk jobs. They can argue that the firm is the victim of unforeseeable exogenous shocks for which they should not be held accountable. This may not be adequate to protect them. Instead, they might misrepresent the corporation’s true performance. This possibility highlights a crucial difference between dividends and private compensation on the one hand and market capitalization on the other. Dividend payments can only be made if the funds are available. Writing bad checks is unlikely to save the CEO. Therefore, it is unlikely that large dividend payments are used to mask problems. Similarly, the payment of salaries and other private benefits requires sufficient cash on hand to meet obligations. Failing to meet these obligations reveals the company’s problems and so fails to protect management. But it is difficult for outsiders to know the true volume of sales, revenue, costs, and profits. Market capitalization reflects these factors. Indeed, these are the factors that when falsely reported but subsequently detected, result in accusations of accounting fraud.

If revenues are exaggerated or costs are understated, then senior executives can temporarily lead the marketplace to misjudge the true worth of a company, making the company appear falsely to have met or exceeded expectations. This, we believe, is the essential motivation behind corporate fraud. We now test implications of these claims.

Figure 1 illustrates one way the theory can be used to predict fraud. The graph plots the variable Private Ratio – private goods as a proportion of total compensation – on the horizontal axis and the empirically predicted level of Private Ratio given each firm’s
governance structure (as estimated in model 1) on the vertical axis. The right-hand panel, labeled “Fraudulent,” shows the graph for firms alleged to commit fraud in the current year or either of the two subsequent years. The left-hand panel shows the same graph, but for “Honest” firms, those against whom no allegations were made. The differences between the figures are striking in two ways.

Focusing just on the horizontal axis, with few exceptions fraudulent firms actually pay few private benefits. According to the theory this is a consequence of two features of large coalition organizations. Such organizations are expected to produce more public and fewer private benefits than are small coalition organizations. Additionally, executives are at greater risk of losing their jobs in large coalition organizations if performance is below expectations. Therefore, we expect that the firms that are most likely to commit fraud also are likely to produce few private goods.

The horizontal axis is insufficient to assess whether differences in private goods allocations can be attributed to the decision to commit fraud. The vertical axis, however, completes the story. Focusing on the vertical axis, we see that fraudulent firms average fewer private goods payments than are expected given their governance structure. This is seen by observing the distribution of points above and below the 45° line. In the panel displaying honest firms, firms fall equally on either side by construction. Recall that the predicted values are based only on honest firms. The fraudulent firms could have been distributed in any way relative to the 45° line. The theory anticipates that they will be disproportionately above the line, indicating smaller actual payments (x-axis) than predicted payments (y-axis). This is what the panel shows for fraudulent firms.

Controlling for coalition size, firms that commit fraud tend to produce fewer private
goods than expected. While these findings are consistent with the theoretical arguments, we now move to more systematic tests of the story related by Figure 1.

Using models 1, 3, and 5 we calculate the expected level of private goods, growth in market capitalization, and dividend payments as a proportion of public goods. For each firm we record the difference between the observed level and the predicted value on each of these variables. That residual amount tells us whether the specific firm in a given year is over or underperforming relative to expectations given its governance structure. We then compare these residual values for the set of firms that were subsequently alleged to have committed fraud in the current year or either of the next two years to firms not alleged to be involved in fraud in this period.

Two of the three residual values for each firm reflect quantities whose true value is difficult to hide: private compensation rewards and dividend payments. Therefore, we expect in these cases to observe residuals that reflect underperformance in the set of firms alleged to have committed fraud. When it comes to comparing growth in market capitalization, if we are correct that fraudulent firms lie in ways that inflate their value, we should either see no statistical difference between those alleged to have committed fraud and those who apparently report performance honestly or we should see that fraudulent firms report especially large growth in market capitalization to compensate for their under-delivery of private goods or dividends. Table 3 shows the comparisons.

The evidence in table 3 supports the predictions. What is more, the table emphasizes a result that casts doubt on accounts of venality as the primary cause of
Firms that will be accused of fraud for their financial reports in the current year or the next two years provide fewer private benefits and fewer dividends than is expected of firms with their governance characteristics. Senior executives are receiving less, not more, than their counterparts in otherwise equivalent companies. However, in terms of growth in market capitalization, these firms are indistinguishable from honest companies with comparable governance arrangements.

Table 3 suggests that it is possible to tell the difference ex ante between firms likely to commit fraud and those who are not. To test this implication more carefully, we now turn to a strictly prospective dependent variable: Future Fraud. The data for the independent variables are all observed in year $t$ and so can be known before fraud has occurred. Table 4 examines the likelihood of Future Fraud as a function of the degree to which a firm deviates from expected performance and as a function of the size of the winning coalition and the selectorate. The theory indicates that payment of dividends and private goods below expectation and growth in market capitalization equal to or above expectation heighten the risk of fraud. Furthermore, the marginal effect of large coalition size beyond its impact on private and public goods allocations is to put failed executives at risk. Therefore, executives in corporations that depend on a large coalition are more likely to misstate financial reports.

The results are consistent with expectations. While supportive of the theory, the specification in table 4 is not optimal as it imposes significant artificial constraints on

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13 That is not to say that fraud is never motivated by personal greed among managers. The case of Tyco, for example, is otherwise difficult to explain. However, as the *New Yorker* (February 17, 2003. “SPEND! SPEND! SPEND!” p. 132) concludes, Tyco’s fraud is qualitatively different from accounting frauds such as Enron’s and Worldcom’s.
how we estimate the impact of governance structure on the risk of fraud. We shift now to a fuller specification of the model and its implications for predicting fraud.

Section V Predicting Fraud: In Sample and Out of Sample Tests

The selectorate model indicates that W, S, g, and x shape the risk of fraud, with g and x being partially dependent on W. Now we propose a statistical specification that includes indicators of all four elements in an attempt to provide ex ante estimates of the risk of fraud one or two years into the future. After demonstrating the general fit between the model and fraud in all cases, we divide the data into two samples. Specifically, we estimate the model on all observations between 1989 and 1996 and use these estimates to predict the likelihood of fraud in each company-year for the period after 1996. For presentational convenience we place our predictions in five risk categories, ranging from lowest (0) to highest (4) estimated probability of fraud. The category breakpoints are determined by assigning 70 percent of in-sample firm years to the lowest risk category; 15 percent to the second lowest risk group; 7.5 percent to the middle group; 5 percent and 2.5 percent to the two highest risk categories.14

We estimate a logit model with Future Fraud as the dependent variable. The independent variables are DIV/Public, Private Ratio, Perqs, Ex. Dir. Cash, (Ex.Dir.Cash)², #Ex. Dir, Inst. Owner, Ln(shares), Big Owner, (Big Owner)², Concentration, Concentration², #OfficersDirectors, #StockOfficers, Stk. Opt. Int.

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14 Dividing the predicted values from the logit into quintiles yields comparable results, with observed fraud increasing significantly from quintile to quintile.
Directors, and Stk. Opt. Executives. Growth in market capitalization is not included to preserve observations.\textsuperscript{15}

a. Full Sample Estimates

Model 8, the full sample logit analysis, is consistent with expectations for each variable as seen in table 5. Its reliability is seen most clearly by looking at table 6 which shows the ex ante fraud risk and the incidence of fraud in the following two years. The table shows that the theory successfully discriminates between firms at risk and those that are not. Of firms predicted to be at greatest risk, 74 percent committed fraud within one of the following two years. Approximately 40\% of all frauds fall within the highest two categories of risk. Yet only 7.5 percent of firm-years occur in these categories. The model not only predicts fraud successfully, but also successfully predicts honesty. Of 971 firm-years with the lowest risk of fraud only 3.4\% are subsequently accused of fraud. Such strong results may be the product of over-fitting the model to the data. To test the genuine predictive power of the model we repeat the analyses using only information on firms prior to 1997. These estimates are also reported in table 5, and labeled as “Model 9: Out-of-Sample” We use these estimates to predict the pattern in subsequent years.

Tables 5 and 6 About Here

b. Out-of-Sample Estimates

Table 7 reports the risk of and the incidence of fraud by company year, paralleling table 6, but now only for out-of-sample observations. Of out-of-sample cases that fall

\textsuperscript{15} Including growth in market capitalization leads to results consistent with expectations but greatly reduces the total number of observations because it requires knowledge of data for the previous year in addition to the current year.
within the highest risk category, 85 percent subsequently committed fraud. Almost 60 percent of all out-of-sample frauds fall into the two highest risk categories. Likewise, the model successfully identifies honest firms. Fewer than 2.5 percent of firms in the lowest risk category subsequently were accused of fraud. The model apparently discriminates between honest and fraudulent firms. A statistic for summarizing that ability to discriminate is the Receiver Operator Characteristic (ROC) that estimates the ratio of signal to noise. A score of 0.50 indicates no discrimination. A score of 1.00 reflects perfect discrimination. The ROC score for the out-of-sample test is 0.88, supporting statistically what is evident from looking at table 7.16

c. Illustration of Performance on Specific Firms

The statistical findings encourage the belief that the selectorate theory provides a reliable tool for anticipating variations in corporate conduct and, in particular, the likelihood of fraudulent reporting. Table 8 provides a list of the ten largest companies accused of fraud during the time period for which we have data. This list includes many of the most notorious instances, including Enron, Waste Management, Rite Aid, and

16 We conducted additional out-of-sample tests in which we randomly assigned approximately half the firms to be in-sample and the remaining firms to be out-of-sample. We then estimated the model in table 5 based on the firms that were in-sample and used these estimates to predict the out-of-sample firms. We repeated this experiment 1,000 times. This is a far more demanding, less realistic, and less practically useful test than that reported in the text. The average ROC for the out-of-sample prediction was 0.785, with a standard deviation of 0.039.
others. The table shows the year-by-year prediction of the risk of fraud for each of these companies, with all predictions after 1996 being strictly out-of-sample. The out-of-sample results are shaded to draw attention to them. Cells for years in which fraud allegedly occurred contain an F as well as the predicted score. Of course, it is the score in either of the two years before fraud that are of greatest interest as these are the ex ante predictions for the period when fraud allegedly occurred. Cells that contain “ND” indicate that missing data precluded estimating a risk score for that company year. Companies are listed in alphabetical order.

Table 8 About Here

The companies listed in Table 8 have been accused of 25 instances of securities frauds during the period covered. Thirteen of these allegedly happened between 1997 and 1999, our out-of-sample period. Three more frauds for these companies, involving Cisco Systems, Xerox, and Enron, are alleged to have occurred in the year 2000. Thus, the out-of-sample predicted period includes 16 cases plus any allegations for these companies. Of these 16 largest, most notorious frauds involving massive numbers of shareholders and firms with extremely large market capitalization, 13 had a score of 4 at least one year in advance and all 16 had scores of 3 or 4 at least one year in advance. Eight provided 2 years of advance warning in the highest risk category.

The table also shows that during periods when these firms were not engaged in fraud, their scores often reflect their good behavior. The estimates for Xerox, for instance, between 1991 and 1994 suggest a very low risk company. Xerox was not accused of fraud for any of its reporting prior to 1998. The model shows that Xerox was slipping in its anticipated behavior, with scores of 2 in 1995 and 1996. Thus the model
finds reason for growing, though still moderate concern about Xerox well before the markets suspected misconduct. A similar pattern of low risk behavior is reflected in the record for Rite Aid, with its risk jumping from 0 in 1993 to 2, then 3, then 4, the highest category, in 1996. Several years later, Rite Aid was accused of having committed fraud in 1998 and 1999. These illustrative cases suggest that the prudent use of the selectorate model could make a significant difference in identifying fraud risks.

Section VI Conclusion

The selectorate theory was used to derive hypotheses about how corporate governance institutions influence corporate actions. We showed that the theory provides an explanation for the amount paid in dividends and in salaries to senior management during years of honest reporting and years immediately preceding fraudulent reporting. In the latter years, senior management receive less compensation than expected given their corporate governance structure, but reported performance and, therefore, the firm’s growth in market capitalization looks as expected given honest reporting. This wedge between lower than expected dividends and compensation for executives and normal growth in market capitalization is an early warning indicator of an elevated risk of fraud.

Our model contributes to the literature on strategic accounting (Caplan 1999; Morton 1993; Shibano 1990) by identifying governance structures and reported performance statements that are consistent with strategic CEOs’ attempts to protect their jobs.

We tested the theory’s potential to predict fraud in advance. Our out-of-sample tests indicate that the model significantly reduces uncertainty about which firms are likely to commit fraud and which are likely to report their performance honestly. The signal to
noise ratio in the out-of-sample test is 0.88 with more than 80 percent of company-years in the highest risk category involving subsequent allegations of fraud.

Our results call into question accounts in which greedy executives act to enrich themselves at the expense of shareholders. Rather, the theory and the evidence support the idea that fraud is more often committed to protect shareholder value, not out of altruism, but to protect the jobs of a firm’s senior executives. At the same time, the results highlight features of corporate governance structure and the appropriate balance between compensation and that structure that is most likely to reduce the risk of fraud.
References


Table 1: Summary Statistics (based on the 1,395 observations reported in Model 8)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future Fraud</td>
<td>0.101</td>
<td>0.302</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Perqs</td>
<td>0.758</td>
<td>5.806</td>
<td>0</td>
<td>186.364</td>
</tr>
<tr>
<td>DIV/Public</td>
<td>0.0012</td>
<td>0.0042</td>
<td>0</td>
<td>0.115</td>
</tr>
<tr>
<td>Private Ratio</td>
<td>0.037</td>
<td>0.068</td>
<td>0</td>
<td>0.761</td>
</tr>
<tr>
<td>Ext. Dir. Cash</td>
<td>0.068</td>
<td>0.121</td>
<td>0</td>
<td>1.200</td>
</tr>
<tr>
<td>#Ext. Dir</td>
<td>5.9441</td>
<td>3.2169</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Owner</td>
<td>0.077</td>
<td>0.130</td>
<td>0.0008</td>
<td>1.01</td>
</tr>
<tr>
<td>Ln(share)</td>
<td>16.262</td>
<td>1.532</td>
<td>9.440</td>
<td>21.281</td>
</tr>
<tr>
<td>Big Owner</td>
<td>0.0055</td>
<td>0.0064</td>
<td>0</td>
<td>0.159</td>
</tr>
<tr>
<td>Concentration</td>
<td>0.151</td>
<td>0.155</td>
<td>0</td>
<td>0.882</td>
</tr>
<tr>
<td>#OfficersDirectors</td>
<td>12.527</td>
<td>4.332</td>
<td>2</td>
<td>31</td>
</tr>
<tr>
<td>#Stock Officers</td>
<td>2.579</td>
<td>2.721</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Stk. Opt. Int. Directors</td>
<td>0.169</td>
<td>1.382</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Stk. Opt. Executives</td>
<td>0.2104</td>
<td>1.096</td>
<td>0</td>
<td>28.642</td>
</tr>
</tbody>
</table>
Table 2: Governance Structures and the Performance of Firms. Regression analysis with fixed effect year dummies performed only on those firm not alleged to be fraudulent in the current year or two years into the future.

<table>
<thead>
<tr>
<th>Fixed-effect year dummies</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>#OfficerDirectors</td>
<td>-0.00064 (0.0005)</td>
<td>-0.00074 (0.00066)</td>
<td>0.017* (0.007)</td>
<td>0.013* (0.007)</td>
<td>.086** (0.035)</td>
<td>.061 (.052)</td>
</tr>
<tr>
<td>#StockOfficers</td>
<td>-0.00222** (0.00077)</td>
<td>-0.0028** (0.0010)</td>
<td>0.018* (0.010)</td>
<td>0.014 (0.010)</td>
<td>-.030 (.055)</td>
<td>-.047 (.083)</td>
</tr>
<tr>
<td>Ln(share)</td>
<td>-0.015** (0.001)</td>
<td>0.069** (0.024)</td>
<td>-0.010 (.100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln(share)_t-1</td>
<td>-0.0139** (0.0018)</td>
<td>0.022 (0.025)</td>
<td></td>
<td></td>
<td>.062 (1.44)</td>
<td></td>
</tr>
<tr>
<td>%age Change in shares</td>
<td>-0.042** (0.012)</td>
<td>1.004** (0.124)</td>
<td></td>
<td></td>
<td>.408 (.956)</td>
<td></td>
</tr>
<tr>
<td>Ln(MarketCap.)_t-1</td>
<td>0.299** (0.021)</td>
<td>0.285** (0.027)</td>
<td>-0.172 (0.269)</td>
<td>0.117 (0.267)</td>
<td>0.464 (1.463)</td>
<td>-.245 (2.110)</td>
</tr>
<tr>
<td>Observations</td>
<td>1559</td>
<td>1057</td>
<td>1063</td>
<td>1061</td>
<td>1561</td>
<td>1057</td>
</tr>
</tbody>
</table>

Joint hypothesis test: #OfficerDirectors=0 and #StockOfficers=0

F(2,1545) = 6.62, p = 0.0014
F(2,1044) = 5.25, p = 0.0054
F(2,1050) = 5.12, p = 0.0061
F(2,1047) = 3.08, p = 0.0462
F(2,1547) = 2.99, p = 0.0507
F(2,1044) = 0.73, p = 0.4834

** p<.01, * p<.05, one tailed tests. Standard errors in parentheses.
Table 3: Differences Between Actual and Expected Provisions of Private Goods, Dividends and Growth in Market Capitalization.

<table>
<thead>
<tr>
<th></th>
<th>Private Goods:</th>
<th>Dividends:</th>
<th>Growth in Market Capitalization:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual-Predicted</td>
<td>Actual-Predicted</td>
<td>Ln(Mar. Cap.) Actual-Predicted</td>
</tr>
<tr>
<td>Honest Firms</td>
<td>Mean = 0 Std.dev. = .071</td>
<td>Mean = 0 Std.dev. = .005</td>
<td>Mean = 0 Std.dev. = .771</td>
</tr>
<tr>
<td>Fraudulent Firms</td>
<td>Mean = -.0079 Std.dev. = .028</td>
<td>Mean = -.0008 Std.dev. = .0015</td>
<td>Mean = .096 Std.dev. = .810</td>
</tr>
<tr>
<td>Hypothesis Test</td>
<td>T = 2.93 p&lt;.004</td>
<td>T = 4.86 p &lt; .000</td>
<td>T = 1.37 p &lt; 0.17</td>
</tr>
</tbody>
</table>

**Table 4: Logit Analysis of the Future Fraud Based Upon Deviations From Expected Performance and Governance Structure. The residual variables represent difference between actual values and values predicted by models 1, 3 and 5.**

<table>
<thead>
<tr>
<th>Dependent Variable: Future Fraud. (Fraud alleged in either subsequent year)</th>
<th>Model 7 Future Fraud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Ratio Residuals</td>
<td>-28.524**</td>
</tr>
<tr>
<td></td>
<td>(10.542)</td>
</tr>
<tr>
<td>Div/Public Residuals</td>
<td>-433.955**</td>
</tr>
<tr>
<td></td>
<td>(124.536)</td>
</tr>
<tr>
<td>Ln(MarketCap.) Residuals</td>
<td>0.402*</td>
</tr>
<tr>
<td></td>
<td>(0.188)</td>
</tr>
<tr>
<td>#OfficerDirectors</td>
<td>-0.026</td>
</tr>
<tr>
<td></td>
<td>(-0.033)</td>
</tr>
<tr>
<td>#StockOfficers</td>
<td>0.155**</td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
</tr>
<tr>
<td>Ln(shares)</td>
<td>0.815**</td>
</tr>
<tr>
<td></td>
<td>(0.145)</td>
</tr>
<tr>
<td>Constant</td>
<td>-16.672**</td>
</tr>
<tr>
<td></td>
<td>(2.605)</td>
</tr>
<tr>
<td>Observations</td>
<td>921</td>
</tr>
<tr>
<td>LogLikelihood</td>
<td>-262.488</td>
</tr>
</tbody>
</table>

** p<.01, * p<.05, one tailed tests. Standard errors in parentheses.
Table 5: Logit Analysis of Future Fraud: Full Sample and Out-of-Sample Estimates

<table>
<thead>
<tr>
<th>Dependent Variable: Future Fraud. (Fraud alleged in either subsequent year)</th>
<th>Model 8 Full Sample: All years</th>
<th>Model 9 Out-of-Sample: Only years prior to 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIV/Public</td>
<td>-0.185* (0.089)</td>
<td>-0.176* (0.094)</td>
</tr>
<tr>
<td>Private Ratio</td>
<td>-24.185** (7.367)</td>
<td>-22.527** (7.874)</td>
</tr>
<tr>
<td>Perqs</td>
<td>0.202** (0.048)</td>
<td>0.139** (0.055)</td>
</tr>
<tr>
<td>Ex.Dir.Cash</td>
<td>-8.637** (2.473)</td>
<td>-8.631** (2.760)</td>
</tr>
<tr>
<td>(Ex.Dir.Cash)^2</td>
<td>12.735** (4.365)</td>
<td>13.019** (4.908)</td>
</tr>
<tr>
<td>#Ex.Dir</td>
<td>-0.186** (0.064)</td>
<td>-0.161* (0.069)</td>
</tr>
<tr>
<td>Inst.Owner</td>
<td>-2.748* (1.335)</td>
<td>-2.246 (1.368)</td>
</tr>
<tr>
<td>Ln(shares)</td>
<td>0.686** (0.115)</td>
<td>0.665** (0.125)</td>
</tr>
<tr>
<td>Big Owner</td>
<td>89.406 (54.92)</td>
<td>90.663 (60.056)</td>
</tr>
<tr>
<td>(Big Owner)^2</td>
<td>-1,799.85 (1,354.07)</td>
<td>-1,848.84 (1,562.48)</td>
</tr>
<tr>
<td>Concentration</td>
<td>7.314** (2.267)</td>
<td>7.626** (2.629)</td>
</tr>
<tr>
<td>Concentration^2</td>
<td>-11.008 (4.576)*</td>
<td>-13.465** (5.738)</td>
</tr>
<tr>
<td>#OfficerDirectors</td>
<td>0.088* (0.044)</td>
<td>0.062 (0.047)</td>
</tr>
<tr>
<td>#StockOfficers</td>
<td>0.075* (0.040)</td>
<td>0.087 (0.041)*</td>
</tr>
<tr>
<td>Stk.Opt.Directors</td>
<td>-1.395 (0.359)**</td>
<td>-1.649 (0.820)*</td>
</tr>
<tr>
<td>Stk.Opt.Executives</td>
<td>0.555 (0.307)</td>
<td>0.818 (0.526)</td>
</tr>
<tr>
<td>Constant</td>
<td>-13.975** (2.010)</td>
<td>-13.409 (2.165)**</td>
</tr>
<tr>
<td>Observations</td>
<td>1395</td>
<td>1140</td>
</tr>
<tr>
<td>Log(likelihood)</td>
<td>-342.05</td>
<td>-285.48</td>
</tr>
</tbody>
</table>

** p<.01, * p<.05, one tailed tests. Standard errors in parentheses.
Table 6: Fraud Risk Predictions Based Upon Full Sample Logit Estimates (Model 8)
Future Fraud measures whether fraud was alleged to have occurred in either of the subsequent years. Figures in parentheses are column percentages.

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Future Fraud: NO</th>
<th>Future Fraud: YES</th>
<th>Total Number of Firm-Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Risk (0)</td>
<td>938 (96.6%)</td>
<td>33 (3.4%)</td>
<td>971</td>
</tr>
<tr>
<td>Low Risk (1)</td>
<td>184 (87.6%)</td>
<td>26 (12.4%)</td>
<td>210</td>
</tr>
<tr>
<td>Moderate Risk (2)</td>
<td>80 (74.8%)</td>
<td>27 (25.2%)</td>
<td>107</td>
</tr>
<tr>
<td>High Risk (3)</td>
<td>42 (61.8%)</td>
<td>26 (38.4%)</td>
<td>68</td>
</tr>
<tr>
<td>Highest Risk (4)</td>
<td>10 (25.6)</td>
<td>29 (74.4%)</td>
<td>39</td>
</tr>
<tr>
<td>Total Number of Firm-Years</td>
<td>1,254</td>
<td>141</td>
<td>1,395</td>
</tr>
</tbody>
</table>

Chi2(4) = 312.65, Pr = 0.000

Table 7: Out-of-Sample Fraud Risk Predictions Based Upon Pre-1997 Firm-Year Logit Estimates (Model 9)
Future Fraud measures whether fraud was alleged to have occurred in either of the subsequent years. Figures in parentheses are column percentages.

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Future Fraud: NO</th>
<th>Future Fraud: YES</th>
<th>Total Number of Firm-Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Risk (0)</td>
<td>159 (97.6%)</td>
<td>4 (2.4%)</td>
<td>163</td>
</tr>
<tr>
<td>Low Risk (1)</td>
<td>40 (87.0%)</td>
<td>6 (13.0%)</td>
<td>46</td>
</tr>
<tr>
<td>Moderate Risk (2)</td>
<td>14 (87.5%)</td>
<td>2 (12.5%)</td>
<td>16</td>
</tr>
<tr>
<td>High Risk (3)</td>
<td>11 (64.7%)</td>
<td>6 (35.3%)</td>
<td>17</td>
</tr>
<tr>
<td>Highest Risk (4)</td>
<td>2 (15.4%)</td>
<td>11 (84.6%)</td>
<td>13</td>
</tr>
<tr>
<td>Total Number of Firm-Years</td>
<td>226</td>
<td>29</td>
<td>255</td>
</tr>
</tbody>
</table>

Chi2(4) = 91.85, Pr = 0.000
Receiver-Operator-Characteristic = 0.88
Table 8: Predictions for Recent, Notorious Cases of Alleged Fraud.
(F = Fraud Alleged; 0 = Lowest Fraud Risk; 1 = Low Fraud Risk; 2 = Moderate Fraud Risk; 3 = High Fraud Risk; 4 = Highest Fraud Risk; ND = No Data)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank of America</td>
<td>ND</td>
<td>ND</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>0 F</td>
<td>0</td>
</tr>
<tr>
<td>Boston Scientific</td>
<td>ND</td>
<td>ND</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4 F</td>
<td>F</td>
<td>ND</td>
</tr>
<tr>
<td>Cendant</td>
<td>ND</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>ND</td>
<td>3 F</td>
<td>0 F</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cisco</td>
<td>ND</td>
<td>ND</td>
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<td>3</td>
<td>F</td>
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<tr>
<td>Enron</td>
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<td>0</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4 F</td>
<td>4 F</td>
</tr>
<tr>
<td>Informix</td>
<td>0</td>
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<td>3</td>
<td>3 F</td>
<td>4 F</td>
<td>4 F</td>
<td>2 F</td>
<td>ND</td>
<td>4</td>
</tr>
<tr>
<td>Medaphis</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3 F</td>
<td>4 F</td>
<td>4 F</td>
<td>3 F</td>
<td>1</td>
<td>ND</td>
</tr>
<tr>
<td>Rite Aid</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4 F</td>
<td>2 F</td>
</tr>
<tr>
<td>Waste Management</td>
<td>4</td>
<td>4 F</td>
<td>4 F</td>
<td>3 F</td>
<td>2 F</td>
<td>4 F</td>
<td>4 F</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Xerox</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4 F</td>
<td>4 F</td>
</tr>
</tbody>
</table>
Figure 1: Private Goods Provision in Honest and Fraudulent Firms.
Appendix: Description and Construction of Variables

Identifying or sorting Variables:

Company name; Ticker; Date of the Report; Net income per share; Shares outstanding
(Shares) = Total company shares actually in the market place. (This does not include
shares that have been issued, but reserved for such things as options or future sale.) Share
price on last day of reported period; Fraudyn = 1 if fraud alleged for the given year, 0 if
fraud was not alleged for the given year.

Variables related to external directors:

Number of external directors (#Ext. Dir) = Number of directors who are not officers or
employees of the company. Being “Secretary” of the board of directors does not
constitute being an employee.

Cash compensation (Ext. Dir. Cash) = Fee per board meeting * number of board meetings
in year t.

Ext. director stock options (Ext. Dir. Stock) = Total number of stock options given, if any,
to the outside directors in the year.

Other compensation (Ext. Dir. Other) = All other compensation (exclusive of SARs), if
any, paid to the outside directors as a group. This may include payment for
committee participation, insurance benefits, onetime cash payment for joining the
board, etc.

Variables related to internal directors:

Number of internal directors (#Int. Dir)

Aggregate salary of internal directors (Int. Dir. Cash)
Int. director stock options (Int. Dir. Stock) = Total stock options given in the year to all internal directors, if any.

Other compensation (Ext. Dir. Other) = All other compensation (exclusive of SARs), if any, paid to the internal directors as a group.

Variables related to management/executive officers:

Top five salary (Top5Sal) = Aggregate salary of the top five (5) employees (or fewer if the company does not have five employees).

Top five % of common shares owned (T5%Stock) = Aggregate number of shares owned by the top five executives divided by the total number of shares outstanding.

Top five stock options (T5Stock) = Aggregate number of stock options given in the year to the top five executives.

Top five other compensation (T5Other) = Aggregate amount of other compensation received by the top five executives.

Number of officers listed (#Officers) = Total number of all officers of the company listed in 10K.

All officers stock options (Off%Stock) = Total number of stock options given, if any, to all officers in the year.

Number of officers receiving stock options (#Stock Off.) = Total number of identified officers who received stock options during the year.

Variables related to distribution of common stock:
Number of individuals or firms listed by name as owning 1% or more of common stock

(NumInd1)

Percentage of shares owned by all officers and directors (Off. Dir. %)

Percentage of shares listed as owned by institutional investors (Inst. %)

Percentage owned by the largest common stockholder (Big Stock %)

Constructed Variables based on directly collected variables described above:

Future Fraud = Fraudyn(t+1) = 1 or Fraudyn(t+2) = 1, then Future Fraud = 1; If
Fraudyn(t+1) = 0 and Fraudyn(t+2) = 0 then Future Fraud = 0

Perqs= Ext. Dir. Other + Int. Dir. Other + T5Other

Total Dividends = Dividend per share * Shares

Public = Total Dividends + Market Capitalization

Private = Ext. Dir. Cash + Int. Dir Cash + Top5Sal + Ext. Dir Other + Int. Dir Other +
T5Other

Private Ratio = Private/(Public + Private)

Ln(share)= Ln(Shares outstanding)

Street = 100-(Inst. % + Off. Dir. %)

Big Owner = ((Big Stock %)/(100* Street))/100

Concentration = (((#Stock Off. * Off. Dir % /(1+#Stock Off. * 100))²) + (NumInd1 *
(Inst. %/(100 *NumInd1 + 1))²))¹/²

Inst. Owner = ((Inst % + 1)/100)/(NumInd1 + 1)