THE EFFECT OF RETRIBUTION ON SHAREHOLDER LITIGATION AND MANAGERS' REPORTS

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Shareholder litigation is important because it is costly and can influence firms' reporting behavior. Prior research finds that attorneys' incentives and specific firm characteristics drive shareholder litigation. In this study, I control for these known drivers in order to examine whether an additional behavioral factor, investor retribution, also drives shareholder litigation. Retribution theory suggests that investors will initiate litigation to punish managers for misreporting even when there is no financial incentive to do so. My study uses experimental markets to examine whether retribution plays a role in investors' litigation decisions, and if this, in turn, affects managers' reporting decisions. Consistent with economic theory, I find that when investors do not have an option to initiate litigation, managers frequently misreport and investors do not find their reports credible. Further, when investors have an option to initiate litigation and a financial incentive to do so (similar to current securities laws), misreporting decreases and the credibility of managers' reports increases. However, inconsistent with economic theory but consistent with retribution theory, when investors have an option to initiate litigation but have no financial incentive to do so, misreporting decreases and the credibility of managers' reports increases to approximately the same level as when investors have a financial incentive to initiate litigation. These findings have important implications for regulators and managers who need to accurately anticipate investors' litigation decisions in order to make optimal policy and reporting decisions.

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PREFACE

1.0   INTRODUCTION

Firm disclosures are a critical element of a functioning capital market (Healy and Palepu 2001).   Firm disclosures allow firms to communicate with investors and other interested stakeholders.   This communication is vital because managers' and investors' interests are generally not perfectly aligned. In addition to goal misalignment, information asymmetry is present in most markets because managers have better information regarding the value of their firm than investors. This information asymmetry provides an opportunity for managers to misreport their financial information, which can reduce allocative efficiency (Easterbrook and Fischell 1984).   Asymmetric information also drives the demand for auditing, financial intermediaries, government regulation and other mechanisms that reduce information asymmetry and enhance the credibility and accuracy of managerial disclosures.   Several of these mechanisms have been studied in the accounting literature. These studies have generally found that these mechanisms are necessary components of an efficient capital market.[1]   These mechanisms are not costless to managers or investors but are generally considered to increase the welfare of both parties. That is, these mechanisms' expected benefits to managers and investors outweigh their expected costs. The focus of my dissertation is to investigate the effects of

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[1] Kothari (2001) and Core (2001) provide reviews of the related archival research and Bloomfield, Libby and Nelson (2002) provide a review of the related experimental research.

shareholder litigation on the disclosure decisions of managers. Shareholder litigation has the potential to improve the credibility of managers' disclosures and increase social welfare.

Prior research has focused exclusively on the financial incentives thought to drive shareholder litigation. However, in addition to financial incentives, retribution, a behavioral factor, may also motivate shareholder litigation. In this study, I use experimental markets to identify the separate effects of financial incentives and retribution on investors' litigation decisions and to examine the impact of investors' litigation decisions on the truthfulness of managers' reports.

Chapter 2 discusses the background and motivation for the study. Shareholder litigation is a topic of interest to researchers in economics, law, accounting and finance. As a result, there are numerous studies that investigate the effects of shareholder litigation. I integrate the related literature to describe what is known about shareholder litigation and identify some unanswered questions. I also introduce studies from economics that investigate negative reciprocity and other social norms, which provide theoretical support and evidence of retribution in settings other than shareholder litigation.

Chapter 3 presents the theory and develops the hypotheses. I begin by discussing the predictions made by economic theory in a market without litigation. This hypothesis, as the other hypotheses in my study, refers to predictions made by economic theory. The term "economic theory" represents conventional economic analysis, which suggests that individuals seek only to maximize their wealth. Despite my use of this definition, I recognize and acknowledge that individuals' utility may be comprised of more factors than wealth. Meaning, a broader interpretation of "economic theory" that includes other factors (i.e., social preferences) may suggest that individuals' actions are indeed consistent with "economic theory." However, I will

use the term "economic theory" for exposition expediency and characterize deviations from wealth-maximizing behavior as deviations from "economic theory."

The market without litigation serves two functions in my study: First, it provides a direct test of economic theory. Second, and more importantly, it allows me to establish an empirical benchmark for the behavior of managers and investors that can be compared to their behavior in markets with litigation. Next, I describe the economic prediction for managers and investors in a market in which the litigation mechanism and calculation of damages mirror real-world securities laws. This condition serves as a validity check and enables me to compare the results from my experiment with archival results from real-world markets. Finally, I develop both economic and behavioral predictions for managers and investors in a market with litigation in which investors have the option to initiate litigation against managers suspected of misreporting, but do not have a financial incentive to do so. This market setting is examined to determine what effect retribution plays in investors' litigation decisions and to measure the effect retribution has on managers' reports.

Chapter 4 describes the experimental design and procedures. The experiment utilized a 1X3 between-participant experimental design in which litigation was varied at three levels (No Litigation, Litigation with financial incentives, and Litigation without financial incentives). In the No Litigation market, investors did not have the option to initiate litigation. The No Litigation market establishes a benchmark of manager and investor behavior that is used to compare to markets that allow litigation. In the Litigation with financial incentives market, investors had the option to initiate costly litigation against managers suspected of misreporting and receive financial restitution for their losses. As a result, investors had a financial incentive to pursue litigation. In the Litigation without financial incentives market investors had the option

to initiate costly litigation against managers suspected of misreporting but could not receive financial restitution for their losses. As a result, investors had no financial incentive to pursue litigation.

Chapter 5 reports the experimental results. There are several noteworthy findings. In the market without litigation, the behavior of managers and investors is consistent with economic theory in that managers frequently misreport and investors do not find their reports credible. In the market in which investors have a financial incentive to initiate litigation, the behavior of managers and investors is also consistent with economic theory in that managers report more truthfully and investors find their reports more credible than when litigation is not an option. However, in the market in which investors have the option to initiate litigation but do not have a financial incentive to do so, the behavior of managers and investors is not consistent with economic theory, but is consistent with investor retribution. In this market, investors are willing to initiate costly litigation against managers suspected of misreporting despite having no financial incentive to do so. This, in turn, induces more truthful reporting by managers. The increase in truthful reporting in both markets in which investors had the option to pursue litigation results in increased social welfare despite the fact that litigation was costly. This result is particularly surprising given the dead-weight loss of litigation costs in the market setting in which investors could not receive financial restitution for their losses.

The results of my study suggest that investor retribution is an important factor in investors' litigation decisions. Investors' desire for retribution induces truthful reporting by managers, and this, in turn, results in welfare improvements for both managers and investors. Chapter 6 summarizes the results, discusses the contributions and limitations of this study, and introduces potential future studies based on the findings of this dissertation.

2.0 BACKGROUND AND MOTIVATION

2.1 OVERVIEW OF CHAPTER

This chapter discusses the relationship between prior research and my dissertation. The chapter begins by discussing prior archival research that investigates shareholder litigation and its effects. Section 2.3 presents the prior experimental research that examines shareholder litigation and describes my primary research question. Section 2.4 introduces economic literature that investigates retribution and other social preferences. Lastly, Section 2.5 integrates the three research streams that motivate my research and explains how my study increases our understanding of shareholder litigation.

2.2 SHAREHOLDER LITIGATION RESEARCH

Many of the current securities laws in the United States (U.S.) are based upon the Securities and Exchange Acts of 1933 and 1934. Although there have been some changes since that time, the laws' two basic requirements, required disclosure and the prohibition of fraud, are the foundation of our current securities laws (Eastbrook and Fischel 1984). These laws are enforced by the Department of Justice (DOJ) and the Securities and Exchange Commission (SEC), which are both public regulators, and by shareholders via private litigation. The majority of security

lawsuits filed are accounting-related cases. For lawsuits filed during the years 1996-2006, 62% were accounting cases (PricewaterhouseCoopers 2006). This study focuses exclusively on the enforcement of these laws by shareholders because shareholder litigation is the primary enforcement mechanism of securities laws. For example, in 2006 only 25% of shareholder lawsuits were also accompanied by a SEC investigation or some form of SEC action (PricewaterhouseCoopers 2006).[2]

An early study that investigates the effectiveness of shareholder litigation was conducted by Romano (1991). In her study, Romano assesses the effectiveness of shareholder litigation as an incentive-alignment device by examining lawsuits brought against firms and the subsequent change in firms' compensation contracts and governance mechanisms. Romano finds that shareholder litigation is not a wealth-increasing event for shareholders, based on no change in stock price, but there are several structural changes (e.g., boards of directors), which suggest that shareholder litigation may be an effective governance mechanism. Other studies (e.g., Cox 1997; Johnson 1997; Black 2000) also find that shareholder litigation is: effective at reducing fraud, an effective governance mechanism and an important component of an efficient securities market.

The litigation environment in the United States changed substantially with the passage of the Private Securities Litigation Reform Act (PSLRA) of 1995. Another stream of archival shareholder litigation research investigates the impact that the PSLRA had on shareholder litigation and managers' disclosure decisions. The PSLRA was passed due to the increasing number of what were perceived to be frivolous shareholder lawsuits filed against firms.

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[2] In addition to the SEC, the DOJ also enforces securities laws. However, most DOJ cases are accompanied by an investigation by the SEC. For example, in 2006 the DOJ investigated 13 security-related cases, all of which were also investigated by the SEC.

However, critics of the PSLRA believe that the PSLRA makes it too easy for firms to escape liability for securities fraud and thus creates a climate in which fraud is more likely to occur. Perino (2003) finds that the PSLRA did not work as intended in that there are as many shareholder lawsuits after the passage of the Act as before, which is also consistent with the findings of several other studies (e.g., Johnson 2001; Buckberg et al. 2003; 2006; PriceWatherhouseCoopers 2007). This empirical result that the number of lawsuits remained constant despite the fact that the PSLRA reduced the financial incentive for shareholders to pursue litigation is consistent with investors' litigation decisions being driven by factors other than financial incentives.[3]

There is also a stream of research that examines shareholder litigation by focusing on the "litigation hypothesis" (e.g., Francis et al. 1994; Skinner 1994; Kasznik and Lev 1995; Skinner 1997; Johnson et al. 2001; Fields et al. 2005). The litigation hypothesis proposes that managers voluntarily disclose negative news in order to reduce litigation costs. The overall evidence regarding the litigation hypothesis is mixed (Healy and Palepu 2001) and has been described by Johnson et al. (2001) as a "controversy in the literature." For example, Skinner (1994) finds that managers are more likely to preempt a mandatory earnings report with the voluntary disclosure of negative news than with the voluntary disclosure of neutral or positive news, which is consistent with the litigation hypothesis. Several other studies also appear to support the litigation hypothesis (e.g., Skinner 1994; Kasznik and Lev 1995; Fields et al. 2005 and Cao et al. 2005). However, the results of a different set of studies are inconsistent with the litigation hypothesis and the results of these

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[3] Despite the fact that the PSLRA did not reduce shareholder litigation, several studies find that the PSLRA had several benefits. For example, the PSLRA was wealth-increasing for shareholders (Johnson et al. 2000), increased forward-looking disclosures (Johnson et al. 2001), increased involvement of institutional investors and led to lower attorney fees (Thomas and Cox 2006; Silver and Dinkin 2008).

studies suggest that investors' litigation decisions may be driven by factors other than financial incentives.[4]

2.3   EXPERIMENTAL SHAREHOLDER LITIGATION RESEARCH

There are only a few accounting experiments that investigate litigation and its effects. An early study by King and Wallin (1990) investigates the impact of litigation in a market in which investors' damages and legal costs are determined in a manner consistent with current securities laws. Another study by Wallin (1992) investigates the demand for audit services in a litigation environment. Both King and Wallin (1990) and Wallin (1992) find that providing investors a litigation option reduces misreporting by managers. In both King and Wallin's (1990) and Wallin's (1992) studies, participants interacted repeatedly, which allowed them to establish reputations, which precludes establishing an unambiguous economic prediction regarding participants' behavior.

Two other studies, by Dopuch and King (1992) and Dopuch, King and Schatzberg (1994) precluded reputation development in their studies and therefore offer a clearer test of economic theory. Both Dopuch and King (1992) and Dopuch et al. (1994) assess how different regimes of auditor liability affect the demand for and supply of auditing services. Although the studies' primary focus involves the demand for auditing services under different liability regimes, the studies also investigate managers' reporting decisions in different litigation environments. Consistent with economic theory, both studies find that managers misreport frequently when a

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[4] Many of these studies have focused on the financial settlements resulting from litigation. However, as noted by Rogers and Buskirk (2008), there is a growing trend in which investors are not exclusively interested in cash awards but also governance reform, which may also account for the weak support of the litigation hypothesis.

litigation mechanism is not present, and that misreporting by managers is reduced when investors have the option to initiate litigation against managers. In both Dopuch and King (1992) and Dopuch et al. (1994) investors had a financial incentive to initiate litigation against managers. However, it is possible that the desire to pursue litigation may be driven by financial incentives and behavioral forces. Because none of the prior studies vary the economic incentives, it is unclear whether investors' desire to initiate litigation against managers suspected of misreporting is driven exclusively by economic forces, or whether other behavioral forces also play a role.

2.4 EXPERIMENTAL RETRIBUTION RESEARCH

There is considerable evidence in the economic literature that suggests that social preferences in addition to financial incentives are important factors in individual decision-making. A precise definition of social preferences has not been agreed upon. Carpenter (2009) offers a reasonable definition and defines social preferences as, "a concern for the payoffs allocated to other relevant reference agents and the intentions that led to this payoff, in addition to the concern for one's own payoffs." Much of the economic research focuses on the pro-social preferences such as altruism or positive reciprocity while less attention has been given to their opposites, retribution or negative reciprocity. However, several studies have shown that negative reciprocity or retribution is an important factor in individual decision-making.

One of the most well-documented examples of the retributive behavior of individuals is the results of the ultimatum game experiments (Guith, Schmittberger and Schwarze 1982). An ultimatum game is a two-person game in which the first mover offers a share of a sum of money to the second mover who either accepts or rejects the proposal. If the proposal is rejected, both

players get nothing, otherwise the proposed division is implemented. Despite the economic prediction that senders will offer the lowest possible amount and receivers will never reject any positive offers, one of the most consistent findings is that senders send much more than predicted by economic theory and positive offers are routinely rejected (e.g., Roth 1995; Pillutla and Murnighan 1996).[5] Other experimental studies also find that individuals are willing to punish others for their undesirable behavior in settings other than the ultimatum game (e.g., Fehr, Gachter and Kirchsteiger 1997; Fehr and Gachter 2002; Carpenter and Matthews 2009). Fehr et al. (1997) investigate the role of both positive and negative reciprocity in the enforcement of incomplete contracts in a labor market. In this incomplete labor market, firms offer wages to employees and employees choose an effort level that is costly and the cost of effort increases with the level of effort chosen. Reputation development is prohibited, so economic theory predicts that employees will choose the lowest level of effort and firms will offer the lowest wage. However, numerous studies (e.g., Akerlof 1982; Fehr, Kirchsteiger and Riedl 1993; Fehr, Kirchler, Weichbold, and Gachter 1998; Hannan 2005) find that firms offer wages greater than predicted by economic theory and employees respond by choosing higher levels of effort. The results of these studies suggest that positive reciprocity (i.e., firms offering high wages and employees responding with high levels of effort) allows firms and employees to settle into an equilibrium that is pareto-optimal to the equilibrium predicted by economic theory. However, in addition to positive reciprocity, Fehr et al. (1997) also allows firms to respond to the effort chosen by employees and punish them if they exhibit undesirable behavior. They find strong evidence that firms behave reciprocally. That is, firms punish shirking workers and firms reward

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[5] Camerer (2003) provides an excellent summary of the ultimatum game studies.

workers who fulfill the contract. This behavior is not consistent with economic theory because punishment is costly and reputation development is prohibited.

Fehr and Gachter (2002) and Carpenter and Matthews (2009) investigate the effect of costly punishment in a public-goods setting, in which free-riding is the optimal strategy. In both Fehr and Gachter's and Carpenter and Matthews' settings, it was costly for participants to punish other players and there was no economic gain from punishing, so there was no financial incentive to punish. As a result, standard economic theory predicts that having this punishment option will have no effect on individuals' contribution to the public good. However, both Fehr and Gachter and Carpenter and Matthews find that individuals' contributions increase significantly when a punishment option is available.

In addition to the experimental studies described above, several analytical models have been developed in an attempt to explain the behavior documented in experimental studies. These models incorporate social preferences in agents' utility functions. Some of the more notable models include those created by Rabin (1993), Fehr and Schmidt (1999) and Bolton and Ockenfels (2000). While all of these models attempt to capture individuals' utility for things other than wealth, their approaches are different. For example, Rabin's (1993) model focuses on the intentions of the other party, Fehr and Schmidt's (1999) model deals with self-centered inequity aversion and in Bolton and Ockenfels' (2000) model, the individual is concerned with his relative share of the group payoff.

There has also been analytical research that suggests that costly punishment can increase social welfare (Friedman and Singh 1999; Fon and Parisi 2005). Friedman and Singh (1999) suggest that negative reciprocity increases social welfare because it deters opportunistic behavior that would otherwise undermine positive reciprocity. The Fon and Paris model demonstrates that

preferences for revenge are just as important as preferences for honesty in inducing cooperation and that retribution is an important factor in the evolution of socially desirable behavior.

Recently, there has also been neuroeconomic research (i.e., research that examines images of the brain in an economic experiment) that provides some evidence that explains why individuals are willing to bear a cost to punish others even when they can not receive any financial benefit from doing so. Such studies confirm the conjecture, based on the behavior observed in experiments, that individuals receive utility from punishing other individuals who violate social norms (de Quervain et al. 2004; Singer et al. 2006). That is, individuals who punish others, at a cost to themselves, for violating social norms are not acting irrationally. On the contrary, by punishing individuals who violate social norms, the punishers are maximizing their utility because the utility they receive from punishing individuals is greater than the financial cost of doing so.

2.5   MOTIVATION FOR STUDY

This dissertation focuses on the truthfulness of managers' reports in different litigation environments. Managers' reports are important because they allow managers to communicate with investors and other interested stakeholders. However, managers often have incentives to misreport their private information (Healy and Palepu 2001). One important goal of securities markets regulation is to mitigate information asymmetry, and thereby increase the welfare of both managers and investors. These laws are enforced either by a regulator, such as the Securities and Exchange Commission (SEC), or by shareholders who initiate litigation against managers they suspect of misreporting. This dissertation focuses on the enforcement of

securities laws via shareholder litigation. Prior research finds that shareholder litigation reduces misreporting and results in more efficient capital markets (e.g., Black 2000; Khurana et al. 2006; La Porta et al. 2006).

Although the benefits of shareholder litigation are well documented, it can also be very costly for firms. Bhagat, Bizjak and Coles (1998) examine corporate lawsuits and the stock market reaction to filing and settlement announcements. They report that firms lose 2.7% of their value when a shareholder lawsuit is filed. Furthermore, Simmons and Ryan (2008) find that the mean and median settlement values for shareholder lawsuits in 2007 were $63 million and $9 million, respectively. In addition to these large explicit financial costs, shareholder litigation also diverts management's time from more productive efforts, which may adversely impact the firm (Field, Lowry and Shu 2005). Shareholder litigation also has a direct effect on managers. Both Strahan (1998) and Niehaus and Roth (1990) find that the probability of CEO turnover increases dramatically after a shareholder lawsuit is filed. This increase can not be explained by firm-specific characteristics or financial distress.   Moreover, shareholder litigation occurs quite frequently. Buckberg, Foster and Miller (2006) find that the average public company has nearly a 10 percent probability of facing a shareholder lawsuit over the course of a five-year period.

Given the frequency and large costs of shareholder litigation for firms, it is important to identify the determinants of shareholder litigation. Prior research suggests that attorneys' incentives (Romano 1991; Macy and Miller 1991) and specific characteristics of firms, such as, industry classification, market capitalization, and stock price volatility, drive shareholder litigation (Kasznik and Lev 1995; PricewaterhouseCoopers 2007). My dissertation extends prior research by examining whether a behavioral factor, retribution, also drives shareholder litigation.

I also investigate how shareholder litigation affects the truthfulness of managers' reports and social welfare.

Standard economic theory suggests that investors will only litigate if the financial benefits of doing so outweigh the financial costs. In contrast, retribution theory suggests that investors' psychological desire to punish managers for suspected misreporting may cause them to litigate even if the potential financial costs outweigh the potential financial benefits. Of course, in real-world securities markets, investors have financial incentives to litigate because they can potentially receive monetary damages for their losses. Therefore, because they occur simultaneously in actual securities markets, the effects of financial incentives and retribution are difficult to separate using field data.

Although it is difficult to isolate shareholder retribution using field data, retribution does offer a possible explanation for some field data that appears to be inconsistent with standard economic predictions. One such result is that the passage of the Private Securities Litigation Reform Act (PSLRA) of 1995 did not reduce the frequency of shareholder lawsuits. The PSLRA made it more difficult for shareholders to prevail in lawsuits against firms. Standard economic arguments predict that the number of lawsuits would decrease. However, the enactment of the PSLRA had no effect on the average number of shareholder lawsuits (e.g., Perino 2003; Buckberg, Foster and Miller 2006). This result could potentially be explained by investor retribution in that, although the financial incentive for shareholders decreased after the passage of the PSLRA, shareholders' desire for retribution, to punish managers who they suspected of misreporting, may have caused them to continue to pursue litigation. Also, the finding by Skinner (1997) that the incidence of shareholder litigation does not always decline when managers disclose negative information early may also be explained by shareholder retribution.

Skinner reasons that both the number of lawsuits and the cost of settling litigation should be reduced when managers disclose negative information early. However, consistent with shareholder retribution, the early disclosure of negative information did not reduce the incidence of litigation because shareholders pursued litigation when there was a large negative earnings surprise regardless of whether the negative information was already disclosed. Furthermore, West (2001) suggests that retribution may play a role in shareholder litigation. He concludes that retribution may help explain the high levels of litigation in Japan despite the fact that, under Japanese securities laws, investors have very little financial incentive to initiate litigation.

Prior experimental studies investigating the effect of investor litigation (King and Wallin 1990; Wallin 1992; Dopuch and King 1992; Dopuch et al. 1994) find that, consistent with economic theory, litigation reduces misreporting by managers. In the prior studies that have investigated investor litigation, investors had a financial incentive to initiate litigation. However, there are also a large number of experimental studies, in settings other than investor litigation, that find that individuals will knowingly bear financial costs to punish others who they believe have treated them unfairly, even if they have no financial incentive to do so. (e.g., Guith et al. 1982; Kagel et al. 1996; Fehr et al. 1997; Fehr and Gachter 2002).

As previously discussed, prior research has investigated the effectiveness of shareholder litigation (e.g., Romano 1991; Cox 1997; Black 2000), the effect of legislative changes on shareholder litigation (e.g., Johnson 2001; Perino 2003), the effect of early disclosure on shareholder litigation (e.g., Skinner 1994; 1997; Fields et al. 2005), and how litigation with financial incentives influences managers' reporting and the demand for auditing services (e.g., Wallin 1992; Dopuch et al. 1994). In addition, there have been academic and practitioner studies that have investigated the drivers of shareholder litigation (e.g., Romano 1991; Macy and Miller

1991; Kasznik and Lev 1995; PricewaterhouseCoopers 2007), and these studies generally find that attorney's incentives, industry classification, market capitalization and stock price volatility appear to drive shareholder litigation. However, in neither the studies that have investigated various aspects of shareholder litigation nor in the studies that investigate the drivers of shareholder litigation, do any of the studies consider the potential role that retribution may play in shareholder litigation decisions. Thus, my study differs from these prior studies in an important way. In my study, I manipulate the level of financial incentives for investors to litigate in order to separate the effects of investors' economic incentives to litigate for financial gain from the effects of investors' psychological desire for retribution.

I use experimental markets to identify the separate effects of financial incentives and retribution on investors' litigation decisions, and to examine the impact of investors' litigation decisions on the truthfulness of managers' reports. By using experimental markets, I am able to design and examine behavior in litigation settings that does not exist in actual securities markets. Examining markets where there is a financial incentive to initiate litigation (as is the case in actual securities markets) and comparing the results to a market where there is no financial incentive to initiate litigation (which does not exist in actual securities markets) enables me to isolate the separate effects of financial incentives and retributive forces. In addition, using an experimental setting allows me to specify and control precisely what private information managers have, which, in turn, allows me to directly measure the extent of managers' truthful reporting. Managers' private information and therefore the extent of their truthful reporting, is difficult to measure in real-world securities markets. By using experimental markets, I am also able to hold constant other market characteristics that vary in naturally-occurring markets, such as reputation, industry, attorneys' incentives and firm size, thereby enabling me to isolate the

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effect of retribution. Finally, my experimental setting permits the measurement and comparison of social welfare under the different litigation environments examined in my study. In summary, using experimental markets allows me to isolate retributive forces in a controlled setting, thereby extending prior experimental research and complementing the existing findings from the field.

3.0   THEORY AND HYPOTHESES

3.1   OVERVIEW OF CHAPTER

Each section in this chapter introduces the theory to develop the hypotheses in the various markets examined. Section 3.2 begins by examining a market in which investors do not have any litigation option. Reputation formation is prohibited in this market as well as in all markets in the study, and as a result, economic theory makes clear predictions regarding manager and investor behavior. In addition to testing economic theory, this market provides an empirical baseline for manager and investor behavior that is compared to their behavior in the other litigation markets examined in this study. Section 3.3 examines the behavior of managers and investors in a market in which investors have a financial incentive to initiate litigation against managers suspected of misreporting. The calculation of damages in this market is consistent with real-world security markets. Section 3.4 examines a market in which investors have the option to initiate litigation against managers suspected of misreporting, but do not have a financial incentive to do so. This section explains the economic prediction for managers and investors but also draws on behavioral theory to make alternative predictions for both managers and investors in this environment. Section 3.5 concludes this chapter by presenting welfare predictions for both managers and investors based on the predicted behavior in the market without litigation, the market with litigation in which investors have a financial incentive to

initiate litigation, and the market with litigation in which investors do not have a financial incentive to initiate litigation.

3.2   NO LITIGATION MARKET

Management disclosures are important in capital market settings because they help facilitate the efficient allocation of resources.   Firm managers have better information than investors regarding the value of the firm and its investment opportunities.   This information asymmetry between managers and investors can reduce allocative efficiency (Easterbrook and Fischell 1984).   Furthermore, managers' and investors' goals are not perfectly aligned and managers generally have incentives to overstate their firm's value and investment opportunities (Healy and Palepu 2001).[6]   More truthful disclosures reduce information asymmetry, thereby allowing more mutually beneficial transactions to transpire.

Early economic models by Grossman (1981) and Milgrom (1981) established the well-known, "full-disclosure" result.   These models identify circumstances under which managers will fully disclose their private information to investors, because not disclosing it causes investors to conclude that managers have the worst type of information.   However, in order to obtain this full-disclosure result, it is necessary to assume that investors know the manager has private information and that misreporting of this information is prohibited *ex ante* via antifraud rules.   The assumption of a perfect, *ex ante* antifraud mechanism has been used extensively in

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[6] Shareholders generally attempt to align managers' interests with theirs by making managers' compensation contingent upon increases in long-term firm value. However, these contracts are usually not totally effective at aligning the interests of managers and investors because managers still have strong incentives to misreport their financial information. Some common reasons for misreporting are job security, upcoming equity issuance, prevention of takeovers and other personal rewards (Healy and Palepu 1993).

accounting disclosure models (Verrecchia 1983; Dye 1985a, 1985b, 1986).[7] In general, these

models employ a costless, *ex post* verification assumption to enforce the antifraud rule.

However, in actual securities markets, it is costly to enforce the antifraud rule and it needs to be

enforced *ex post* either through a public regulator, such as the SEC, or by shareholders via

private litigation.

Without antifraud rules prohibiting misreporting *ex ante*, or antifraud rules that can be

enforced by a regulator, or via shareholder litigation *ex post*, managers will not truthfully reveal

their private information, and therefore investors will not find managers' reports credible. To

illustrate this result, assume the existence of a single firm operated by an effort-averse, risk-

neutral manager offering an asset for sale to risk-neutral investors for a single period. Figure 1

shows the extensive form of this setting.

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[7] Verrecchia (2001) provides a review and Dye (2001) provides a related discussion of the disclosure literature.

Figure 1: Extensive Form of Experimental Setting

The extended form game presented below in Figure 1 is a representation of the basic market. In some markets, investors will have the option of initiating litigation against managers suspected of misreporting.
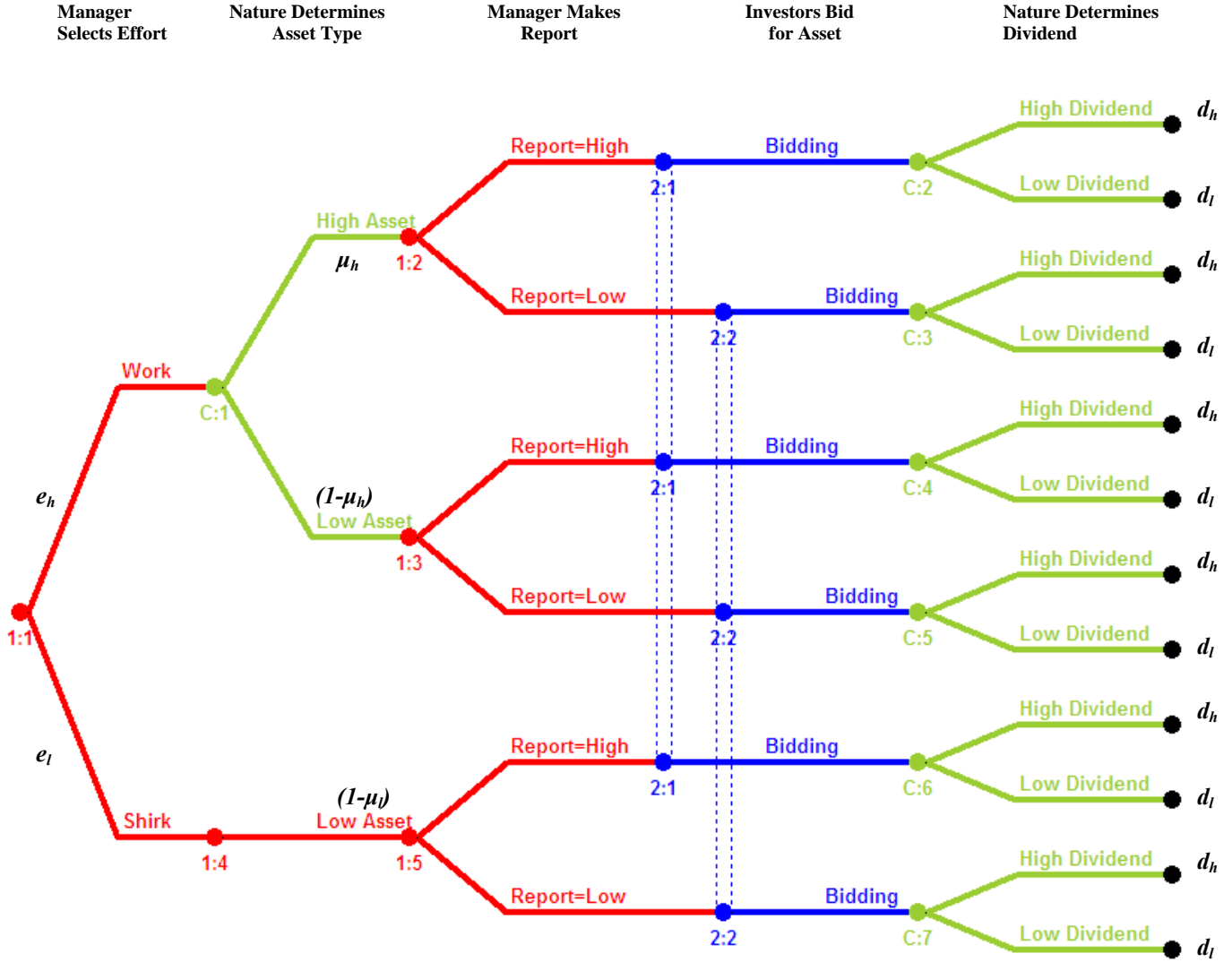
Variables
e_h = work; Ce_h = cost of working
e_l = shirk; Ce_l = cost of shirking
μ_h = probability of a high asset given work
μ_l = probability of a high asset given shirk
$(1-\mu_h)$ = probability of a low asset given high effort
$(1-\mu_l)$ = probability of a low asset given low effort
d_h = high dividend; d_l = low dividend

Assumptions
$Ce_h > Ce_l$
$\mu_h > \mu_l$
$(1-\mu_l) = 100\%$
$d_h > d_l$

As shown in Figure 1, the manager has two effort choices, work (e_h), and shirk (e_l), where the cost to the manager of effort is $Ce_h > Ce_l$. Including an effort choice in the model is consistent with actual corporate settings because moral hazard between managers and investors exists in such settings, and the value of the firm contains some information about the actions of the manager (Dye 2001).

Choosing to work results in a (μ_h) probability of producing a high asset (q_h), and a ($1-\mu_h$) probability of producing a low asset (q_l). Choosing to shirk results in a low asset (q_l) with certainty. In addition, high assets have a greater probability of paying the investor a high dividend (d_h) and low assets have a greater probability of paying the investor a low dividend (d_l).[8] In this setting, higher effort is positively, though imperfectly, correlated with higher firm value. However, the manager's effort is not observable or verifiable by the investor, which creates a moral hazard problem and prohibits a contract from being written on effort.[9]

In the setting described above, as in my experimental setting, the manager chooses an effort level, observes the actual asset type, and then makes a report (r) regarding the asset type to investors. The manager can either report that he has a high asset ($r=q_h$) or a low asset ($r=q_l$), irrespective of his actual asset type. Investors are unaware of the manager's effort choice and are also unaware of the manager's actual asset type. In a single-period setting, investors will not find a high report ($r=q_h$) credible because the manager has an incentive to always report that he has a high asset regardless of his actual asset type. Anticipating that the manager will always report a high asset ($r=q_h$), investors will disregard the manager's report as "cheap talk."

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[8] This setting focuses on the case where investors want the manager to work. That is, the expected benefit of choosing high effort is greater than the cost, $[(\mu_h)(q_h) + (1-\mu_h)(q_l)] - [(1-\mu_l)(q_l)] > Ce_h$.

[9] Consistent with prior experimental research (e.g., Dopuch et al. 1989; King and Wallin 1990; Kachelmeier 1991; Wallin 1992), I assume that contracts can not be written on outcome signals such as dividends.

Given that the manager's report will be ignored, the manager has no incentive to work to increase the expected value of the firm.[10]   That is, in a single-period setting, a manager will never choose to work (e_h) because he can choose to shirk (e_l) and save the cost of high effort (Ce_h-Ce_l).   Anticipating that the manager will shirk (e_l), investors will value the firm accordingly. Therefore, the subgame-perfect Nash equilibrium is for the manager to shirk (e_l) and for investors to value the firm as if e_l were selected.   This equilibrium is pareto-dominated by a high-effort, truthful-reporting equilibrium, in which the manager always chooses to work and report truthfully.   However, the low-effort, misreporting equilibrium prevails because the manager cannot credibly commit to a high-effort, truthful-reporting strategy.

Economic theory outlined above, leads to my first hypothesis:

Hypothesis 1: In a market in which investors do not have the option to initiate litigation, managers will shirk and misreport, and investors will value the firm accordingly.

Hypothesis one tests how closely manager and investor behavior follows economic theory.   However, the main objective of examining a market without a litigation option is to establish an empirical benchmark against which to compare managers' and investors' behavior to their behavior in other markets with a litigation option.   Such comparisons allow me to isolate the incremental effects of different litigation environments on the behavior of managers and investors.   Alternatively, one could compare the results from markets with litigation to the theoretical economic prediction.   However, individuals' actual behavior frequently deviates from theoretical predictions.   For example, Forsythe et al. (1999) examine the effect of cheap talk on buyers who are matched anonymously and find that buyers rely on seller's reports, despite the economic prediction that buyers will disregard the sellers' reports.   There are also several studies

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[10] A potential solution to this agency problem is to sell the firm to the manager. The analysis described here assumes that the limited liability of the manager prevents this solution.

in accounting that find that individuals have preferences for honesty and sometimes report truthfully even without a financial incentive to do so (e.g., Evans, Hannan, Krishnan and Moser 2001; Rankin Schwartz and Young 2003; Hannan, Rankin and Towry 2006). Given the number of studies that document that individual behavior deviates from economic predictions, it is appropriate to identify the incremental effects of various litigation markets by comparing the results from such markets to the empirical baseline established in the market without litigation.

3.3 LITIGATION MARKET WITH FINANCIAL INCENTIVES

In the U.S., financial markets are regulated and, in particular include antifraud laws that prohibit deliberate misreporting. These laws are enforced primarily in two ways: 1) directly by the SEC, and 2) by shareholders who initiate litigation against managers they suspect of misreporting. Standard economic arguments suggest that investors will only litigate if the financial benefits of litigating outweigh the financial costs. Consequently, current U.S. securities laws allow investors to receive financial restitution for their losses, thereby providing investors with a financial incentive to initiate litigation against managers suspected of misreporting. Archival studies find that this system of shareholder litigation reduces misreporting, and results in more efficient securities markets (e.g., Black 2000; Khurana et al. 2006; La Porta et al. 2006).

Economic analysis and prior analytical studies (e.g., Becker 1968; Stigler 1970; Harris 1970) suggest that the availability of a litigation mechanism with a financial incentive to use the mechanism should reduce misreporting. Prior experimental research findings (King and Wallin 1990; Dopuch and King 1992; Wallin 1992; Dopuch et al. 1994) are consistent with economic theory and suggest that the availability of a litigation mechanism reduces misreporting and

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mitigates the moral hazard problem between managers and investors, thus improving social welfare.[11] King and Wallin (1990) investigated the impact of litigation in an environment in which investors' damages and legal costs were determined in a manner consistent with current securities laws. King and Wallin's study was exploratory, so no hypotheses were offered. There were two different types of sellers, "good" and "bad" in their study. "Good" sellers were more likely to have high assets than "bad" sellers. The authors found the overall misreporting was reduced when litigation was available. However, the finding was primarily due to the reduced misreporting of the "good" sellers. "Bad" sellers misreported as frequently as when litigation was not available. The effect of litigation on sellers' reports was unclear because litigation appears to have had a different effect on the two different types of sellers.

Several other accounting studies have examined the role of auditing in markets with litigation (e.g., Wallin 1992) and theses studies also examined how different liability environments affect auditors (e.g., Dopuch and King 1992; Dopuch, King and Schatzberg 1994). Although these studies were primarily interested in the role of auditing, they all examined a litigation environment consistent with current securities laws and find that, consistent with economic theory, managers choose higher effort levels and make more truthful reports when investors have a litigation option.

My purpose in examining a litigation market in which investors can receive financial restitution for their losses, is to observe the behavior of managers and investors in a litigation environment that mirrors current securities law. Investigating managers' and investors' behavior

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[11] The litigation mechanism used in prior research (King and Wallin 1990; Dopuch and King 1992; Wallin 1992; Dopuch et al. 1994) and in the current study allows investors to initiate litigation against managers suspected of misreporting. This corresponds with rule 10b-5 of the 1934 Securities and Exchange Act. In a typical 10b-5 case, investors allege they bought stock at inflated prices because managers misled the market by disseminating overly optimistic information or by failing to disclose material adverse information.

in a market in which an investor has a litigation option and a financial incentive to pursue litigation allows me to replicate the findings from the prior experimental research. More importantly, the results from this market serve as a validity check that my experimental market's findings are consistent with the findings from the field. The ability of my experimental market to replicate the findings from archival field-studies provides some comfort that my market reflects the important characteristics of actual securities markets, and as such, provides a good starting point for investigating other litigation market environments that do not exist in actual securities markets.

For my second hypothesis, I compare the results from the market in which an investor has the option to pursue litigation and can receive restitution for his losses to the results from my benchmark market without litigation (see H1).[12] Consistent with economic theory and prior research, I propose my second hypothesis:

> **Hypothesis 2:** In a market in which investors have the option to initiate litigation and can receive financial restitution for their losses, managers will expend *more* effort and report *more* truthfully than in a market without litigation. As a result, investors will value the firm higher than in a market without litigation.

3.4 LITIGATION MARKET WITHOUT FINANCIAL INCENTIVES

In addition to financial incentives, legal scholars and philosophers contend that individuals punish suspected wrongdoing as a means of retribution (e.g., Mc Closkey 1965; Hegel 1969; Posner 1980; Hemingway 2007). Retribution theory suggests that punishment is backward looking and is not concerned with financial incentives or with prevention of future

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[12] A detailed explanation of the economic prediction for the litigation environment in which an investor has a financial incentive to initiate litigation can be found in the Appendix.

misbehavior. That is, the underlying logic for retribution is that an individual who engages in undesirable behavior deserves to be punished. Retribution does not have an agreed upon parsimonious definition. However, Durkheim (1964) asserts that "retribution is a passionate reaction to the violations of a rule, norm, or law that evokes a desire for punishment of the violator."

Society has a well established need to see individuals punished for wrongful conduct (Hemingway 2007) and there is some recent anecdotal evidence that suggests that Americans' outrage over the government's bailout of Wall Street in the fall of 2008 was driven by individuals' desire for retribution. Ariely (2008) states, "People are willing to lose money to get those people on Wall Street to suffer." Cobb (2008) expresses a similar view when she suggests that, "people feel that Wall Street must pay for its mistakes - even if this costs the rest of us too."

In addition to the evidence from the recent financial crisis that suggests that individuals are willing to incur a cost to punish others, there is also field data that suggests that retribution may play a role in shareholder litigation. For example, a finding that can not be explained by financial incentives but could potentially be explained by shareholder retribution is the constant number of shareholder lawsuits filed before and after the PSLRA was passed in 1995. The PSLRA contained several provisions designed to reduce shareholder litigation, making it more difficult for shareholders to prevail in lawsuits against firms. This change in the legal environment provided a "natural experiment" in which to examine the impact that the PSLRA had on investors' litigation decisions. Standard economic arguments predict that the number of lawsuits would decrease when it became more difficult for shareholder lawsuits to prevail under the PSLRA. However, the enactment of the PSLRA had no effect on the average number of shareholder lawsuits (Perino 2003; Buckberg et al. 2006). Although the lack of change in the

number of lawsuits could, in theory, be explained by an increase in misreporting by managers after the PSLRA was enacted, Johnson et al. (2001) find that the quality of firms' financial information did not change after the PSLRA, suggesting that this is an unlikely explanation for the constant number of lawsuits. However, retribution offers a potential explanation. That is, shareholders may have continued to file the same number of lawsuits to simply punish managers suspected of misreporting even though the expected financial benefit of litigation had decreased.

West's (2001) study of shareholder litigation in Japan provides more direct evidence regarding shareholders' motives for litigation. Japan is an ideal setting to investigate investor retribution because there is a high level of litigation even though investors do not have strong financial incentives to litigate. When an investor sues a corporation in Japan, damages are not paid to the investor but are paid directly to the corporation, so the most an investor can receive is a pro-rata increase in the value of his stock. Using an event study methodology, West finds that shareholder lawsuits do not result in significant stock price movements, suggesting that investors do not benefit financially from shareholder lawsuits. Given that shareholders do not appear to benefit financially, West interviewed shareholders in Japan involved in security litigation to determine why they initiate litigation. He concludes that, as in the United States, attorneys' fees play a role in shareholder litigation. However, West also finds that shareholders expressed anger over corporate scandals, saw lawsuits as a method of justice and seemed to enjoy contributing to the welfare of others. These results suggest that shareholder litigation may be partially driven by retributive behavior.

Another set of studies that suggests that retribution may play a role in shareholder litigation are the archival studies that investigate the litigation hypothesis. The litigation hypothesis proposes that managers voluntarily disclose negative news in order to reduce

litigation costs. The overall evidence regarding the relationship between voluntary disclosures of negative information and litigation is mixed (Healy and Palepu 2001). While a number of studies appear to support the litigation hypothesis (e.g., Skinner 1994; Johnson et al. 2001; Fields et al. 2005 and Cao and Narayanamoorthy 2005), other studies are inconsistent with (Francis et al. 1994) or only partially support (Skinner 1997) the litigation hypothesis.

Shareholder retribution offers a potential explanation for those studies' findings that are not consistent with the litigation hypothesis.[13] For example, Skinner (1997) suggests that both the number of lawsuits and the cost of settling litigation should be reduced when managers disclose negative information early. He reasons that early disclosure reduces expected legal costs because the security is trading at an inflated value for a shorter period of time and the investors' claim that managers failed to disclose the adverse news in a timely fashion is weaker, which should result in either no litigation or a lower settlement amount. Skinner's results partially support his hypothesis in that early disclosures of negative information reduce the cost of settling litigation. However, inconsistent with his hypothesis, Skinner finds that early disclosure of negative information did not reduce the incidence of litigation because shareholders sued when there was a large negative earnings surprise regardless of whether the negative information was disclosed earlier. This unexpected result is consistent with shareholder retribution because, although the financial reward for initiating litigation had decreased, shareholders still pursued litigation at the same level.

Finally, there is considerable experimental evidence suggesting that retributive actions are important forces in settings other than investor litigation (e.g., Guith et al. 1982; Fehr et al. 1997; Fehr and Gachter 2002). One of the most well-documented examples of the retributive

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[13] These studies focus on the timeliness of managers' voluntary disclosures of negative information. Voluntary disclosures of negative information may serve as a proxy for truthful reporting, which is examined in my study.

behavior of individuals is the results of the ultimatum game experiments (Guith et al. 1982). An ultimatum game is a two-person game in which a sender proposes a division of a sum of money to the receiver and the receiver can either accept or reject the proposal. If the proposal is rejected both the sender and receiver get nothing, if the proposal is accepted the proposed division is implemented. Economic theory predicts that senders will offer the lowest possible amount and receivers will never reject any positive offers. However, results from ultimatum experiments show that senders on average offer 40% of the sum of money and offers lower than 20% are routinely rejected (Roth 1995).

Another study that demonstrates the impact that retribution has on individuals' behavior is Fehr et al. (1997). This study examines whether the ability to punish workers for shirking affects employee effort in an incomplete labor market. Prior research finds that reciprocal motivations enable incomplete labor markets to be more efficient than economic theory suggests (e.g., Akerlof 1982; Fehr et al. 1998; Hannan et al. 2002; Hannan 2005). That is, firms pay a higher wage than predicted by economic theory and workers reciprocate with higher effort, which leads to increases in welfare for both parties. Fehr et al. (1997) give firms an opportunity to punish workers who do not provide the suggested effort level, and find that this punishment mechanism provides an incentive for workers, who are not motivated by positive reciprocity, to provide high levels of effort, which results in increases in social welfare.

Fehr and Gachter also investigate the role of retribution in their (2002) study in which they examine the effect of costly punishment in a public goods setting. In public goods settings, free-riding is the optimal strategy, and as a result, economic theory predicts that no one will contribute to the public good. Experimental tests of similar settings show that the economic prediction frequently obtains in that low levels of contributions are given by participants when

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no punishment mechanism is available (e.g., Dawes and Thaler 1988; Ledyard 1995). Economic theory predicts that adding a costly punishment mechanism to a public goods setting in which punishment is costly and does not provide any financial benefit to the punisher will have no effect on participants' contributions. However, despite the economic prediction that this punishment mechanism will have no effect, Fehr and Gachter (2002) find that with the presence of a costly punishment mechanism almost complete cooperation (i.e., full contribution) can be maintained, although economic theory predicts there will be no cooperation at all.

However, several of the studies that investigate retribution examine retributive actions in dyad or non-market settings, so it is unclear whether such behavior persists in a competitive market environment. Prior research is mixed as to whether behavior that is not individually rational will persist in a market setting. For example, DeJong, Shleifer and Summers (1991) and Ganguly, Kagel and Moser (1994) find that irrational behavior persists in market settings, but Roth, Prasnikar, Okuno-Fujiwara and Zamir (1991) and Waller (2002) find that such behavior will be either eliminated or less pronounced in market settings. For example, if an investor tries to punish a manager suspected of misreporting by not purchasing the security of his firm, another investor may negate the punishment by purchasing the security anyway. However, investor litigation works more like a dyad setting because a single investor can effectively punish a manager suspected of misreporting by initiating a lawsuit. This makes the threat of retributive litigation especially potent in competitive securities markets because it only takes one of many investors to punish a manager for misreporting.

The studies described above provide considerable evidence that individuals are willing to punish others at a cost for their undesirable behavior. In the ultimatum game (Guith et al. 1982), as well as in the other studies described above (e.g., Fehr et al. 1997; Fehr and Gachter 2002) the

punisher was able to determine the other individual's action with certainty. However, the willingness of individuals to punish is greatly reduced when there is uncertainty in regard to the other individual's action or intention (Kagel, Kim and Moser 1996; Rapoport and Sundali 1996; Huck 1999). The notion of fairness plays a major role in explaining retributive behavior displayed by individuals when the ultimatum game is played under certainty. However, this fairness notion becomes ambiguous when the ultimatum game is played under uncertainty (i.e., the amount of resources to be divided is stochastic or unknown). For example, Roth et al. (1991) report rejection rates of 28% when both the proposer and responder have symmetric payoffs, as in the standard ultimatum game. However, using a similar setting, Kagel et al. (1996) find rejection rates of only 8% when responders do not know the payoff of the proposer. In the case where the responder is not aware of the payoff of the proposer, it is not clear if the proposer made a "fair" or "unfair" offer. That is, the intention of the proposer is unknown. The decrease of 71% in rejection rates calls into question how much individuals will punish when they are unsure of the actions taken by others. In real-world market settings, as in my experiment, neither the manager's effort nor the actual asset type can be known with certainty just by observing the outcome. That is, the investor is unsure if the low outcome he received is due to deliberate misreporting by the manager or just bad luck. Therefore, it is not clear that the results we observe (i.e., individuals' strong willingness to punish) in settings in which there is certainty regarding the other party's action and intention will persist in a setting with information asymmetry when the other party's action and intention can not be known for certain.

As discussed, there is evidence that suggests that individuals will punish undesirable behavior at a cost to themselves. However, there is also evidence that suggests that the presence of information asymmetry greatly reduces individuals' willingness to punish. Although the

presence of information asymmetry may reduce individuals' willingness to punish, I predict that investors' strong desire for retribution will cause them to initiate litigation against managers suspected of misreporting. In addition to the preponderance of evidence from experimental studies that find that retribution affects individuals' decision-making when they are personally affected, there is also evidence that individuals are willing to punish other individuals who violate social norms even if they are not personally affected (i.e., third-party punishment).[14] Fehr and Fischbacher (2004) investigate the effects of third-party punishment. In their study, the authors endow a third-party with resources that he can use to punish other agents who are playing a prisoner's dilemma game or a dictator game. Standard economic arguments predict that there will be no punishment because the individual does not have a financial incentive to punish. However, Fehr and Fischbacher (2004) report that two-thirds of the third parties punish the violation of the distribution norm. The results of this study provide evidence that individuals' desire for retribution is so strong that they are willing to punish others who violate social norms even when they are not affected. As a result of individuals' strong desire for punishment, I expect individuals who suspect misreporting by a manager to initiate litigation against the manager. I predict that investors are likely to punish managers in this setting because retribution in securities litigation is more personal because the investor has been personally affected by the actions of the manager. Because the investor is personally affected, he is more likely to be angry and administer justice himself via litigation.[15] Finally, the results of the neuroeconomic research suggest that individuals receive utility from punishing other individuals who violate social norms (de Quervain et al. 2004; Singer et al. 2006), which also leads me to

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[14] Retribution as defined in this study is also related to the third-party punishment literature (TPP).
[15] Camerer (2003) discusses the emotional differences between personal injustices, which incite anger and third-party injustices, which incite indignation.

believe that individuals will initiate litigation against managers suspected of misreporting to maximize their utility. That is, investors will initiate litigation against managers because the utility they receive from punishing the managers is greater than the financial cost of doing so.

In summary, I predict that investors' desires for retribution will cause them to initiate costly litigation against managers suspected of misreporting even if they can not receive any financial restitution for their losses. Consistent with retribution theory, I propose my third hypothesis:

> **Hypothesis 3:** In a market in which investors have the option to initiate litigation but *cannot* receive financial restitution for their losses, managers will expend *more* effort and report *more* truthfully than in a market without litigation. As a result, investors will value the firm higher than in a market without litigation.

3.5   SOCIAL WELFARE

Hypotheses 1-3 focus on the reporting behavior by managers and the valuation of the firm by investors. Although both managers' and investors' behavior may lead to changes in their welfare, the behavior examined in hypotheses 1-3 are intermediary measures (e.g., effort, honesty and valuation) as opposed to a more fundamental measure, such as a change in welfare.[16] In order to fully understand the welfare implications of managers and investors actions in various litigation markets, I will examine manager and investor welfare in different litigation markets. As a result, my final hypotheses investigate whether the hypothesized behavior for managers and investors leads to changes in social welfare.

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[16] See Evans et al. (2001) and Kuang and Moser (2009) for other studies that illustrate the importance of distinguishing between effects measured by intermediary measures as opposed to effects measured by more comprehensive measures, such as the welfare of the principal or the agent.

Economic theory predicts that managers in a market without litigation will shirk and misreport. As a result, investors will value the firm accordingly (see H1). If H1 is supported, social welfare in this market will not differ significantly from the social welfare predicted by economic theory. This leads to my first welfare hypothesis:

Hypothesis 4a: Social welfare will not differ significantly from the social welfare predicted by economic theory in a market without litigation.

H2 predicts that, in a market in which litigation is an option and investors can receive financial restitution for their losses, managers will expend *more* effort and report *more* truthfully than in a market without litigation. As a result, investors will value the firm higher than in a market without litigation. Consistent with the expected behavior in H2, and economic theory, my second welfare hypothesis predicts that social welfare will be greater when investors have the option to initiate litigation and can receive financial restitution for their losses than in a market without litigation. Thus, my second welfare hypothesis is:

Hypothesis 4b: Social welfare will be *greater* in a market in which investors have the option to initiate litigation and can receive financial restitution for their losses than in a market without litigation.

Economic theory predicts that, in a market in which litigation is an option and investors can not receive financial restitution for their losses, the presence of the litigation option will have no impact on managers' decisions and therefore, managers' effort and reporting decisions in this market are expected to be equal to managers' effort and reporting decisions in a market without litigation. However, based on retribution theory, H3 predicts that, in a market in which litigation is an option and investors cannot receive financial restitution for their losses, managers will expend *more* effort and report *more* truthfully than in a market without litigation, and investors

will value the firm higher than in a market without litigation. Consistent with the predicted behavior in H3, my final welfare hypothesis is:

> **Hypothesis 4c:** Social welfare will be *greater* in a market in which investors have the option to initiate litigation but cannot receive financial restitution for their losses than in a market without litigation.

4.0   RESEARCH DESIGN

4.1   OVERVIEW OF CHAPTER

Chapter 4 presents the research design and procedures. More specifically, Section 4.2 of this chapter provides a high-level summary of the experimental setting. Section 4.3 presents the experimental design and describes the three market settings examined in the study. Finally, Section 4.4 explains the detailed experimental procedures, calculations of damages, and payoffs for managers and investors.

4.2   EXPERIMENT OVERVIEW

In order to understand the role retribution plays in investors' litigation decisions and to examine how litigation affects managers' reporting decisions, I examine managers' and investors' behavior in three markets. In the first market, litigation is not an option. In the second market, litigation is an option and investors have a financial incentive to initiate litigation. In the third market, litigation is an option but investors do *not* have a financial incentive to initiate litigation.

4.3   EXPERIMENTAL DESIGN

The experiment was a 1X3 between-participant design in which litigation was varied at three levels (No Litigation, Litigation-Incentive, and Litigation-No Incentive).   In the No Litigation condition, investors did not have the option to initiate litigation.   The No Litigation condition establishes a benchmark for manager and investor behavior against which I subsequently compare to manager and investor behavior in conditions that allow litigation. In the Litigation-Incentive condition, the winning investor has the option of initiating costly litigation against a manager suspected of misreporting and the investor can receive financial restitution for his losses. In the Litigation-No Incentive condition, the winning investor also has the option of initiating costly litigation against a manager suspected of misreporting, but the investor cannot receive financial restitution for his losses.

4.4   EXPERIMENTAL PROCEDURES

The hypotheses previously described in Section 3.0 were tested using Z-tree market software (Fischbacher 2007) in a computer laboratory experiment in which 100 students participated in one of six 90-minute sessions (16 participants per session - 4 managers and 12 investors).[17]   The roles of manager and investor were randomly assigned to participants and fixed throughout the session. There were 30 periods in each experimental session, which was known to all participants.   One manager was matched with three investors each period.

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[17] One session had 20 participants, 5 managers and 15 investors. As discussed later in the paper during the test of hypothesis three, an additional session consisting of 9 managers and 27 investors was conducted in the market in which investors have the option to initiate litigation but can not receive financial restitution for their losses.

Managers and investors were randomly and anonymously rematched each period, which precluded reputation development and simulated an independent one-shot environment. The one-shot, repeated-interaction design was chosen to control for reputation effects but provide participants with experience making decisions in their market. During the experiment, the terms "sellers" and "buyers" were used instead of managers and investors. Although more context-free terms could have been used (e.g., Participant A and Participant B) the terms "sellers" and "buyers" helped facilitate the participants' understanding of their roles in the experiment. Participants received a $5.00 participation fee, which was added to their cumulative earnings from the experiment and paid to them upon completion of the experiment.

Table 1 summarizes the parameters used in the experiment and Figure 2 illustrates the sequence of events, as shown to the participants.[18] In step 1, each investor receives an endowment (σ) of $0.50 and is randomly assigned a payoff value for a high dividend (d_h). The payoff values for a high dividend (d_h) are randomly drawn with replacement each period from the three values $2.80, $2.00 or $1.20. The random payoff values enable buyers to earn profits in a competitive market setting. The payoff value for a low dividend (d_l) is always $0.00 for all investors.

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[18] This experimental setting is similar to the markets utilized by Dopuch et al. (1989) and Wallin (1992). The auction mechanism is also consistent with several prior experimental studies that have used an auction market to study the interactions between managers and investors (e.g., King and Wallin 1990; 1991; 1995; Dopuch and King 1992; Wallin 1992; Dopuch et al. 1994; Hobson and Kachelmeier 2005).

Table 1: Summary of Parameter Definitions and Parameter Values

Panel A of Table 1 provides definitions for the parameters used in the experiment and Panel B provides the values of the parameters.

Panel A: Parameter Definitions

σ	Investor endowment
e	Managerial effort, where e_h is work and e_l is shirk.
Ce	Cost of effort
μ_h	Probability of a high asset given work. $(1-\mu_h)$ probability of a low asset given work.
μ_l	Probability of a high asset given shirk. $(1-\mu_l)$ probability of a low asset given shirk.
q_h	High asset type. A high asset has a q_h probability of a high dividend (d_h) and a $(1-q_h)$ probability of a low dividend (d_l).
q_l	Low asset type. A low asset has a q_l probability of a high dividend (d_h) and a $(1-q_l)$ probability of a low dividend (d_l).
d	Actual dividend of the asset. The dividend may be either high (d_h) or low (d_l).
r	Report made by the manager about asset type. A manager may report $r=q_h$, $r=q_l$
k	Legal costs (fixed)
m	Variable damages payable to the investor
p^*	Purchase price of asset

Panel B: Parameter Values

σ	=$0.50
Ce	Ce_h costs $0.40 and Ce_l cost $0.00
μh	μ_h=80%; $(1-\mu_h)$=20%
μl	μ_l=0%; $(1-\mu_l)$=100%
q_h	q_h=80%; $(1-q_h)$=20%
q_l	q_l=20%; $(1-q_l)$=80%
d_h	A high dividend (d_h) pays either ($2.80, $2.00, $1.20) depending on the buyer's payoff value for the period
d_l	A low dividend (d_l) pays $0.00
k	=$0.40

Figure 2: Experiment Timeline

Panel A of Figure 2 below presents a timeline of the experiment for the Litigation-Incentive condition. Panel B of Figure 2 presents a timeline of the experiment for the Litigation-No Incentive condition. The difference between the Litigation-Incentive condition and the Litigation-No Incentive condition is the financial incentive that the investor has to initiate litigation. The potential penalty that the manager is subject to for misreporting is held constant, but the potential reward to the investor differs between the two conditions. In the No Litigation condition, the experiment ends after Step 5.

Panel A: Litigation-Incentive Condition
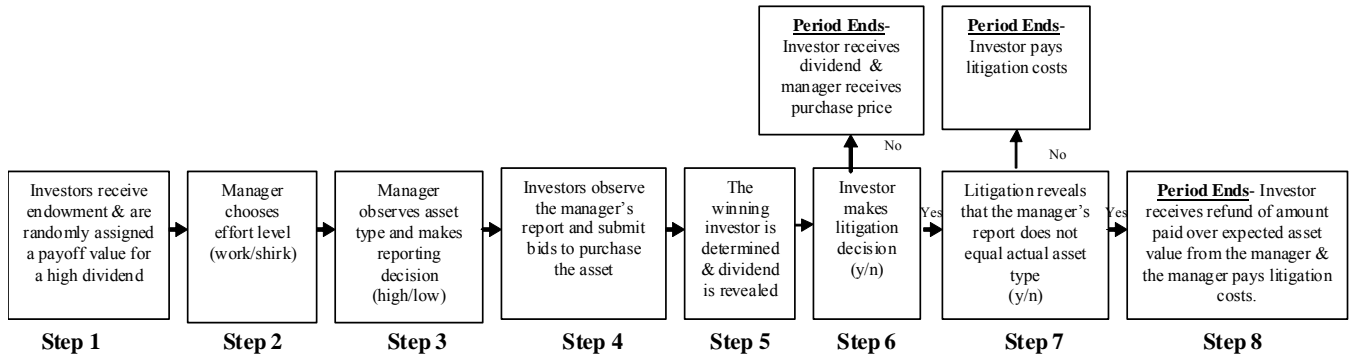
Panel B: Litigation-No Incentive Condition
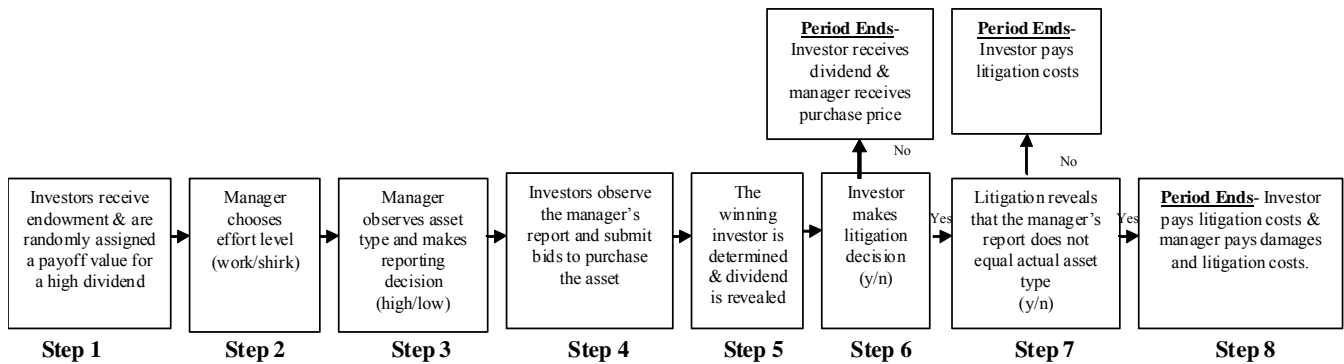
In step 2, the manager chooses whether to work (e_h) or shirk (e_l), where the cost of working (Ce_h)=$0.40 and shirking ($Ce_l$)=$0.00. In step 3, the asset type is partially determined by the effort choice of the manager. If the manager chooses to work, he has an 80% chance of receiving a high asset and a 20% chance of receiving a low asset. If the manager chooses to shirk, he receives a low asset with certainty. The manager privately observes the actual asset type, either high (q_h) or low (q_l), and makes a report (r) regarding the asset type to investors. Managers are free to report that they have a high or low asset irrespective of their actual asset type.

In step 4, investors observe the manager's report and submit bids to purchase the asset. The winning investor is determined in step 5. The investor who submits the highest bid purchases the asset at a price equal to the second highest bid (p^*), which is the amount paid to the manager. This second-price auction mechanism was used because it is a theoretically demand-revealing mechanism and does not depend on the bidder's expectations about his rivals' bids (Cox et al. 1982). The bidder with the highest bid (i.e., the winner of the second-price auction) purchases the asset and receives the asset's dividend, which is either a high dividend (d_h) or a low dividend (d_l). A high asset has an 80% (20%) chance of a high (low) dividend, and a low asset has a 20% (80%) chance of a high (low) dividend. These probabilities create an environment in which the dividend depends upon managerial effort and an independent state variable. In the No Litigation condition, the period ends after this step.

Steps 6, 7 and 8 apply to both the Litigation-Incentive and the Litigation-No Incentive conditions. In step 6, the investor who purchased an asset reported as high has the option of initiating a lawsuit at a cost (k), which is fixed at $0.40. In step 7, the outcome of any litigation

initiated in step 6 is determined. If the manager's report is not equal to the actual asset type (i.e., $r_h \neq q_h$) then the investor wins the lawsuit.

In step 8, managers' and investors' earnings are calculated. In the Litigation-Incentive condition, if the investor wins the lawsuit, the manager must pay legal costs (k), and damages to the investor. The payment of damages to the investor is equal to the price the winning investor paid for the asset less the expected value of a low asset, which depends upon the investor's payoff value. For example, the expected value of a low asset, given a payoff value of $2.00, is calculated as $[(q_l)(d_h) + (1-q_l)(d_l)] = (20\%*\$2.00) + (80\%*\$0.00) = \$0.40$. This is the amount the investor would have paid if the manager truthfully reported his asset type. The calculation is the same for the other payoff values ($1.20, $2.80). The calculation of damages and the payment of legal costs in the Litigation-Incentive condition are consistent with damage awards for violations of Rule 10b-5, which is the current securities law that is violated when managers of a firm make false or misleading statements. Under Rule 10b-5 a successful investor is allowed to recover actual damages (i.e., losses) and legal fees. In the Litigation-No Incentive condition, the manager pays the same damages and legal costs as in the Litigation-Incentive condition if the investor wins the lawsuit. However, the investor is always responsible for his legal costs and does not receive any financial restitution for his losses. That is, a manager in the Litigation-Incentive condition and a manager in the Litigation-No Incentive condition pay the same legal costs and damages for misreporting. However, an investor in the Litigation-Incentive condition receives financial restitution for his losses and is not responsible for legal costs while an investor in the Litigation-No Incentive condition does not receive financial restitution for his losses and is responsible for legal costs.

5.0   EXPERIMENTAL RESULTS

5.1   OVERVIEW OF CHAPTER

This chapter reports the results of the tests of my hypotheses. Section 5.2 provides a summary of the data from the three markets to determine if it is consistent with the predicted behavior. Formal statistical tests of hypothesis one, two, three and four are presented in Sections 5.3, 5.4, 5.5, and 5.6, respectively. Section 5.7 presents additional analysis of managers' reporting behavior.

5.2   SUMMARY OF THE DATA

This section provides a general description of the overall pattern of results. Formal statistical tests are provided in subsequent sections. Table 2 reports the descriptive results by condition and Figure 3 presents graphs depicting the changes in managers' effort and reporting choices and investors' bidding decisions across periods.

Panel A of Figure 3 presents managers' percent of high effort choices. The percent of managers' high effort choices is calculated by taking the number of times high effort was selected by managers divided by the total number of effort choices made by managers. Panel B presents managers' percent of truthful reporting. Managers' percent of truthful reporting is calculated by taking the number of times managers reported low assets divided by the total number of times managers had low assets. Panel C presents investors' average bid ratio. Investors' average bid ratio is calculated by taking the average of each investor's bid when they received a high report divided by the investor's payoff value for the period.

Panel A: Managers' Percent of High Effort
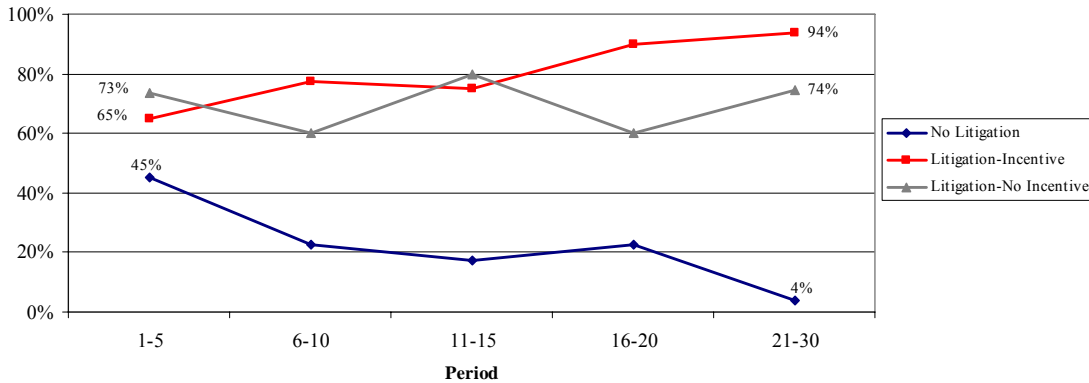
Panel B: Managers' Percent of Truthful Reports
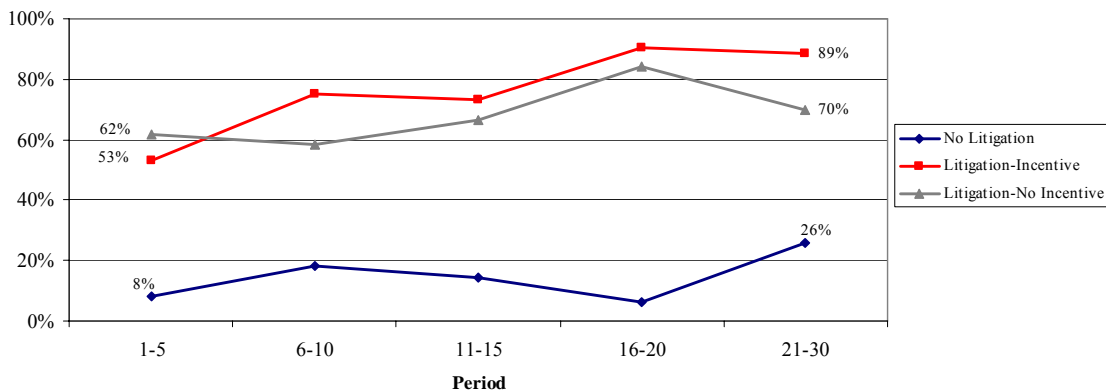
Panel C: Investors' Average Bid Ratio
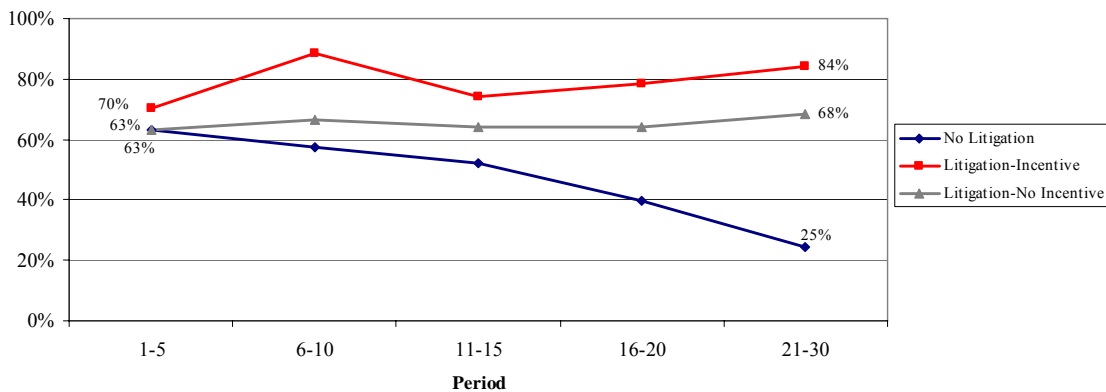
Table 2: Summary of Results by Condition

Table 2 below summarizes the results of the dependent variables for the No Litigation, Litigation-Incentive and Litigation-No Incentive conditions. Specific tests of hypotheses are presented in Table 3.

	No Litigation	Litigation- Incentive	Litigation-No Incentive
	Overall	Overall	Overall
% High Effort [a]	20%	83%	70%
% of Truthful Reports [b]	17%	73%	67%
Mean Bid Ratio [c]	44%	78%	68%
% of Litigation [d]	N/A	98%	72%
Avg. Manager's Earnings [e]	$ 19.29	$ 27.42	$ 20.88
Avg. Investor's Earnings [f]	$ 11.35	$ 17.93	$ 17.45
Avg. Earnings (managers & investors)[g]	$ 13.34	$ 20.30	$ 18.31

Notes to table:
a- the number of times high effort was selected by managers divided by the total number of effort choices made by managers.
b- the number of times managers reported low assets divided by the total number of times managers had low assets.
c- the average of each investor's bid when they received a high report divided by the investor's payoff value for the period.
d- the number of lawsuits by investors divided by the total number of times investors received a high report and a low dividend.
e- the sum of each manager's earnings divided by the number of managers.
f- the sum of each investor's earnings divided by the number of investors.
g- the average earnings of both managers and investors.

The pattern of managers' and investors' behavior is consistent with expectations. Because the No Litigation condition does not have a litigation option, managers were expected to choose high effort and report truthfully least often in this condition. As a result, investors were expected to find managers' reports least credible in this condition. Because the Litigation-Incentive condition allows investors to initiate litigation and provides a financial incentive to do so, managers were expected to choose high effort and report truthfully most often in this condition. Therefore, investors were expected to find managers' reports most credible in this condition. The Litigation-No Incentive condition allows investors to initiate litigation but provides no financial incentive to do so. Nevertheless, despite the lack of a financial incentive, due to retribution theory, I expected that investor retribution would cause investors to initiate litigation and this would result in greater effort and more truthful reporting by managers than in the No Litigation condition. Consequently, investors were expected to find managers' reports more credible than in the No Litigation condition.

I begin by examining managers' effort choices, which are presented in Panel A of Figure 3. During the first five periods, managers frequently choose high effort in all conditions (i.e., 45% of the time in the No Litigation condition, 65% of the time in the Litigation-Incentive condition and 73% of the time in the Litigation-No Incentive condition). I examine the first five periods because managers' and investors' initial behavior may provide interesting insights regarding their initial response to the various litigation environments. However, I am more interested in managers' and investors' behavior in the later periods. If the market is converging toward equilibrium, the later periods provide a more accurate description of equilibrium behavior. During the last 10 periods, consistent with the expected pattern of behavior, managers choose high effort least often in the No Litigation condition (4%) and most often in the

Litigation-Incentive condition (94%). Managers' high effort choices in the Litigation-No Incentive condition (74%) are greater than in the No Litigation condition (4%), which is consistent with investor retribution causing managers to choose high effort.

I next examine managers' reporting behavior. Managers' reporting decisions are presented in Panel B of Figure 3. The option to litigate has an immediate effect on the reporting decisions of managers. During the first five periods, managers report truthfully only 8% of the time in the No Litigation condition, as compared to 53% of the time in the Litigation-Incentive condition and 62% of the time in the Litigation-No Incentive condition. The expected pattern of results are observed in the last 10 periods, in which managers' reports are truthful least often in the No Litigation condition (26%), most often in the Litigation-Incentive condition (89%), and the truthfulness of managers' reports in the Litigation-No Incentive condition (70%) is greater than in the No Litigation condition (26%). The only difference between the No Litigation condition and the Litigation-No Incentive condition is that investors in the Litigation-No Incentive condition have the option to initiate litigation against a manager suspected of misreporting. Given that there is no financial incentive for an investor to initiate litigation against a manager, another factor, such as investor retribution, must have induced truthful reporting by managers.

Finally, I examine investors' bidding behavior. As explained more fully later, investors' bid ratios serve as a proxy for their beliefs regarding the truthfulness of managers' reports. Panel C of Figure 3 reports investors' bidding decisions. Investors initially find managers' reports credible in all conditions. During the first five periods, investors bid 63%, 70% and 63% of their payoff value for managers' assets in the No Litigation, Litigation-Incentive and Litigation-No Incentive conditions, respectively. However, consistent with the expected pattern of behavior,

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during the last 10 periods, investors' bids are lowest in the No Litigation condition (25%), highest in the Litigation-Incentive condition (84%) and investors' bids in the Litigation-No Incentive condition (68%) are greater than in the No Litigation condition (25%). The latter result is consistent with investor retribution leading to more truthful reports by managers, which, in turn, causes investors to find managers' reports more credible.

5.3   TESTS OF HYPOTHESIS 1

Economic theory predicts that managers will misreport and investors will not find their reports credible. As a result, managers have no incentive to undertake costly effort to improve the prospects of the firm. Consistent with economic theory, H1 predicts that managers will not choose high effort, will misreport and investors will not find managers' reports credible. In order to test H1, I report the results of statistical tests of these three dependent variables (effort choice, reporting choice, and bidding decision) in sequence.

Panel A of Table 3 reports the predictions for manager and investor behavior. H1 posits that consistent with economic theory, managers will choose low effort and always misreport, therefore the prediction column in Panel A of Table 3 shows a 0% prediction for both the percent of high effort selected by managers and the percent of truthful reports made by managers. As a result of managers always choosing low effort, H1 also predicts that investors will value the firm accordingly. Managers are expected to always choose low effort, which means that managers will always have a low asset. A low asset has a 20% probability of paying a high dividend and 80% chance of paying a low dividend, which is zero for all investors. As a result, investors are expected to bid the expected value of a low asset, which is 20% of their payoff value. Panel A of

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Table 3 also reports managers' reporting decisions, effort choices and investors' bidding decisions overall (i.e., for 30 periods) and their decisions during the last 10 periods of the experiment. As reported in Panel A of Table 3, managers in the No Litigation condition choose high effort 20% of the time overall but only 4% of the time during the last 10 periods. Given my interest in equilibrium behavior, the test of my hypotheses will focus on the last 10 periods of the experiment.[19] To test H1, I compute a 95% Agresti-Coull Confidence Interval around 4%.[20] The confidence interval shows that the probability that a manager chooses high effort during the last 10 periods is between 0.8% and 10.9%. The lower bound of the confidence interval is less than 1%, which leads me to conclude that managers' effort choices during the later periods are consistent with economic theory, providing support for H1.

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[19] Table 3 and Table 4 report the results of the tests of hypotheses examined in the study using the overall data and only the data for the last 10 periods. I focus on managers' and investors' decisions in the later periods because the later periods provide a more accurate description of equilibrium behavior. The use of an alternative cutoff (e.g., the last 5 periods) does not materially affect my results.
[20] The Agresti-Coull converges more quickly and is a better approximation of a confidence interval with binomial data than the standard Wald Confidence Interval (Agresti and Coull 1998).

Table 3: Tests of Hypotheses 1-3

Panels A, B and C of Table 3 show the results for the tests of hypotheses 1-3 and summarize the results of the dependent variables for the No Litigation, Litigation-Incentive and Litigation-No Incentive conditions, respectively. Panel A reports the predictions for H1. Consistent with economic theory, H1 predicts that managers will not choose high effort and will not report truthfully, and as a result, investors will value the firm accordingly. Managers are not predicted to choose high effort, so they will always have a low asset. As a result, investors are expected to bid the expected value of a low asset, which is 20% of their payoff value. Panel A also reports the actual behavior of managers and investors overall (i.e., 30 periods) and their behavior considering only the last 10 periods of the experiment. Panel A also reports the results of the 95% Agresti-Coull confidence interval. A "+" indicates that the data falls within the range of the confidence interval, which is consistent with predicted behavior. Panel B displays the prediction for H2, which predicts that the percent of high effort and percent of truthful reports by managers, and the bids by investors will be greater than they are in the No Litigation condition. Panel B also reports the economic predictions for manager and investor behavior. Economic theory predicts that managers will always choose high effort and will report truthfully 64% of the time. As a result of managers' effort and reporting choices, investors are expected to bid 75% of their payoff value. See Appendix A for a detailed discussion of the economic prediction in the Litigation-Incentive condition. Panel C reports the predictions for H3, which predicts that the percent of high effort and percent of truthful reports chosen by managers, and the bids by investors will be greater than they are in the No Litigation condition. Panel C also reports the economic prediction for manager and investor behavior, which is the same as the economic prediction in the No Litigation condition. Both Panels B and C report the results of Mann-Whitney tests for differences relative to the predictions for hypotheses 2 and 3, respectively. The hypotheses are tested using the overall data and the data for the last 10 periods, counting each participant as a single observation. An "**" and "*" indicates significance at the 5% and 10% level, respectively.

Panel A: H1 (No Litigation)	Prediction	Overall	Confidence Interval	Last 10	Confidence Interval
Managers					
% High Effort[a]	= 0%	20%	15.0% - 25.1%	4%[+]	0.8% - 10.9%
% Truthful Reports[b]	= 0%	17%	12.7% - 23.1%	26%	17.4% - 36.8%
Investors					
Mean Bid Ratio[c]	= 20%	44%	35.8% - 52.9%	25%[+]	14.5% - 33.8%

Panel B: H2 (Litigation- Incentive)	Prediction	Overall	Last 10	Econ
Managers				
% High Effort[a]	> H1	83%[**]	94%[**]	100%
% Truthful Reports[b]	> H1	71%[**]	83%[**]	64%
Investors				
Mean Bid Ratio[c]	> H1	78%[**]	83%[**]	75%

Panel C: H3 (Litigation-No Incentive)				
Managers				
% High Effort[a]	> H1	70%[**]	74%[**]	0%
% Truthful Reports[b]	> H1	63%[**]	71%[**]	0%
Investors				
Mean Bid Ratio[c]	> H1	68%[**]	67%[**]	20%

Notes to panels:
a- the number of times high effort was selected by managers divided by the total number of effort choices made by managers.
b- the number of times managers reported low assets divided by the total number of times managers had low assets.
c- the average of investors' bid when they received a high report divided by investors' payoff value for the period.

H1 also predicts that, consistent with economic theory, managers will always misreport. Panel A of Table 3 reports the results of managers' reporting decisions. Only reports made by managers whose actual assets are low are considered in tests of managers' truthful reporting because it is always in managers' interest to report an actual high asset as high. As reported in Panel A of Table 3, managers in the No Litigation condition report truthfully 17% of the time overall and 26% of the time during the last 10 periods. As with managers' effort choices, managers' reporting decisions are tested using a 95% Agresti-Coull Confidence Interval around 26%. The confidence interval shows the probability that a manager will report truthfully during the last 10 periods is between 17.4% and 36.8%, which is greater than the economic prediction that managers will never report truthfully. This result does not support H1. Recall that the primary purpose of H1 is to establish an empirical benchmark that can be used to compare to other markets with litigation. That is, failure to support H1 is of no consequence regarding the main issues of interest in my study. However, it appears that the reason that managers' reporting behavior deviated from the economic prediction is that investors attempted to punish managers for misreporting by frequently bidding zero when they received a high report. Investors increased the frequency with which they bid zero throughout the experiment. During the first five periods, investors bid zero 2% of the time when they received a high report, but during the last five periods investors bid zero 20% of the time when they received a high report. According to economic theory, as will be fully explained later, investors should bid 20% of their payoff value, which is the expected value of a low asset. Even considering that some investors may be risk-adverse, low assets always have some financial value, so economic incentives alone can not explain investors bidding zero. However, investors' desire for retribution may have induced the bids of zero, which ensures that managers will not receive any compensation for their assets.

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The adverse reaction of investors when a manager reported a high asset may have induced truthful reporting by managers because they could receive more compensation by reporting truthfully than by misreporting.

H1 also predicts that investors will value the firm consistent with standard economic theory and bid 20% of their payoff value. For this test, only investors' bidding decisions when they receive a high report from a manager are considered. If a manager reports a low asset, the report is almost certainly truthful and no difference in bidding behavior is expected.

The dependent variable used to test whether investors' behavior is consistent with H1 is the bid ratio, which is calculated as the investor's bid divided by his payoff value for a high asset. This bid ratio serves as a proxy for the investor's belief regarding the truthfulness of the manager's report. For example, in the experiment, the probability that a high asset pays a high dividend is 80%. Therefore, an investor who is certain that a manager has a high asset should bid 80% of his payoff value for a high dividend. The mean bid ratio is used to aggregate the investor's beliefs regarding the manager's actual asset type for the period. H1 predicts that investors will anticipate that managers will never choose high effort, will disregard managers' reports, and bid the expected value of a low asset, which is 20% of their payoff value. Panel A of Table 3 reports that investors' mean bid ratio in the No Litigation condition is 44% overall and 25% during the last 10 periods. The 95% Confidence Interval around 25% shows that investors' mean bid ratio during the last 10 periods falls between 14.5% and 33.8%. Consistent with H1, the confidence interval includes the economic prediction of 20%, indicating that investors' bids are not statistically different from the standard economic prediction.

In summary, managers' and investors' behavior in later periods is consistent with economic theory. However, managers report more truthfully than predicted by economic theory, which appears to be driven by investors' attempts to punish managers for misreporting.

5.4   TESTS OF HYPOTHESIS 2

H2 predicts that managers will choose high effort and report truthfully more often in a market in which investors have the option to initiate litigation and a financial incentive to do so, than in a market without litigation. That is, the prediction for H2 is that the percent of high effort chosen by managers, the percent of truthful reports by managers and investors' bid ratios will be greater in the Litigation-Incentive condition than in the No Litigation condition.

Economic theory predicts that managers will always choose high effort. Economic theory also predicts that managers will choose a mixed-reporting strategy that will make an investor indifferent between initiating litigation and not initiating litigation. When determining whether to litigate an investor must consider the financial damages that he could receive if the manager misreported and the investor must also consider the legal costs that he would incur if the manager reported his asset truthfully. The truthful reporting percentage that makes an investor indifferent between pursuing litigation and not pursuing litigation is approximately 64%. In a mixed-strategy equilibrium, the investor would also choose a litigation strategy that would make a manager indifferent between reporting his asset type truthfully and misreporting his asset type. The litigation percentage that makes a manager indifferent between reporting his asset type truthfully and misreporting his asset type is approximately 92%. Given that managers and investors choose the mixed-strategy equilibrium predicted by economic theory, economic theory

predicts that investors will bid 75% of their payoff value. See Appendix A for a further discussion of the economic prediction in the Litigation-Incentive condition.

Panel B of Table 3 shows that managers in the Litigation-Incentive condition choose high effort 83% of the time overall and 94% of the time during the last 10 periods. Consistent with the tests of H1, the tests of H2 focus on the last 10 periods of the experiment. Results of a Mann-Whitney test indicate that the high effort choices of managers during the last 10 periods in the Litigation-Incentive condition (94%) are greater ($z=3.61$; $p<0.000$) than the high effort choices of managers in the No Litigation condition (4%).[21]

Panel B of Table 3 reports that managers in the Litigation-Incentive condition report truthfully 71% of the time overall and 83% of the time during the last 10 periods. The percent of truthful reports by managers during the last 10 periods in the Litigation-Incentive condition (83%) is greater ($z = 2.31$; $p=0.021$) than the percent of truthful reports in the No Litigation condition (26%). These results support H2 and suggest that, consistent with economic theory, providing investors the option to litigate and a financial incentive to do so, induces managers to choose high effort and make truthful reports more often than in a market without litigation.

H2 also predicts that investors will find managers' reports more credible in a market in which investors have the option to initiate litigation and a financial incentive to do so, than in a market without litigation. Panel B of Table 3 reports that investors' mean bid ratio is 78% overall and 83% during the last 10 periods. Consistent with economic theory and as predicted by H2, investors' mean bid ratio during the last 10 periods in the Litigation-Incentive condition

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[21] Tests for H2-H3 were conducted with non-parametric Mann-Whitney statistical tests. The use of non-parametric tests work against me finding significant differences in my tests of H2 and H3. However, I employed non-parametric tests because of their less restrictive distribution assumptions. Tests of H2 and H3 use the average of the last 10 periods of each participant as an individual observation. The averages presented in Table 3, which are an average of an average, may differ slightly from the average of the overall data reported in Table 2 and Figure 3.

(83%) is greater (z=4.76; p<0.000) than investors' mean bid ratio in the No Litigation condition (25%).

Taken together, the tests of H2 show that, consistent with economic theory, managers choose high effort and report truthfully more often in a market in which investors have the option to litigate and a financial incentive to do so, than in a market without litigation. As a result, investors find managers' reports more credible and reward them with higher bids for their assets.

5.5   TESTS OF HYPOTHESIS 3

H3 predicts that managers will choose high effort and report truthfully more often in a market in which investors have the option to initiate litigation even though they have no financial incentive to do so, than in a market without litigation. That is, managers' percent of high effort choices and percent of truthful reporting will be greater in the Litigation-No Incentive condition than in the No Litigation condition. Economic theory predicts that the option to litigate without a financial incentive will have no impact on managers' decisions and therefore, managers' effort and reporting decisions in the Litigation-No Incentive condition should equal managers' effort and reporting decisions in the No Litigation condition.

Contrary to the economic prediction, but as predicted by H3, Panel C of Table 3 shows that managers choose high effort 70% of the time overall and 74% of the time during the last 10 periods in the Litigation-No Incentive condition. The percent of managers' high effort choices during the last 10 periods in the Litigation-No Incentive condition (74%) is greater (z=3.51; p<0.000) than the percent of managers' high effort choices in the No Litigation condition (4%), providing support for H3.

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The results of managers' reporting behavior also provides strong support for H3. As reported in Panel C of Table 3, managers in the Litigation-No Incentive condition report truthfully 63% of the time overall and 71% of the time during the last 10 periods. Consistent with H3, the percent of truthful reporting by managers during the last 10 periods in the Litigation-No Incentive condition (71%) is greater ($z=2.15$; $p=0.032$) than the percent of truthful reporting by managers in the No Litigation condition (26%).

H3 also predicts that investors will find managers' reports more credible in a market in which investors have the option to initiate litigation but no financial incentive to do so, than in a market without litigation. As shown in Panel C of Table 3, investors' mean bid ratio is 68% overall and 67% during the last 10 periods in the Litigation-No Incentive condition. Consistent with H3, investors' mean bid ratio during the last 10 periods in the Litigation-No Incentive condition (67%) is greater ($z=3.39$; $p<0.000$) than investors' mean bid ratio in the No Litigation condition (25%).

Overall, the tests of H3 provide strong support for the prediction that due to investor retribution, the option to litigate without a financial incentive to do so, has a significant effect on the decisions of both managers and investors. Investor retribution induces high effort and truthful reporting by managers, and investors respond to managers' high effort and truthful reporting by increasing their bids for managers' assets.

5.5.1 Additional Support of Hypothesis 3

Hypothesis 3 posits that due to retribution investors will initiate litigation against managers suspected of misreporting even though they have no financial incentive to do so. Although managers and investors were randomly and anonymously matched, they do interact

repeatedly, so there could be a financial incentive for an investor to initiate litigation against a manager. For example, an investor may initiate costly litigation against a manager in the current period in hope of influencing the manager's reporting behavior in future periods if or when they meet again. Kandori (1992) used an analytical model to demonstrate that there is no theoretical justification for the one-shot/repeated design to prevent the development of reputation effects. In response to Kandori's theorem, Duffy and Ochs (2009) conducted an experiment that matched participants in a prisoner's dilemma game in anonymous-fixed or randomly-matched pairings. Contrary to the possibility suggested by Kandori (1992), a cooperative norm did not emerge when players were matched randomly. However, a cooperative norm did emerge in the fixed pairing treatment. These results support the use of the one-shot infinitely repeated experimental design controlling for reputation effects. If reputation effects are present, which may induce strategic punishment, the financial incentive for an investor to initiate litigation are the strongest early in the experiment because the likelihood is greater that the manager and investor will meet again. As a result, if financial incentives are significantly contributing to investors' litigation decisions in the Litigation-No Incentive condition then we should expect to see a decline in litigation as the experiment progresses. Figure 4 presents investors' litigation decisions in both the Litigation-Incentive and Litigation- No Incentive conditions.

Figure 4: Graph of Investors' Litigation Decisions

Figure 4 below summarizes investors' litigation decisions in the Litigation-Incentive and Litigation-No Incentive conditions. Investors' percent of litigation is calculated by dividing the number of times investors chose to litigate by the number of times investors received a high report and a low dividend.
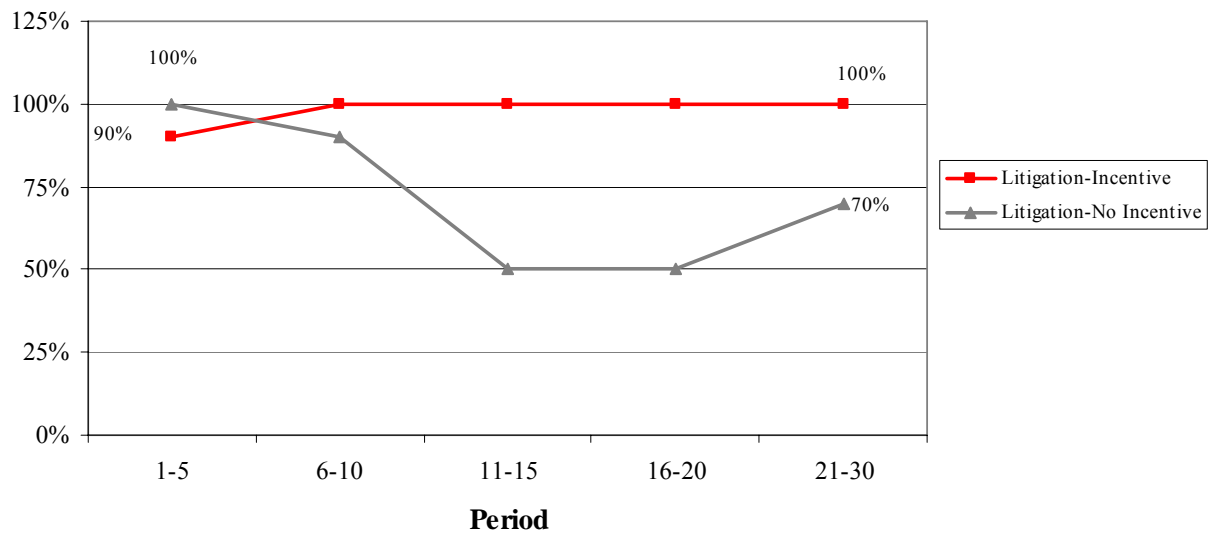
As shown in Figure 4 investors' litigation decisions in the Litigation-No Incentive condition do not monotonically decrease throughout the experiment, which should occur if their decisions are primarily driven by financial incentives or strategic concerns. In fact, investors pursued litigation more often during the last 10 periods (70%) than they did during the previous 10 periods (50%), which is not consistent with their decisions being driven by financial incentives.

It appears unlikely that investors' litigation decisions in my experiment are driven by financial incentives given that investor litigation did not decrease throughout the experiment, as would be expected if investors' litigation decisions were driven by financial incentives. In addition, the prior research of Duffy and Ochs (2009) suggests that the random-matching of participants mitigates reputation effects. However in order to rule out financial incentives and more thoroughly test whether investors' litigation decisions were driven by financial incentives or retribution, I conducted an additional experiment in the Litigation-No Incentive condition, which utilized the turnpike protocol (Cooper et al. 1989). The turnpike protocol is designed to allow participants to gain experience but makes it impossible for participants' choices to influence the behavior of other participants in future periods because each manager and investor only meet once.[22] Controlling for strategic punishment is important because it enables me to focus on punishment as the expression of a social preference and excludes punishment that can be explained by financial incentives.

In this additional experiment, managers and investors were never rematched to rule out the possibility of strategic litigation. In this experimental session, there were 36 participants (9 managers and 27 investors). Because managers and investors could only interact with each other

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[22] Cooper et. al (1989) introduced the turnpike protocol. Similar matching protocols have been widely used in the experimental literature by different names (e.g., perfect stranger matching, round robin, etc.).

once, there were only 9 periods in the experiment, which was known to all participants. Neither the effort choice (p=0.32), nor the truthful reporting (p=0.82) of managers, nor the bidding decisions of investors (p=0.89) is significantly different than the decisions of managers and investors in the Litigation-No Incentive condition in which managers and investors were randomly matched. Although there was a theoretical possibility that investors' litigation decisions could be driven by financial incentives, the results from the Litigation-No Incentive condition using the turnpike protocol provide strong support for the assertion that investors' litigation decisions were driven by retribution rather than financial incentives.

Overall, the results from the tests of H3 provide strong support for the prediction that the litigation mechanism without a financial incentive had a significant effect on the decisions of both managers and investors. Comparing managers' and investors' behavior in the Litigation-Incentive condition to managers' and investors' behavior in the Litigation-No Incentive condition also provides additional support for the important role that investor retribution plays in investors' litigation decisions and how investors' desire for retribution affects managers' reports. In the Litigation-Incentive condition, in addition to investor retribution, investors have a financial incentive to initiate litigation against managers suspected of misreporting because they can receive financial restitution for their losses. In the Litigation-No Incentive condition there is no financial incentive to initiate litigation, so retribution provides the only incentive for an investor to pursue litigation against a manager suspected of misreporting. Therefore, comparing the outcomes for the dependent variables in the Litigation-Incentive condition to the outcomes for the dependent variables in the Litigation-No Incentive condition show the relative importance of financial incentives and retribution to investors' litigation decisions and subsequently the effect on managers' reports. The outcomes for the three dependent variables in the Litigation-No Incentive condition are not statistically different from the outcomes for the three dependent variables in the Litigation-Incentive condition. That is, neither the

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managers' effort choices (p=0.27), nor truthful reporting by managers (p=0.41), nor the bidding behavior of investors (p=0.12) is significantly different at conventional levels between the Litigation-Incentive and Litigation-No Incentive conditions. These results provide further evidence that the retributive desires of investors is a significant factor in their litigation decisions and that investor retribution alone can induce high effort and truthful reports by managers.

5.6   TESTS OF HYPOTHESIS 4

Hypotheses 4a, 4b and 4c examine the welfare of managers and investors. Managers' and investors' average earnings are used as a proxy for their welfare. That is, the sum of managers' earnings divided by the number of managers and the sum of investors' earnings divided by the number of investors equals the average earnings for managers and investors, respectively. Social welfare refers to the welfare of all participants, so the average earnings of both managers and investors are used as a proxy for social welfare.

Table 4 reports the welfare of managers, the welfare of investors, the average welfare of both managers and investors (i.e., social welfare) and the economic prediction for each condition. H4a predicts that social welfare in the No Litigation condition will not differ significantly from the social welfare predicted by economic theory. Economic theory predicts that managers will not choose high effort and as a result, investors will value the firm accordingly. As a result, investors are expected to bid the expected value of a low asset, which is 20% of their payoff value. Assuming that the payoff values are uniformly distributed ($1.20, $2.00 $2.80), and given the second-price auction mechanism, a manager would receive the

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second highest bid of $0.40 (20%*$2.00) each period. Therefore, economic theory predicts managers' earnings for 30 periods will be $12.00 ($0.40*30) and managers' earnings will be $4.00 ($0.40*10) for 10 periods. Panel A reports that managers' average earnings in the No Litigation condition are $19.29 overall and $3.20 when only considering the last 10 periods. As with tests of H1, H2, and H3, I focus on managers' and investors' behavior in the later periods because the later periods provide a more accurate description of equilibrium behavior. Consistent with economic theory, and as predicted in H4a, managers' earnings during the last 10 periods ($3.20) are not different (t=-1.15; p=0.288) from managers' earnings predicted by economic theory ($4.00).

According to economic theory, investors will bid 20% of their payoff value. Assuming that the payoff values are uniformly distributed ($1.20, $2.00 $2.80), and given the second-price auction mechanism, the winning investor will pay $0.40 (20%*$2.00) for an asset that has an expected value of $0.56 (20%*$2.80), which results in an expected gain of $0.16 for the winning investor. All investors receive a $0.50 endowment each period. Over the 30 periods, each investor is expected to win the auction during 10 periods (1/3* 30 periods) and receive $0.66 ($0.50 endowment + $0.16 gain). Each investor is expected to lose the auction during 20 periods and just receive his endowment. Total earnings for each investor for 30 periods are expected to be $16.60 ($0.66*10 + $0.50*20). Therefore, economic theory predicts investors' earnings for 10 periods will be $5.53 ($16.60/3). Panel A of Table 4 reports that investors' average earnings in the No Litigation condition are $11.35 overall and $4.73 when considering the last 10 periods. Investors' earnings during the last 10 periods ($4.73) are less (t=-3.67; p= 0.001) than investors' earnings predicted by economic theory ($5.53), which does not support H4a.

Social welfare considers the average earnings of both managers and investors. Economic theory predicts that managers will earn $12.00 when considering all 30 periods and $4.00 ($12.00/3) when considering only the last 10 periods. Economic theory also predicts that investors will earn $16.60 when considering all 30 periods and $5.53 ($16.60/3) when only considering the last 10 periods. Each market has 4 managers and 12 investors (i.e., 16 participants) and the weighted average of managers' and investors' earnings is $15.45 ((12.00*4/16) + (16.60*12/16)) when considering all 30 periods, and $4.35 ((3.20*4/16) + (4.73*12/16)) when only considering the last 10 periods. The weighted average earnings of managers and investors serve as a proxy for social welfare.

Panel A of Table 4 reports that the average earnings (i.e., social welfare) for all participants (i.e., both managers and investors) in the No Litigation condition are $13.34 overall and $4.35 when considering the last 10 periods. The average earnings during the last 10 periods ($4.35) are less (t=-3.07; p=0.005) than the average earnings predicted by economic theory ($5.15), which does not support H4a. Although social welfare results are not consistent with H4a, the results appear to be driven by the lower than expected earnings of investors, which may be due to investors frequently bidding zero, in an attempt to punish managers for misreporting, during the later part of the experiment as noted in the discussion of H1.

Table 4: Social Welfare Tests

Panels A, B and C of Table 4 report the welfare tests for managers and investors in the No Litigation, Litigation-Incentive and Litigation-No Incentive conditions, respectively. Panel A reports the predicted welfare for managers and investors based upon their predicted behavior in H1 in the No Litigation condition. Consistent with economic theory, H1 predicts that managers will not choose high effort and as a result, investors will value the firm accordingly. As a result, investors are expected to bid the expected value of a low asset, which is 20% of their payoff value. Assuming that the payoff values are uniformly distributed ($1.20, $2.00 $2.80), and given the second-price auction mechanism, a manager would receive the second highest bid of $0.40 (20%*$2.00) each period. Therefore, H1 predicts managers' earnings for 30 periods will be $12.00 ($0.40*30) and for 10 periods will be $4.00 ($0.40*10). Also consistent with economic theory, H1 predicts that investors will not find managers' reports credible and will bid 20% of their payoff value. Assuming that the payoff values are uniformly distributed and given the second-price auction mechanism, the winning investor will pay $0.40 for an asset that has an expected value of $0.56 (20%*$2.80), which results in an expected gain of $0.16 for the winning investor. All investors receive a $0.50 endowment each period. Over the 30 periods, each investor is expected to win the auction during 10 periods (1/3* 30 periods) and receive $0.66 ($0.50 endowment + $0.16 gain). Each investor is expected to lose the auction during 20 periods and just receive his endowment. Total earnings for each investor for 30 periods are expected to be $16.60 ($0.66*10 + $0.50*20). Therefore, H1 predicts that investors' earnings for 10 periods will be $5.53 ($16.60/3). Panel B displays the prediction for H2, which predicts that the welfare of managers, investors and social welfare will be greater than in H1. Panel B also reports the welfare predicted by economic theory. Based on the predicted behavior of managers and investors, economic theory predicts that managers will earn $26.40 over 30 periods and $10.29 when considering the last 10 periods. Economic theory predicts that investors will earn $17.93 over 30 periods and $6.89 when considering the last 10 periods. Economic theory predicts that the weighted-average earnings for both managers and investors are $20.30 over 30 periods and $7.74 when considering the last 10 periods. See Appendix A for a detailed discussion of the economic prediction in the Litigation-Incentive market. Panel C reports the prediction for H3, which predicts that the welfare of managers, investors and social welfare will be greater than in H1. Panel C also reports welfare predicted by economic theory, which is the same as the welfare predicted in H1. All panels report the results of two-tailed t-tests for differences relative to the predictions. The hypotheses are tested using the overall data and the data for the last 10 periods, using each participant as an individual observation. An "**" and "*" indicates significance at the 5% and 10% level, respectively.

Panel A: H4a (No Litigation)	Prediction	Overall	Econ	Last 10	Last 10 Econ
Avg. Managers' Earnings[a]	= 4.00	19.29**	12.00	3.20	4.00
Avg. Investors' Earnings[b]	= 5.53	11.35**	16.60	4.73**	5.53
Avg. Earnings (managers & investors)[c]	= 5.15	13.34**	15.45	4.35**	5.15
Panel B- H4b (Litigation-Incentive)					
Avg. Managers' Earnings[a]	> H1	27.42*	26.40	10.29**	8.80
Avg. Investors' Earnings[b]	> H1	17.93**	20.44	6.89**	6.81
Avg. Earnings (managers & investors)[c]	> H1	20.30**	21.93	7.74**	7.31
Panel C- H4c (Litigation-No Incentive)					
Avg. Managers' Earnings[a]	> H1	20.88	12.00	7.31**	4.00
Avg. Investors' Earnings[b]	> H1	17.45**	16.60	6.34**	5.53
Avg. Earnings (managers & investors)[c]	> H1	18.31**	15.45	6.58**	5.15

Notes to Panel
 a- the sum of each manager's earnings divided by the number of managers.
 b- the sum of each investor's earnings divided by the number of investors.
 c- the average earnings of both managers and investors.

H4b predicts that social welfare will be greater in the Litigation-Incentive condition than in the No Litigation condition. Panel B of Table 4 reports that managers' average earnings in the Litigation-Incentive condition are $27.42 overall and $10.29 when considering only the last 10 periods. Managers' earnings during the last 10 periods in the Litigation-Incentive condition ($10.29) are greater (t=3.99; p=0.001) than managers' earnings in the No Litigation condition ($3.20). Investors also fared better in the Litigation-Incentive condition than in the No Litigation condition. Investors' average earnings in the Litigation-Incentive condition are $17.93 overall and $6.89 when considering only the last 10 periods. Investors' earnings during the last 10 periods ($6.89) are greater (t=6.12; p< 0.000) than investors' earnings in the No Litigation condition ($4.73). Average earnings of all participants (i.e., social welfare) in the Litigation-Incentive condition are $20.30 overall and $7.74 when considering only the last 10 periods. Average earnings during the last 10 periods in the Litigation-Incentive condition ($7.74) are also greater (t=5.88; p< 0.000) than average earnings in the No Litigation condition ($4.35). These results provide strong support for H4b and suggest that, consistent with economic theory, providing investors the option to litigate and a financial incentive to do so, increases social welfare relative to a market without litigation.

H4c predicts that social welfare will be greater in the Litigation-No Incentive condition than in the No Litigation condition. This test is of particular interest because economic theory predicts that social welfare will be equal in the two conditions. Panel C of Table 4 reports that managers' earnings in the Litigation-No Incentive condition are $20.88 overall and $7.31 when considering only the last 10 periods. Managers' earnings during the last 10 periods in the Litigation-No Incentive condition ($7.31) are greater (t=2.66; p=0.018) than managers' earnings in the No Litigation condition ($3.20). Investors' earnings in the Litigation-No Incentive

condition are $17.45 overall and $6.34 when considering the last 10 periods. Investors' earnings during the last 10 periods in the Litigation-No Incentive condition ($6.34) are greater (t=3.22; p=0.002) than investors' earnings in the No Litigation condition ($4.73). Average earnings (i.e., social welfare) are $18.31 in the Litigation-No Incentive condition overall and $6.58 when considering the last 10 periods. Average earnings during the last 10 periods in the Litigation- No Incentive condition ($6.58) are also greater (t=4.12; p< 0.000) than average earnings in the No Litigation condition ($4.35).

Although not predicted, it is also worthy to note that there are no significant differences in the welfare of managers and investors in the Litigation-Incentive condition as compared to the welfare of managers and investors in the Litigation-No Incentive condition. That is, managers' earnings during the last 10 periods in the Litigation-Incentive condition ($10.29) are not different (t=1.44; p=0.172) than managers' earnings in the Litigation-No Incentive condition ($7.31). Also, the earnings of investors during the last 10 periods in the Litigation-Incentive condition ($6.89) are not different (t=1.05; p=0.300) than investors' earnings in the Litigation-No Incentive condition ($6.34). Finally, average earnings (i.e., social welfare) during the last 10 periods in the Litigation-Incentive condition ($7.74) are not different (t=1.69; p= 0.095) at conventional levels of significance than the average earnings in the Litigation-No Incentive condition ($6.58).

In summary, these results provide support for H4c and suggest that not only does the increased effort and truthful reporting driven by investor retribution lead to increases in social welfare, but also that due to investor retribution, the welfare of managers and investors in a market in which litigation is an option and there is a financial incentive to litigate, is similar to the welfare of managers and investors in a market in which litigation is an option but there is no financial incentive to litigate.

5.7   ADDITIONAL ANALYSIS

The results for H1-H3 reported earlier indicate that providing investors with an option to litigate had the predicted effect on managers in that they chose high effort more often and made more truthful reports than when litigation was not an option.   However, another potentially interesting question is whether managers' reporting decisions are affected by their effort choice. Economic theory predicts that managers' honesty will not differ depending on their effort choice. There are two competing psychological theories regarding the relationship between effort and truthful reporting.   First, several studies find that some individuals report more honestly (e.g., Evans et al. 2001; Rankin et al. 2003; Hannan et al. 2005) and provide more effort (e.g., Akerlof 1982; Fehr et al. 1998; Hannan et al. 2002; Hannan 2005) than predicted by economic theory. However, research also shows that due to entitlement, some individuals may feel that they deserve the fruits of their labor and this may override any preference for honesty.   That is, managers who provide high effort and receive a low asset may feel entitled to the benefits of their high effort and therefore may misreport more often than when they choose low effort (e.g., Adams 1965; Hoffman and Spitzer 1985).

Table 5: Summary of Manager Misreporting by Condition

Economic theory predicts that a manager's choice of effort will have no effect on his subsequent reporting decision. The Panels A-C in Table 5 below tabulate the misreporting and effort choices of managers. When considering whether a manager misreported, only reports made by managers who had a low asset are considered because there is no incentive for a manager to misreport when he has a high asset.

Panel A: No Litigation

| Misreport | Effort | | Total |
	Low	High	
No	29 (15%)	6 (67%)	35 (17%)
Yes	164 (85%)	3 (33%)	167 (83%)
Total	193 (100%)	9 (100%)	202 (100%)

Panel B: Litigation-Incentive

| Misreport | Effort | | Total |
	Low	High	
No	36 (86%)	21 (58%)	57 (73%)
Yes	6 (14%)	15 (42%)	21 (27%)
Total	42 (100%)	36 (100%)	78 (100%)

Panel C: Litigation-No Incentive

| Misreport | Effort | | Total |
	Low	High	
No	61 (76%)	12 (41%)	73 (67%)
Yes	19 (24%)	17 (59%)	36 (33%)
Total	80 (100%)	29 (100%)	109 (100%)

As shown previously in tests of H1, managers frequently choose low effort and misreport in the No Litigation condition. Panel A of Table 5 reports that managers in the No Litigation condition misreport 85% of the time when they choose low effort and only 33% of the time when they choose high effort. These results are consistent with the theory that managers who choose high effort are inherently more likely to report truthfully. However, it is important to interpret this finding with caution given the small number of times that managers choose high effort in this condition. In contrast to the results from the No Litigation condition, the results from the Litigation-Incentive condition suggest that managers are more likely to misreport when they choose high effort. Panel B of Table 5 shows that managers in the Litigation-Incentive condition misreport 14% of the time when they choose low effort, as compared to 42% when they choose high effort. Results from the Litigation-No Incentive condition are similar to those from the Litigation-Incentive condition. Panel C reports that managers in the Litigation-No Incentive condition misreport 24% of the time when they choose low effort and 59% when they choose high effort. These results suggest that managers in either litigation condition are more likely to misreport when they choose high effort than when they choose low effort.[23]

The result that managers are more likely to misreport when they choose high effort in both litigation conditions is further analyzed using the logit regression model shown in Table 6. The logit regression uses *Misreport* as the dependent variable and lists indicator variables for *High Effort* and the *Litigation-Incentive* and *Litigation-No Incentive* conditions.[24] As expected, the variable in Model 1, which only has *High Effort* as an independent variable, is not significant

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[23] I am currently conducting a follow up study to investigate this finding further.

[24] *Misreport* is an indicator variable that equals one if the manager had a low asset and reported it as high and zero if the manager had a low asset and reported it as low. *High Effort* is an indicator variable that equals one if the manager chose high effort and zero if the manager chose low effort. The regression model is estimated using a logit model that includes the participant as a cluster variable to control for repeated measures.

due to the differential effects of high effort previously noted on the misreporting by managers in the No Litigation, Litigation-Incentive and Litigation-No Incentive conditions. Consistent with the overall truthful reporting noted in prior analyses, the odds ratio is less than one for *Litigation-Incentive* (0.051) and *Litigation-No Incentive* (0.083) indicator variables in Model 2 suggesting that managers in these two litigation conditions are less likely to misreport than managers in the No Litigation condition. However, Model 3, which includes interaction terms for *Litigation-Incentive * High Effort* and *Litigation-No Incentive * High Effort*, shows that the odds ratios, for *Litigation-Incentive* (0.029) and *Litigation-No Incentive* (0.055), which are less than one when analyzed separately, are much greater than one (48.473 and 51.442, respectively) when *Litigation-Incentive* and *Litigation-No Incentive* are interacted with *High Effort*, respectively. These results suggest that managers in either litigation condition are more likely to misreport when they choose high effort than when they choose low effort.

The finding reported above could have important implications for real-world internal and external reporting environments as managers may be more likely to misreport financial information when they feel that their poor financial results are caused by bad luck or factors outside of their control. Although I find this effort-reporting anomaly only in the litigation conditions, I believe that this result may hold more generally in real-world reporting environments for two reasons. First, the fact that we do not find a similar pattern of results in the No Litigation condition is likely due to the low variation in effort choices. Out of the 202 effort choices made by managers in the No Litigation condition only 9 (4%) were high effort and 193 or (96%) were low effort. Second, in real-world reporting environments, managers are subject to litigation by investors. Therefore, if litigation is a necessary factor that induces effort-dependent

misreporting by managers, we should also observe this pattern of misreporting in real-world reporting environments in which managers make financial reports under the threat of litigation.

Table 6: Regression Analysis of Reporting and Effort Choice

The logit model presented in Table 6 below uses *Misreport* as an indicator variable that equals one if the manager had a low asset and reported it as high and zero if the manager had a low asset and reported it as low. *High Effort* is an indicator variable that equals one if the manager chose high effort and zero if the manager chose low effort. All regressions testing effort choice and truthful reporting are estimated using a logit model and include the participant as a cluster variable to control for repeated observations.

	Logit models		
	1	2	3
High Effort	0.598	2.367	0.088[*]
	(-1.07)	(1.62)	(-2.98)
Litigation-Incentive		0.051[**]	0.029[**]
		(-4.22)	(-5.08)
Litigation-No Incentive		0.083[**]	0.055[**]
		(-3.86)	(-4.88)
*High Effort * Litigation-Incentive*			48.473[**]
			(3.59)
*High Effort * Litigation-No Incentive*			51.442[**]
			(3.88)
Wald Chi^2	1.14	20.95	42.85
Adj. R-sqr	0.7%	23.0%	27.4%
number of participants	25	25	25
number of observations	389	389	389

**, * Indicates significance at 1% and 5%, respectively. Z statistics are in the parentheses.

6.0   CONCLUSION AND DISCUSSION

6.1   OVERVIEW OF CHAPTER

Section 6.2 summarizes the results of this study. Section 6.3 discusses the contribution of this dissertation to the academic literature, the importance to practitioners and the potential policy implications. Section 6.4 concludes this chapter by discussing the limitations of this dissertation and describes potential future projects related to the findings of this study.

6.2   SUMMARY OF RESULTS

Shareholder litigation is an important and costly component of the regulation of securities markets. Consequently, it is important to understand the determinants of shareholder litigation. Prior research finds that attorneys' incentives and specific characteristics of firms (e.g., industry, market capitalization, and stock price volatility) drive shareholder litigation. My study controls for these characteristics in order to examine whether a behavioral factor, retribution, also drives shareholder litigation. Using an experiment to hold constant the many confounding factors present in naturally-occurring markets is consistent with recent calls to use the experimental method to study policy (Kachelmeier and King 2002) and legal (Camerer and Tally 2007) issues.

In a market in which litigation is not an option, I find that both managers' and investors' behavior is generally consistent with economic theory in that managers frequently misreport and investors do not find their reports credible. In a market in which investors have the option to initiate litigation and a financial incentive to do so, I find that consistent with economic theory, managers report more truthfully and investors find their reports more credible than when litigation is not an option. This results in an increase in social welfare, despite the fact that litigation is costly. These results are consistent with economic theory, prior experimental results (King and Wallin 1990; Wallin 1992; Dopuch and King 1992; Dopuch et al. 1994) and with archival studies that find that shareholder litigation is an important factor in efficient securities markets (e.g., Black 2000; Khurana et al. 2006; LaPorta et al. 2006).

In a market in which litigation is an option but investors do *not* have a financial incentive to initiate litigation, I find that investors nevertheless are willing to initiate costly litigation against managers suspected of misreporting. This, in turn, induces more truthful reporting by managers and results in increased social welfare. Because there is no financial incentive to initiate litigation, this result appears to be driven by a psychological desire for retribution, and as such, is inconsistent with standard economic theory. The outcomes from a market in which litigation is an option but investors do not have a financial incentive to initiate litigation is almost as effective at inducing high effort, eliminating misreporting, enhancing the credibility of managers' reports, and increasing social welfare as a market in which investors do have a financial incentive to initiate litigation. These results appear to be driven by investor retribution.

6.3 CONTRIBUTIONS

My study has several contributions. My findings regarding investor retribution may help explain why the passage of the PSLRA in 1995 did not reduce the number of shareholder lawsuits as expected. The PSLRA contained several provisions designed to reduce shareholder litigation, making it more difficult for shareholders to prevail in lawsuits against firms. However, the enactment of the PSLRA had no effect on the average number of shareholder lawsuits (e.g., Perino 2003; Buckberg et al. 2006). However, investor retribution offers a potential explanation. That is, shareholders may have continued to file the same number of lawsuits to simply punish managers suspected of misreporting, even though the expected financial benefit of litigation had decreased.

Investor retribution also offers a potential explanation for the results of Skinner (1997) and others who find that the incidence of shareholder litigation does not necessarily decline when managers disclose negative information early to avoid litigation. Skinner (1997) suggests that both the number of lawsuits and the cost of settling litigation should be reduced when managers disclose negative information early. However, Skinner finds that early disclosure of negative information did not reduce the incidence of litigation because shareholders sued when there was a large negative earnings surprise regardless of whether the negative information was disclosed earlier. This unexpected result is consistent with investor retribution because although the financial reward for initiating litigation had decreased, shareholders still pursued litigation at the same level due to their desire to punish managers for misreporting.

My study also contributes to the existing experimental literature. Although prior experimental research finds that retribution plays a role in decision-making (e.g., Guith et al. 1982; Kagel et al. 1996; Fehr et al. 1997; Fehr and Gachter 2002) and prior studies suggest that

retribution may be a factor in investors' litigation decisions (Posner 1980; West 2001; Hemingway 2007), my study is the first to demonstrate empirically that retribution can drive investors' litigation decisions, and that this behavior can persist in a competitive market and lead to welfare improvements. In prior studies by Dopuch and King (1992) and Dopuch et al. (1994) investors had a financial incentive to initiate litigation against managers. As a result, it is possible that the desire to pursue litigation may be driven by both financial incentives and other behavioral forces, such as retribution. Because these prior studies did not vary the economic incentives, it is unclear whether the desire to initiate litigation is driven exclusively by economic forces, or whether other behavioral forces also play a role. The results of my study suggest that retribution plays a significant role in investors' litigation decisions.

My results also have potential implications for the regulation of U.S. securities markets. There is an ongoing dispute regarding the effectiveness of the enforcement of securities laws via shareholder litigation versus enforcement via the SEC (Cox and Grundfest 2008). In addition to the questions regarding the effectiveness of the SEC, there are also questions regarding the efficiency of the SEC. The agency spends large sums of money to regulate securities markets. The SEC spends nearly $1 billion annually to enforce securities laws (SEC 2008). However, despite the large amount of annual spending by the SEC, there is concern that the SEC lacks the resources to adequately regulate financial markets (Seligman 1994; Black 2000; Government Accountability Office 2002). The results of my study suggest that as a consequence of shareholder retribution, the SEC may be able to rely on shareholder litigation more than standard economic analysis predicts to assist them in regulating financial markets. That is, increasing reliance on shareholder litigation may allow the SEC to receive the benefits of the enforcement of securities laws (i.e., truthful reporting, efficient markets) at a lower cost. Relying on shareholder litigation

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would allow the SEC to allocate resources to other areas, such as hedge funds, derivatives, short-selling and other areas that have been linked to the recent financial crisis. This reallocation of resources could prevent future misbehavior and lead to an increase in social welfare.

There is also a debate as to whether the current legal system results in too much shareholder litigation (Atkins 2007; Cox and Grundfest 2008). If regulators only consider financial incentives and do not consider shareholder retribution, the result may be excessive litigation against firms. My results suggest that shareholder litigation is driven by both financial incentives and retributive forces. Because regulators can not regulate investor retribution, they should consider caps on damages that can be awarded to investors to reduce the financial incentive to pursue litigation. If regulators only consider financial incentives and overlook investor retribution when making policy decisions, the result may be more litigation against firms than expected, which may have an adverse effect on social welfare.

Finally, in addition to regulators, managers also need to be aware of shareholders' desire for retribution and the potential implications for their disclosure strategies. For example, as a consequence of shareholder retribution, managers may want to adopt a more conservative forecasting strategy, or not provide forecasts at all, given that shareholders may initiate lawsuits when earnings fall short of expectations even when the expected financial reward is small or nonexistent.

6.4   LIMITATIONS AND FUTURE RESEARCH

As with any study, there are several limitations that may limit the generalizability of my findings. The first limitation is the fact that attorneys, who play a nontrivial role in shareholder litigation, are not present in my experimental markets. This design choice was deliberate because excluding attorneys controls for their influence, which allows me to focus on investors' desire for retribution. However, the incentives of attorneys are an important factor in shareholder litigation in naturally-occurring markets and the incentives of attorneys could potentially affect the role investor retribution plays in investors' litigation decisions.

The results from my experiment suggest that a litigation mechanism increases social welfare relative to when there is no litigation available. However, this finding is somewhat dependent upon the cost of the litigation mechanism. In my experiment there is a cost to an investor when he chooses to pursue litigation but there is no fixed cost to have access to the litigation mechanism. Although my welfare results hold for a large range of costs, if the costs are too large, the social welfare gains due to increased effort and truthful reporting may be offset by the cost of the legal system.

Finally, my study used a repeated-one shot design in order to preclude reputation formation. This allowed me to make precise economic predictions and isolate investor retribution, which is the primary variable of interest. However, in real-world securities markets reputation development is possible and may reduce the need and demand for litigation, particularly in the case when an investor can not receive financial restitution. Future research could explore this issue in a multi-period setting with fixed manager-investor pairings in a litigation market in which investors do not have a financial incentive to initiate litigation.

Future research could also examine the role that auditors, boards of directors and other governance mechanisms have on investors' desire to pursue litigation. Although I excluded other governance mechanisms in order to isolate investors' litigation decisions and examine the effect that retribution has on managers' reports, future research could consider a more complex market setting that includes other participants now that we have established the role that retribution plays in a simpler market setting that excludes governance mechanisms.

I plan on conducting a follow-up study to further examine the anomalous reporting behavior discussed in Section 5.7. Economic theory predicts that a manager's effort decision should have no effect upon his subsequent reporting decision. The choice of effort effectively becomes a "sunk cost," which is irrelevant for managers' reporting decisions. However, my results suggest that managers are more likely to misreport when they choose high effort than when they choose low effort. This finding may have important implications for real-world reporting environments as managers may be more likely to misreport when they feel that their poor financial results are caused by bad luck or factors outside of their control. Given that managerial effort is an important component of real-world corporate reporting environments, there are several other additional studies that could further investigate the reporting anomaly. For example, further understanding of the effort-reporting relationship and if the threat of litigation is a necessary condition to induce this reporting behavior seems like a logical extension of the current study and a fruitful line of research.

APPENDIX A

Derivation of Equilibrium Strategies in the Litigation-Incentive Condition

This appendix derives the equilibrium effort and reporting strategies for managers and the bidding and litigation strategies for investors. In equilibrium, the manager's misreporting strategy (θ^*) is chosen optimally, the investor's pricing strategy (p_h^*, p_l^*) is chosen optimally, and the investor's litigation strategy (λ^*) is chosen optimally.

I will begin by considering investors' bidding strategies. I assume that investors are risk-neutral and bid their reservation value (consistent with the second price, sealed-bid institution). If a manager's actual asset is low and he reports it as low, it is assumed to be truthful because managers have no incentive to report a high asset as low. As a result, investors are expected to bid the expected value of a low asset, which is 20% of their payoff value.[25] Assuming that the payoff values are uniformly distributed, Investor 1 would bid \$0.56 (20%* \$2.80), Investor 2 would bid \$0.40 (20%* \$2.00) and Investor 3 would bid \$0.24 (20%* \$1.20). The manager would receive the second highest bid of \$0.40, which is p_l^*.

The equilibrium price for an asset reported as high is determined by solving for the underlying probabilities of a high asset (q_h) and a low asset (q_l), as a function of the manager's misreporting strategy (θ) and the investor's litigation strategy (λ). Investors determine their pricing and litigation strategy to generate a price for an asset disclosed as high from the following equation:

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[25] Investors are randomly assigned payoff values with replacement each period.

$$p_h* = \frac{(1-\mu_h)\theta q_l + \mu_h q_h + \lambda[(1-\mu_h)\theta(1-q_l)(p_h*-m) - \mu_h(1-q_h)k]}{(1-\mu_h)\theta + \mu_h} \qquad (1)$$

where:

$(1-\mu_h)$ = the probability of a low asset

(θ) = the probability that the manager will misreport

(q_l) = the probability that a low asset will pay a high dividend

(μ_h) = the probability of a high asset

(q_h) = probability that a high asset will pay a high dividend

(λ) = the probability that the investor will sue

(m) = variable damages payable to the investor

(k) = fixed legal cost

Given the parameter used in the experiment, $p_h*=\$1.50$ (to be shown below)

With a mixed strategy equilibrium, both parties must be indifferent between choosing the mixed strategy or any other strategy (Fudenberg and Tirole 1991). Managers must be indifferent between misreporting ($\theta=1$) and reporting truthfully ($\theta=0$) when they have a low asset (q_l). Investors must be indifferent between always bringing a suit ($\lambda=1$) when a low dividend (d_l) obtains and the report r= (q_h) was made and one of never bringing suit ($\lambda=0$).[26]

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[26] The dominated strategies of a manager reporting a high asset as low and an investor initiating litigation when he receives a low report or an investor initiating litigation when he receives a high report and a high dividend are not considered in this analysis. Including these strategies does not change the equilibrium. See King and Wallin (1993) for a discussion of this issue.

Using the parameters from the experiment, we can calculate the probability that manager's actual

asset is high (q_h) when then investor observes a high report ($r=q_h$) and receives a low dividend (d_l) as:

$$Pr(q=q_h|\ r=q_h,\ d_l) = \frac{(.80)(1.00)(.20)}{(.80)(1.00)(.20) + (.20)(\theta)(.80)} \qquad (2)$$

In a mixed strategy equilibrium, the expected payoff to the investor must be the same when a

manager reports high ($r=q_h$) and the dividend is low (d_l) whether the investor chooses to sue or not.

The manager will select the amount of misreporting (θ^*) that will make investors indifferent about

bringing a lawsuit.

The investor's payoff given the investor chooses to sue ($\lambda=1$) when the manager's actual asset is *high*

can be expressed as:

$$EP^I\ (q=q_h|r=q_h,\ div=d_l,\ \lambda=1) = (d_l - p_h - k)$$

Substituting parameters from the experiment:

$$EP^I\ (q=q_h|r=q_h,\ div=d_l,\ \lambda=1) = -\$1.90\ \ (\$0.00-\$1.50-.40)$$

Similarly, the investor's payoff given that the investor chooses to sue ($\lambda=1$) when the manager's actual asset is *low* can be expressed as: [27]

$$EP^I (q=q_h|r=q_h, div=d_l, \lambda=1) = (d_l - p_h + m)$$

Substituting parameters from the experiment:

$$EP^I (q=q_l|r=q_h, div=d_l, \lambda=1) = -\$0.40 \ (\$0.00 - \$1.50 + \$1.10)$$

The investor's payoff when he chooses not to sue ($\lambda=0$) whether the manager's actual asset is *high* or *low* can be expressed as:

$$EP^I (q=q_h|r=q_h, div=d_l, \lambda=1) = (d_l - p_h)$$

Substituting parameters from the experiment:

$$EP^I (r=q_h, div=d_l, \lambda=0) = -\$1.50 \ (\$0.00 - \$1.50)$$

By setting the investor's payoff if he sues, equal to the investor's payoff if he does not sue, we can solve for the probability that the manager's actual asset is high (q_h) given the investor receives a high report ($r=q_h$).

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[27] An investor receives the excess that he paid over the expected value of the asset. The expected value of a low asset, given a residual value of $2.00, is calculated as $[(q_l)(d_h) + (1-q_l)(d_l)] = (20\%*\$2.00) + (80\%*\$0.00) = \$0.40$. If the investor paid $1.50 for the asset, then he would be entitled to damages of $1.10, which is $1.50 less the amount ($0.40) he would have paid if the manager truthfully reported the asset value.

$-1.90\text{Pr}(q_h) - \$0.40(1-\text{Pr}(q_h)) = -\$1.50$ (3)

Solving equation (3) above $\text{Pr}(q_h) = 0.7333$

Substituting $\text{Pr}(q_h)$ into equation (2) we can now solve for θ^*.

$$0.7333 = \frac{(.80)(1.00)(.20)}{(.80)(1.00)(.20) + (.20)(\theta)(.80)}$$

$\theta^* = 0.3636$. That is, a manager will misreport approximately 36% of the time when he as a low asset in equilibrium.

Now that we have solved for the manager's equilibrium reporting strategy, we can calculate the investor's litigation strategy. The investor will choose his litigation strategy to make the manager indifferent between misreporting and truthfully disclosing his asset.

The manager's payoff, if he chooses to misreport ($r=q_h$) when his actual asset is low (q_l) can be expressed as:

$$EP^M (r=q_h|\ q_l) = (1-q_l)\lambda(p_h-m-k) + (1-q_l)(1-\lambda)(p_h) + q_l (p_h)$$ (4)

The manager's payoff, if he chooses to report truthfully ($r=q_l$) when his actual asset is low (q_l) can be expressed as:

$$EP^M (r=q_l|\ q_l) = p_l = \$0.40$$ (5)

Setting expression (4) equal to expression (5) and solving for (λ) we can calculate the frequency that an investor will choose to litigate. Using the parameters from the experiment, $\lambda=0.9167$. That is, an investor will choose to sue the manager when he receives a low dividend given a high report approximately 92% of the time.

Now that we have solved for θ and λ we can substitute these values into equation (1) to solve for p_h^*. Substituting $\theta=0.3636$ and $\lambda=0.9167$, and the other parameters given in the experiment we find that $p_h^*=0.75$. That is, investors will bid 75% of their payoff value. Assuming that the payoff values are uniformly distributed, Investor 1 would bid \$2.10 (75%* \$2.80), Investor 2 would bid \$1.50 (75%* \$2.00) and Investor 3 would bid \$0.90 (75%* \$1.20). The manager would receive the second highest bid of \$1.50, which is p_h^*.

With regard to effort choice, in equilibrium the investor does not need to be concerned with the manager's effort choice because it is in the manager's interest to choose high effort (e_h). By selecting high effort (e_h) over low effort (e_l), the manager will more frequently receive p_h^* and because the expected benefit of choosing high effort is greater than the cost $[(\mu_h)(q_h) + (1-\mu_h)(q_l)] - [(1-\mu_l)(q_l)] > Ce_h$, the manager will choose high effort (e_h). The manager would not select low effort (e_l) and use a larger value of misreporting (θ) for fear of lawsuits. Investors can tell of this defection by observing the frequency of low payoffs when the manager reports high. In summary, the threat of litigation not only reduces misreporting but also solves the moral hazard problem with regard to effort.

BIBLIOGRAPHY

Adams, J. 1965. Inequity in Social Exchange. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*, Vol. 2, New York: Academic Press.

Agresti, A., and B. Coull. 1998. Approximate is Better than Exact for Interval Estimation of Binomial Proportions. *The American Statistician,* Vol. 52, No. 2, 119-126.

Akerlof, G. 1982. Labor Contracts as Partial Gift Exchange. *Quarterly Journal of Economics*, November, 543-569.

Ariely, D. 2008. "Animal Instincts: Main Street Seeks Revenge on Wall Street." Live Science. Retrieved from http://livescience.com/culture/081002-bailout-package.html.

Atkins, P. 2007. Address by SEC Commissioner: Is Excessive Regulation and Litigation Eroding U.S Financial Competitiveness? Conference co-sponsored by the American Enterprise Institute and the Brookings Institution, Washington, DC.

Becker, G. 1968. Crime and Punishment: An Economic Approach. *Journal of Political Economy*, Vol. 75, 169-217.

Black, B. 2000. The Core Institutions that Support Strong Securities Markets. *Business Lawyer*, Vol. 55, 1565-1607.

Bhagat, S., H. Bizjak and J. Coles. 1998. The Shareholder Wealth Implications of Corporate Lawsuits. *Financial Management,* Vol. 27, No. 4, 5-27.

Bloomfield, R., R. Libby and M. Nelson. 2002. Experimental Research in Financial Accounting. *Accounting, Organizations and Society*, Vol. 27, 775-811.

Bolton, G., and A. Ockenfels. 2000. ERC: A Theory of Equity, Reciprocity and Competition. *American Economic Review*, March, 166-193.

Buckberg, E., T. Foster and R. Miller. 2003. Recent Trends in Shareholder Litigation: Will Enron and Sarbanes-Oxley Change the Tides? *Unpublished Manuscript*, National Economic Research Associates.

Buckberg, E., T. Foster and R. Miller. 2006. Recent Trends in Shareholder Litigation: Beyond the Mega Settlements, is Stabilization Ahead? *Unpublished Manuscript*, National Economic Research Associates.

Camerer, C. 2003. Behavioral Game Theory: Experiments in Strategic Interaction. Princeton University Press, Princeton, New Jersey.

Camerer, C., and E. Talley. 2007. Experimental Study of Law. In A. Mitchell Polinsky and Steven Shavell (Eds.), *Handbook of Law and Economics*, Vol II, Amsterdam: Elsevier Science Publishing, 1619-1650.

Cao, Z., and G. Narayanamoorthy. 2005. The Effect of Litigation Risk on Management Earnings Forecasts. *Yale University*, Working Paper.

Carpenter, J. 2009. Social Preferences, forthcoming in the New Palgrave Dictionary of Economics.

Carpenter, J., and P. Matthews. 2009. What Norms Trigger Punishment. *Experimental Economics*, forthcoming.

Colb, S. 2008. "The Rationality of Spite: What the Bailouts Do, And Should, Make People Angry." FindLaw. Retrieved from http://writ.lp.findlaw.com/colb/20081001.html.

Cooper, R., D. DeJong and R. Forsythe. 1989. Communication in the Battle of the Sexes Game: Some Experimental Results. *Rand Journal of Economics*, Vol. 20, 568-587.

Core, J. 2001. A Review of the Empirical Disclosure Literature: Discussion. *Journal of Accounting and Economics*, 31, 441-456.

Cox, J., B. Roberson and V. Smith. 1982. Theory and Behavior of Single Object Auctions. *Research in Experimental Economics*, Vol. 2, JAI Press, Greenwich, CT.

Cox, J. 1997. Private Litigation and the Deterrence of Corporate Misconduct. *Law and Contemporary Problems*, Vol. 60, No. 4, 1-38.

Cox, J., and J. Grundfest. 2008. Panel Discussion. The Securities Class Action: Important Deterrent or Wasteful Litigation? New York, NY. October 28, 2008.

Dawes, R., and R. Thaler. 1988. Cooperation. *Journal of Economic Perspectives*, Vol. 2, 187-197.

DeJong, J., A. Shleifer and L. Summers. 1991. The Survival of Noise Traders in Financial Markets. *Journal of Business*, Vol. 64, No. 1, 1-19.

De Quervain, D., R. Fischbacher, V. Treyer, M. Schellhammer, U. Schnyder, A. Buck, and E. Fehr. 2004. The Neural Basis of Altruistic Punishment. *Science*, Vol. 305, 1254-1258.

Dopuch, N., R. King and D. Wallin. 1989. The Use of Experimental Markets in Auditing Research: Some Initial Findings. *Auditing: A Journal of Practice & Theory*, Vol. 8, Supplement, 98-127.

Dopuch, N., and R. King. 1992. Negligence Versus Strict Liability Regimes in Auditing: An Experimental Investigation. *The Accounting Review*, Vol. 67, No. 1, 97-120.

Dopuch, N., R. King and J. Schatzberg. 1994. An Experimental Investigation of Alternative Damage-Sharing Liability Regimes with an Auditing Perspective. *Journal of Accounting Research*, Vol. 32, Supplement, 103-130.

Duffy, J., and J. Ochs. 2009. Cooperative Behavior and the Frequency of Social Interaction. *Games and Economic Behavior*, forthcoming.

Durkheim, E. 1964. The Division of Labor in Society. Toronto: Collier-Macmillan Canada Ltd.

Dye, R. 1985a. Disclosure of Nonproprietary Information. *Journal of Accounting Research,* Vol. 23, No.1, 123-143.

_____. 1985b. Strategic Accounting Choice and the Effects of Alternative Financial Reporting Requirement. *Journal of Accounting Research*, Autumn, 544-574.

_____. 1986. Proprietary and Nonproprietary Disclosures. *Journal of Business*, April, 331-366.

_____. 2001. An Evaluation of "Essays on Disclosure" and the Disclosure Literature in Accounting. *Journal of Accounting and Economics,* Vol. 32, 181-235.

Eastbrook, R., and D. Fischel. 1984. Mandatory Disclosures and the Protection of Investors. *Virginia Law Review*, Vol. 70, No. 4, 669-715.

Evans, J.H., R.L. Hannan, R. Krishnan, and D. Moser. 2001. Honesty in Managerial Reporting. *The Accounting Review*, Vol. 74, No. 4, 537-559.

Fehr, E., and U. Fischbacher. 2004. Third-Party Punishment and Social Norms. *Evolution and Human Behavior*, Vol. 25, 63-87.

Fehr, E., S. Gachter, and G. Kirchsteiger. 1997. Reciprocity as a Contract Enforcement Device: Experimental Evidence. *Econometrica*, Vol. 65, No. 4, 833-860.

Fehr, E., G. Kirchsteiger and A. Riedl. 1993. Does Fairness Prevent Market Clearing? *Quarterly Journal of Economics*, Vol. 108, No. 2, 437-459.

Fehr, E., E. Kirchler, A. Weichbold and S. Gachter. 1998. When Social Norms Overpower Competition: Gift Exchange in Experimental Labor Markets. *Journal of Labor Economics*, Vol. 16, No. 2, 324-351.

Fehr, E., and K. Schmidt. 1999. A Theory of Fairness, Competition, and Cooperation. *The Quarterly Journal of Economics,* Vol. 114, 817-868.

Fehr, E., and S. Gachter. 2002. Cooperation in Public Goods Experiments. *American Economic Review*, Vol. 90, 980-994.

Field, L., M. Lowry and S. Shu. 2005. Does Disclosure Deter or Trigger Litigation? *Journal of Accounting and Economics*, Vol. 39, 487-507.

Fischbacher, U. 2007. z-Tree: Zurich Toolbox for Ready-Made Economic Experiments. *Experimental Economics*, Vol. 10, 171-178.

Fon, V., and F. Parisi. 2005. Revenge and Retaliation. In F. Parisi & V. Smith (Eds.), *The Law and Economics of Irrational Behavior*. Stanford University Press, Stanford, California.

Forsythe, R., R. Lundholm and T. Rietz. 1999. Cheap Talk, Fraud, and Adverse Selection in Financial Markets: Some Experimental Evidence. *The Review of Financial Studies*, Vol. 12, No.3, 481-518.

Francis, J., D. Philbrick and K. Schipper. 1994. Shareholder Litigation and Corporate Disclosures. *Journal of Accounting Research*, Vol. 32, No. 2, 137-164.

Friedman, D., and N. Singh. 1999. On the Viability of Vengeance. Working Paper, University of California, Santa Cruz.

Fudenberg, D., and J. Tirole. 1991. Game Theory. *The MIT Press,* Cambridge, Massachusetts.

Ganguly, A., J. Kagel and D. Moser. 1994. The Effect of Biases in Probability Judgments on Market Prices. *Accounting, Organizations and Society*, Vol. 19, No. 8, 675-700.

Government Accountability Office. 2002. SEC Operations: Increased Workload Creates Challenges.

Grossman, S. 1981. The Informational Role of Warranties and Private Disclosure about Product Quality. *Journal of Law and Economics*, Dec., 461-483.

Guith, W., R. Schmittberger and B. Schwarze. 1982. An Experimental Analysis of Ultimatum Bargaining. *Journal of Economic Behavior and Organization*, Vol. 3, 367-388.

Hannan, R. L. 2005. The Combined Effect of Wages and Firm Profit on Employee Effort. *The Accounting Review*, Vol. 80, No. 1, 167-188.

Hannan, R. L., J. H. Kagel, and D. V. Moser. 2002. Partial Gift Exchange in Experimental Labor Markets: Impact of Subject Population Differences, Productivity Differences and Effort Requests on Behavior. *Journal of Labor Economics*, Vol. 20, No. 4, 923-951.

Hannan, R.L., W. Rankin and K. Towry. 2006. The Effect of Information Systems on Honesty in Managerial Reporting: A Behavioral Perspective. Contemporary Accounting Research, Vol. 23, 885-918.

Harris, J. 1970. On the Economics of Law and Order. *Journal of Political Economy*. Vol. 78, 165-174.

Healy, P., and K. Palepu. 1993. The Effect of Firms' Financial Disclosure Strategies on Stock Prices. *Accounting Horizons,* Vol. 7, No. 1, 1-11.

Healy, P., and K. Palepu. 2001. Information Asymmetry, Corporate Disclosure and the Capital Markets: A Review of the Empirical Disclosure Literature. *Journal of Accounting and Economics*, 31, 405-440.

Hegel, G. 1969. *This Philosophy of Right.* London: Oxford University Press.

Hemingway, J. 2007. Hell Hath No Fury Like an Investor Scorned: Retribution, Deterrence, Restoration, and the Criminalization of Securities Fraud Under Rule 10b-5. *Journal of Business & Technology Law*, Vol. 2, 3-24.

Hobson J., and S. Kachelmeier. 2005. Strategic Disclosure of Risky Prospects: A Laboratory Experiment. *The Accounting Review,* Vol. 80, No. 3, 825-846.

Hoffman, E., and M. Spitzer. 1985. Entitlements, Rights and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice. *Journal of Legal Studies*, Vol. 15, 259-297.

Huck, S. 1999. Responder Behavior in Ultimatum Offer Games with Incomplete Information. *Journal of Economic Psychology*, Vol. 20, 183-206.

Johnson, K. 1997. Deterrence of Corporate Fraud through Securities Litigation: The Role of Institutional Investors. *Law and Contemporary Problems*, Vol. 60, No. 4, 155-166.

Johnson, M., R. Kasznik and K. Nelson. 2000. Shareholder Wealth Effects of the Private Securities Litigation reform Act of 1995. *Review of Accounting* Studies, Vol. 5, 217-233.

Johnson, M., R. Kasznik and K. Nelson. 2001. The Impact of Securities Litigation Reform on the Disclosure of Forward-Looking Information By High Technology Firms. *Journal of Accounting Research*, Vol. 39, No. 2, 297-327.

Kachelmeier, S. 1991. A Laboratory Market Investigation of the Demand for Strategic Auditing. *Auditing: A Journal of Practice and Theory*, Vol. 10, Supplement, 25-48.

Kachelmeier, S., and R. King. 2002. Using Laboratory Experiments to Evaluate Accounting Policy Issues. *Accounting Horizons*, Vol. 16, No. 3, 219-232.

Kagel, K., C. Kim and D. Moser. 1996. Fairness in Ultimatum Games with Asymmetric Information and Asymmetric Payoffs. *Games and Economic Behavior*, Vol. 13, 100-110.

Kandori, M. 1992. Social Norms and Community Enforcement. *Review of Economic Studies*, Vol. 59, 63-80.

Kasznik, R., and B. Lev. 1995. To Warn or Not to Warn: Management Disclosures in the Face of an Earnings Surprise. *The Accounting Review*, Vol. 70, No. 1, 113-134.

Khurana, I., K. Raman and D. Wang. 2006. Does the Threat of Private Litigation Increase the Usefulness of Reported Earnings? International Evidence. *Journal of International Accounting Research*, Vol. 5, No. 2, 21-40.

King, R., and D. Wallin. 1990. The Effects of Antifraud Rules and Ex-Post Verifiability on Managerial Disclosures. *Contemporary Accounting Research*, Spring, 859-892.

_____, and _____. 1991. Voluntary Disclosures When Seller's Level of Information is Unknown. *Journal of Accounting Research,* Vol. 29, 96-108.

_____, and _____. 1993. Optimal Level of Fraudulent Disclosure When Litigation is Costly. *Review of Quantitative Finance and Accounting*, Vol. 3, 283-309.

_____, and _____. 1995. Experimental Tests of Disclosure With an Opponent. *Journal of Accounting and Economics,* Vol. 19, 139-167.

Kothari, S. 2001. Capital Markets Research in Accounting. *Journal of Accounting and Economics Vol*. 31, 105-231.

Kuang, J., and D. Moser. 2009. Reciprocity and the Effectiveness of Optimal Agency Contracts. *The Accounting Review*, Vol. 84, No. 5, 1-24.

La Porta, R., F. Lopez-De-Silanes and A. Shleifer. 2006. What Works in Securities Laws? *Journal of Finance*, Vol. 61, No. 1, 1-32.

Ledyard, J. 1995. Public Goods: A Survey of Experimental Research. In J. Kagel & A. Roth (Eds.), *The Handbook of Experimental Economics*. Princeton, New Jersey: Princeton University Press: 111-194.

Macey, J., and G. Miller. 1991. The Plaintiffs' Attorney's Role in Class Action and Derivative Litigation: Economic Analysis and Recommendations for Reform. *University of Chicago Law Review*, Vol. 58, No. 1, 1-118.

McCloskey, H. 1965. A Non-Utilitarian Approach to Punishment. *Inquiry*, Vol. 8, 239-255.

Milgrom, P. 1981. Good News and Bad News: Representation Theorems and Applications. *The Bell Journal of Economics*, Vol. 12, No. 2, 380-391.

Niehaus, G., and G. Roth. 1999. Insider Trading, Equity Issues, and CEO Turnover in Firms Subject to Securities Class Action. *Financial Management*, Vol. 28, No. 4, 52-72.

Perino, M. 2003. Did the Private Securities Litigation Reform Act Work? *University of Illinois Law Review*, Vol. 4, 913-978.

Posner, R. 1980. Retribution and Related Concepts of Punishment. *Journal of Legal Studies*, Vol. 9, No. 1, 71-92.

Pillutla, M., and J.K. Murnighan. 1996. Unfairness, Anger, and Spite: Emotional Rejections of Ultimatum Offers. *Organizational Behavior and Human Decision Processes*. Vol. 68, No. 3, 208-224.

PricewaterhouseCoopers. 2006. 2006 Securities Litigation Study.

PricewaterhouseCoopers. 2007. 2007 Securities Litigation Study.

Rabin, M. 1993. Incorporating Fairness Into Game Theory and Economics, *American Economic Review*, December, 1281-1302.

Rankin, W., S. Schwartz, and R. Young. 2003. Management Control Using Non-Binding Announcements. *Journal of Management Accounting Research*, Vol. 15, 75-93.

Rapoport, A., and J. Sundali. 1996. Ultimatums in Two-Person Bargaining with One-Sided Uncertainty: Offer Games. *International Journal of Game Theory*, Vol. 25, 475-494.

Rogers, J., and A. Buskirk. 2008. Shareholder Litigation and Changes in Disclosure Behavior. *Journal of Accounting and Economics*, (forthcoming).

Romano, R. 1991. The Shareholder Suit: Litigation without Foundation. *The Journal of Law, Economics, and Organization*, Vol. 71, 55–87.

Roth, A., V. Prasnikar, M. Okuno-Fujiwara and S. Zamir. 1991. Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study. *The American Economic Review,* Vol. 81, No. 5, 1068-1095.

Roth, A. 1995. Bargaining Experiments. In J. Kagel & A. Roth (Eds.), *The Handbook of Experimental Economics*. Princeton, New Jersey: Princeton University Press: 253-348.

Securities and Exchange Commission (SEC). 2008. Performance and Accountability Report.

Seligman, J. 1994. The Merits Do Matter: A Comment of Professor Grundfest's Disimplying Private Rights of Action Under the Federal Securities Laws: The Commission's Authority. *Harvard Law Review*, Vol. 108, 438-457.

Silver, C., and S. Dinkin. 2008. Incentivizing Institutional Investors to Serves as Lead Plaintiffs in Securities Fraud Actions. *DePaul Law Review*, Vol. 57, No. 2, 471-508.

Simmons, L., and E. Ryan. 2008. Securities Class Action Settlements: 2007 Review and Analysis. *Unpublished Manuscript,* Cornerstone Research.

Singer, T., B. Seymour, J.P. O'Doherty, K.E. Stephan, R.J. Dolan, and C.D. Frith. 2006. Empathic Neural Responses are Modulated by the Perceived Fairness of Others. *Nature*, Vol. 439, 466-469.

Skinner, D. 1994. Why Firms Voluntarily Disclose Bad News. *Journal of Accounting Research*. Vol. 32, No. 1, 38-60.

Skinner, D. 1997. Earnings Disclosures and Stockholder Lawsuits. *Journal of Accounting and Economics*. Vol. 23, No. 3, 249-282.

Stigler, G. 1970. The Optimum Enforcement of Laws. *Journal of Political Economy*. Vol. 78, 526-536.

Strahan, P. 1998. Securities Class Actions, Corporate Governance and Managerial Agency Problems. *Federal Reserve Bank of New York*, Working Paper.

Thomas, R.S., and J.D. Cox. 2006. Does the Plaintiff Matter? An Empirical Analysis of Lead Plaintiffs in Securities Class Actions, *Columbia. Law. Review*, Vol. 106, 1587-1640.

Verrecchia, R. 1983. Discretionary Disclosure. *Journal of Accounting and Economics*. Dec, 179-194.

Verrecchia, R. 2001. Essays on Disclosure. *Journal of Accounting and Economics.* Vol. 32, 97-180.

Waller, W. 2002. Experimental Business Research. *Kluwer Academic Publishers.* Boston, MA.

Wallin, D. 1992. Legal Recourse and the Demand for Auditing. *The Accounting Review*, Vol. 67, No.1, 121-147.

West, M. 2001. Why Shareholders Sue: The Evidence From Japan. *Journal of Legal Studies*, Vol. 30, June, 351-382.