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## ARTICLE

# LYING AND GETTING CAUGHT: AN EMPIRICAL STUDY OF THE EFFECT OF SECURITIES CLASS ACTION SETTLEMENTS ON TARGETED FIRMS


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## INTRODUCTION

The ongoing Great Recession has triggered numerous proposals to improve the regulation of financial markets and, most importantly, the regulation of organizations such as credit rating agencies, underwriters, hedge funds, and banks, whose behavior is believed to have caused the credit crisis that spawned the economic collapse.[1] Not surprisingly, some of the reform efforts seek to strengthen the use of private litigation.[2] Private suits have long been championed as a necessary mechanism not only to compensate investors for harms they suffer from financial frauds but also to enhance deterrence of wrongdoing.[3]

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[1] Congress has recently sought to address the economic crisis with proposed legislation aimed at greater oversight of these organizations. *See, e.g.*, Restoring American Financial Stability Act of 2010, S. 3217, 111th Cong. (2010); Wall Street Reform and Consumer Protection Act of 2009, H.R. 4173, 111th Cong. (2009); Private Fund Investment Advisers Registration Act of 2009, H.R. 3818, 111th Cong. (2009); Investor Protection Act of 2009, H.R. 3817, 111th Cong. (2009); Comprehensive Derivatives Regulation Act of 2009, S. 1691, 111th Cong. (2009).

[2] *See, e.g.*, Liability for Aiding and Abetting Securities Violations Act of 2009, S. 1551, 111th Cong. § 2 (2009) (proposing to amend section 20 of the Securities Exchange Act of 1934 to authorize private actions against persons who "knowingly or recklessly provide[] substantial assistance to another person in violation of [the Act]"); Restoring American Financial Stability Act of 2009, 111th Cong. § 984 (Discussion Draft 2009), *available at* http://banking.senate.gov/public/_files/AYO09D44_xml.pdf (proposing to amend section 21D of the Securities Exchange Act of 1934 to authorize private liability for aiding and abetting in violation of the Act).

[3] The most significant embrace of the deterrent value of private suits is the Supreme Court's recognition of implied private rights of action under the securities laws. *See, e.g.*, Herman & MacLean v. Huddleston, 459 U.S. 375, 380 (1983) (noting that the existence of an implied private right of action under the antifraud provisions of the 1933 and 1934 Acts "is simply beyond peradventure"); J.I. Case Co. v. Borak, 377 U.S. 426, 432 (1964) ("Private enforcement of the proxy rules provides a necessary supplement to Commission action. As in anti-trust treble damage litigation, the possibility of civil damages or injunctive relief serves as a most effective weapon in the enforcement of the proxy requirements."), *abrogated by* Alexander v. Sandoval, 532 U.S. 275, 276 (2001). For emphatic and thoughtful defenses of the private suit, see generally James

However, in recent years there has been a chorus calling for reform, singing a distinctly deregulatory tune and calling for serious restraints on private litigation as a vehicle for protecting investors.[4] In this revisionist story, securities class action suits were cast as the villain that placed U.S. capital markets at a serious competitive disadvantage without producing any net benefits for institutional investors, whose trading makes them not only dominant participants in securities markets but also important beneficiaries of successful securities class action settlements.[5]

It is interesting to note, though, how quickly a crisis can change the discourse of public debate on the value of private litigation. Now it seems likely that reform will occur. While we are hopeful that the recession will ultimately abate, a significant question nonetheless remains: which of these two views of securities class actions should guide the formation of public policy with respect to the role of private litigation in the greater constellation of financial market regulatory mechanisms? In this Article, we provide evidence addressing this very issue.

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D. Cox, *Making Securities Fraud Class Actions Virtuous*, 39 ARIZ. L. REV. 497 (1997), and Joel Seligman, Commentary, *The Merits Do Matter*, 108 HARV. L. REV. 438 (1994).

[4] *See* COMM'N ON THE REGULATION OF CAPITAL MKTS. IN THE 21ST CENTURY, U.S. CHAMBER OF COMMERCE, REPORT AND RECOMMENDATIONS 1 (2007), *available at* http://www.capitalmarketscommission.com (follow hyperlink under "March 2007" heading) ("[T]he perception . . . of burdensome and duplicative regulatory schemes and an inefficient and unfair legal system w[as] making the U.S. capital markets increasingly less attractive . . . ."); MICHAEL R. BLOOMBERG & CHARLES E. SCHUMER, SUSTAINING NEW YORK'S AND THE US' GLOBAL FINANCIAL SERVICES LEADERSHIP 16 (2007), *available at* http://www.nyc.gov/html/om/pdf/ny_report_final.pdf (observing that the highly regulated U.S. legal environment in the financial sector is perceived as "less fair and less predictable"); *see also* U.S. CHAMBER INST. FOR LEGAL REFORM, SECURITIES CLASS ACTION LITIGATION: THE PROBLEM, ITS IMPACT, AND THE PATH TO REFORM i-iv (2008) (asserting that securities class action costs are "enormous," provide "miniscule" benefits, and erode the competitiveness of U.S. capital markets). Academics also have repeatedly doubted that the benefits of private securities suits outweigh their costs to the defendant firm as well as society. *See, e.g.*, Joseph A. Grundfest, *Why Disimply?*, 108 HARV. L. REV. 727, 747 (1995) (concluding that it is unclear whether the securities litigation process does more good than harm); Roberta Romano, *The Shareholder Suit: Litigation Without Foundation?*, 7 J.L. ECON. & ORG. 55, 65-66 (1991) (noting that stock price changes of companies involved in securities class actions do not support the proposition that the suits confer substantial wealth effects on the company's stockholders).

[5] *See, e.g.*, Elliott J. Weiss & John S. Beckerman, *Let the Money Do the Monitoring: How Institutional Investors Can Reduce Agency Costs in Securities Class Actions*, 104 YALE L.J. 2053, 2089-91 (1995) (reporting that a small number of large institutional investors submit a significant portion of the claims in settled securities class actions).

## I. THE COSTS AND BENEFITS OF SECURITIES CLASS ACTION SETTLEMENTS

The costs and benefits of securities class actions for the past two decades have been central to the formulation of policy regarding private suits. The extensive hearing record compiled before Congress's enactment of the monumental Private Securities Litigation Reform Act of 1995 (PSLRA)[6] was filled with empirical data purporting to capture the effects of securities class actions.[7] Since the PSLRA's enactment, there have been scores of empirical studies exploring different aspects of securities class actions and the impact of the PSLRA on the conduct and outcome of these suits. Much like how the Pentagon once purported to measure progress in the Vietnam War by comparative body counts, so has much of the securities litigation literature sought to evaluate the value of securities class actions, and in turn the PSLRA, by capturing data bearing on dismissal rates and settlement amounts (pre- and post-PSLRA), the outcomes associated with different types of suits and lead plaintiffs, and even the variation of attorneys' fees across categories of suits. Since we have produced some of this literature, it is in our self-interest to say these are important inqui-

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[6] Pub. L. No. 104-67, 109 Stat. 737 (codified as amended in scattered sections of 15 U.S.C.).

[7] *See generally Private Litigation Under the Federal Securities Laws: Hearings Before the Subcomm. on Securities of the S. Comm. on Banking, Housing, and Urban Affairs*, 103d Cong. (1993) [hereinafter *1993 Hearings*] (examining the efficacy of securities class action litigation); *Securities Litigation Reform: Hearings Before the Subcomm. on Telecommunications and Finance of the H. Comm. on Energy and Commerce*, 103d Cong. (1994) (discussing the effects of regulations and laws on deterrence of securities fraud). For example, the SEC's Division of Enforcement Director marshaled data from the Administrative Office of the United States Courts showing the ebbs and flows in the number of class actions filed over a twenty-two-year period. *See 1993 Hearings*, *supra*, at 114 app. A (testimony of William R. McLucas, Director, Division of Enforcement, U.S. Securities and Exchange Commission). Other studies submitted to Congress questioned how investor recoveries in settled suits compared to their asserted losses. *See* FREDERICK C. DUNBAR & VINITA M. JUNEJA, RECENT TRENDS II: WHAT EXPLAINS SETTLEMENTS IN SHAREHOLDER CLASS ACTIONS? (2003) (finding that increases in settlements are not proportionate to the damages and losses suffered), *in 1993 Hearings*, *supra*, at 739. Not all testimony before the hearing, however, was empirically based. *See, e.g.*, *1993 Hearings*, *supra*, at 12 (statement of Edward R. McCracken, Jr., President, Silicon Graphics, Inc.) (asserting that an unforeseen decline of ten percent or more in his company's stock price was followed by the filing of a class action complaint alleging securities fraud, and that stock price volatility invites abuse of securities fraud litigation). These kinds of assertions, however, lack empirical support. *See* Leonard B. Simon & William S. Dato, *Legislating on a False Foundation: The Erroneous Academic Underpinnings of the Private Securities Litigation Reform Act of 1995*, 33 SAN DIEGO L. REV. 959, 960-62 (1996) (finding that one oft-cited study asserting that lawsuits are almost always filed against a company with significantly declining stock was flawed and inconsistent with results from a replicated study drawing from a broader data pool).

ries, and we genuinely believe they are. We also believe, however, that the full measure of the costs and benefits of securities class actions requires a broader inquiry than has been pursued in scholarly literature.

To be sure, some studies have examined the direct effects of suits. These studies report that firms involved in securities fraud incur a substantial reputational loss, as measured by declines in the short-term market value of their securities following revelation of their prior transgressions.[8] Moreover, firms frequently terminate executives linked to such misrepresentations.[9] Each of these outcomes provides its own disciplining force and ought to be weighed on the positive side of securities class actions. But is there a hidden dark side to the successful prosecution of a securities class action? Do the revelation of earlier misstatements, the initiation of a private suit, and the payment of a substantial settlement weaken the defendant firm so that, from the point of view of well-received financial metrics, the firm is permanently worse off as a consequence of the settlement?

In part, the answer to this question depends on why the fraud occurred in the first place. In general, the motivations for false financial reporting are not hard to divine. Mainly, it is a harmful mixture of overoptimism, greed, and a perceived need to play catch-up. Executive suites are populated more often than not by risk-seeking, self-confident individuals.[10] Many claim that stock options are necessary to incentivize managers who are, unlike the firms' diversified owners, overinvested in the firm, and hence do not share the same risk preference as the firm's owners. Moreover, absent some skin in the game, managers will impose substantial agency costs on the firm by attempting to maximize their own utility by, for instance, shirking in their duties.[11] However, the literature supports the view that the virtue of

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[8] *See infra* note 25 and accompanying text (observing that the drop in present value of future cash flow is many times greater than the litigation penalties).

[9] *See infra* note 28 and accompanying text (noting that the vast majority of individuals identified as responsible parties lose their jobs).

[10] Professor Donald Langevoort has extensively investigated this issue. *See, e.g.*, Donald C. Langevoort, *Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (and Cause Other Social Harms)*, 146 U. PA. L. REV. 101, 139-41 (1997) (noting that self-delusion, excessive optimism, and self-confidence are behavioral traits valued within firms and drive managers to risky behavior); Donald C. Langevoort, Essay, *Resetting the Corporate Thermostat: Lessons from the Recent Financial Scandals About Self-Deception, Deceiving Others, and the Design of Internal Controls*, 93 GEO. L.J. 285, 299-301 (2004) (finding that the tournament model of achievement in firms disproportionately rewards overconfidence and extreme optimism).

[11] For the classic work on this point, see Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Cost, and Ownership Structure*, 3 J.

stock options is also a vice, as compensation based on firm value is associated with abnormal accounting accruals and even fraud as executives try to make sure they catch the golden goose.[12] So there *can* be too much of a good thing.

Pure greed can motivate insider trading as well. In addition to defrauding the investors on the other sides of these trades, insiders have strong incentives to distort the flow of information to the market to maximize their gains in these transactions. Such distortions lead quickly to frauds that affect the entire universe of traders and often result in enforcement actions against the perpetrators.

Much fraudulent reporting arises from the so-called "last period problem,"[13] in which, faced with the possibility of failing to meet the expectations of the "Street," executives opt for accounting chicanery to borrow that missed nickel per share from the future in the wild, unsupported belief that in the next fiscal period, they will incur unforeseen good fortune that will balance out the unforeseen bad fortune of

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FIN. ECON. 305, 353 (1976), which prescribes the use of stock price–based compensation to link managers to owners more closely. The paradigmatic success of such a linkage is the compensation structure common to private equity firms. *See, e.g.*, PAUL MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION AND MANAGEMENT 425, 435 (1992) (reporting that research has shown that stock markets respond positively to the adoption of executive incentive programs); Kevin J. Murphy, *Executive Compensation* (studying the effectiveness of stock-based incentives in leveraged management buyouts facilitated by private equity firms), *in* 3 HANDBOOK OF LABOR ECONOMICS 2485, 2542 (O. Ashenfelter & D. Card eds., 1999). For general discussions regarding the idea that stock-based performance pay is not simply an antidote to an agency problem but also the manifestation of an agency problem, see Lucian Arye Bebchuk & Jesse M. Fried, *Executive Compensation as an Agency Problem*, J. ECON. PERSP., Summer 2003, at 71.

[12] There is an extensive literature on the perverse effects of stock-based compensation. *See, e.g.*, JENNIFER FRANCIS, PER OLSSON & KATHERINE SCHIPPER, STOCKHOLM INST. FOR FIN. RESEARCH, REPORT NO. 34, CALL OPTIONS AND ACCRUALS QUALITY 3-4 (2005), *available at* http://www.sifr.org/Pdfs/sifr-wp34.pdf (noting that greater sensitivity to returns volatility in option-based compensation worsens the quality of earnings accruals); Terry Baker et al., *Stock Option Compensation and Earnings Management Incentives*, 18 J. ACCT. AUDITING & FIN. 557, 559 (2003) (noting the use of discretionary accruals and the decrease in current earnings in periods before firms grant options to executives); Eli Bartov & Partha Mohanram, *Private Information, Earnings Manipulations, and Executive Stock-Option Exercises*, 79 ACCT. REV. 889, 891 (2004) (finding that higher income-increasing accruals systematically precede the exercise of executive stock options); Daniel Bergstresser & Thomas Philippon, *CEO Incentives and Earnings Management*, 80 J. FIN. ECON. 511, 513 (2006) (observing that aggressive use of discretionary earnings accruals by CEOs are associated with performance-based executive options).

[13] *See* Jennifer H. Arlen & William J. Carney, *Vicarious Liability for Fraud on Securities Markets: Theory and Evidence*, 1992 U. ILL. L. REV. 691, 693-95, 727-30 (presenting evidence consistent with view that a significant portion of market frauds are driven by managers' quest to avoid loss of compensation, perquisites, and positions due to deterioration in their firms' performance).

the current period. When the next period arrives and there is not good fortune, but rather more unforeseen bad fortune, managers borrow even more against the future to cover the ten cents per share that they are already down, and so forth, exponentially. Thus, it is the combination of overoptimism and overinvestment in the firm that frequently leads managers to make false financial reports.

In this Article, we focus on the cost side of securities class actions. We examine whether firms involved in settled securities class actions experience long-term weaknesses in their performance, as measured by standard metrics of financial performance and position in the period before the first misstated report (which begins the class period for the resulting securities class action). To test this hypothesis, we compare the subject firms with a matched cohort of firms. We select cohorts by using standard industry classification and by matching classes within the discrete industry by asset size.

Our ultimate focus, however, is the impact of the suit and the settlement on the firm's vitality. While no doubt exaggerated, there is a good deal of commentary that litigation not only weakens companies financially and makes them less competitive but actually leads to bankruptcy. Although commentators level these claims at litigation generally (particularly product liability claims and punitive damage awards), the securities class action is not immune to such claims. The argument is that the sums needed to defend the suit and pay the settlement do not come solely from an insurance policy but also from the corporation itself.[14] On top of this cost impact, there is the deflection of executive attention and the depression of morale and reputation. In combination, these various impacts are harmful to the financial health of the firm. We therefore hypothesize that well-recognized financial metrics bearing on the firm's financial performance and position will reflect the ill effects of revelation of earlier false financial reports. We look for evidence of such adverse effects in the post-lawsuit, as well as post-settlement, years, and pay special attention to any correlation between the settlement size vis-à-vis the defendant firm's asset size and financial metrics.

We also examine other potential effects of securities fraud class action suits on the future health of the targeted firms. For example,

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[14] *See* ANJAN V. THAKOR ET AL., U.S. CHAMBER INST. FOR LEGAL REFORM, THE ECONOMIC REALITY OF SECURITIES CLASS ACTION LITIGATION 1, 16-17 (2005) (arguing that because public companies are primarily owned by well-diversified institutional investors, securities class actions are likely to yield net benefits only in merger and initial-public-offering settings due to the circularity of recovery that would otherwise occur).

scholars have said much about the benefits of the PSLRA's lead-plaintiff provision.[15] We therefore consider whether the nature of the lead plaintiff has an indirect effect on the future health of the firm being sued. Congress designed the lead-plaintiff provision to stop the class action's representative from being decided by a race to the courthouse, which was the predominant practice prior to PSLRA. Now, the court appoints the most adequate plaintiff, who is presumed to be the petitioning party with the most significant financial loss associated with the alleged fraud.[16] A perceived benefit of the institutional lead plaintiff at the helm is that it would not only serve as a governor on the initiation of the suit but, as an institutional investor, would also be equally engaged in crafting a responsible settlement at the suit's conclusion.[17] Several plaintiffs' law firms sought to make institutional clients lead plaintiffs by championing those clients' ba-

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[15] Securities Exchange Act of 1934 § 21D(a)(3), 15 U.S.C. § 78u-4(a)(3) (2006). For an empirical study of the impact that the type of plaintiff has on settlements, see Stephen J. Choi, Jill E. Fisch & A.C. Pritchard, *Do Institutions Matter? The Impact of the Lead Plaintiff Provision of the Private Securities Litigation Reform Act*, 83 WASH. U. L.Q. 869, 870 (2005), which reported a significant relationship between public-pension-fund lead plaintiffs and larger settlements, but questioned whether these institutions "cherry-pick" cases because the authors did not control for variables such as the presence of an SEC action. *See also* James D. Cox & Randall S. Thomas, *Does the Plaintiff Matter? An Empirical Analysis of Lead Plaintiffs in Securities Class Actions*, 106 COLUM. L. REV. 1587, 1624, 1630-31 (2006) (finding a positive and significant relationship between institutional lead plaintiffs and higher settlements even with the introduction of variables such as the presence of an SEC action); James D. Cox, Randall S. Thomas & Lynn Bai, *There Are Plaintiffs and . . . There Are Plaintiffs: An Empirical Analysis of Securities Class Action Settlements*, 61 VAND. L. REV. 355, 378-80 (2008) (same); Michael A. Perino, *Institutional Activism Through Litigation: An Empirical Analysis of Public Pension Fund Participation in Securities Class Actions* (St. John's Univ. Sch. of Law Legal Studies Research Paper Series, Paper No. 06-0055, 2006), *available at* http://ssrn.com/abstract=938722 (noting that institutions appear to reduce fee awards to class counsel and finding that, while controlling for variables such as accounting restatements and SEC enforcement action, there is some reason to believe that institutions do not cherry-pick cases).

[16] *See* Private Securities Litigation Reform Act of 1995 § 21D(a)(3)(B)(iii)(I)(bb), 15 U.S.C. § 78u-4(a)(3)(B)(iii)(I)(bb) (creating a rebuttable presumption that the most adequate lead plaintiff is the petitioner with "the largest financial interest in the relief sought by the class").

[17] *See* Cox & Thomas, *supra* note 15, at 1593-1602 (reviewing the multiple benefits of an engaged lead plaintiff). Congressional records surrounding the enactment of the PSLRA variously extolled the virtues of the lead plaintiff, which was presumed generally to be an institutional investor. *See, e.g.*, H.R. REP. NO. 104-369, at 34 (1995) (Conf. Rep.) (observing that prior to the PSLRA, the race-to-the-courthouse system prevented "institutional investors from selecting counsel or serving as lead plaintiff[s]," and expressing the hope that "increasing the role of institutional investors in class actions will ultimately benefit shareholders and assist courts"); S. REP. NO. 104-98, at 11 (1995) ("[I]ncreasing the role of institutional investors in class actions will ultimately benefit the class and assist the courts.").

lanced approach to settlement, rather than gearing up for the type of scorched-earth policy that would have appealed to General Sherman (but would have made him unpopular in Atlanta). The presumption is that informed institutions would more closely calibrate the settlement to the ongoing health of the defendant firm, trading off corrective governance steps for larger settlements.[18] Thus, we layer onto our earlier analysis of the firm's post-suit financial metrics with the question of whether the presence of an institutional lead plaintiff impacts the observed effects on the target firm.

## II. LITERATURE REVIEW

There is extensive empirical literature studying the enforcement of the federal securities laws.[19] However, only a few papers have explored issues that bear directly on the subject of this project. In Part II, we summarize those studies most relevant to our work.

The study that most closely relates to ours is by Professors Marciukaityte, Szewczyk, Uzun, and Varma.[20] Within their sample of companies that have experienced fraud of different types—including fraud on stakeholders, fraud on the government, financial-reporting fraud, and regulatory violations—they examine whether there are corporate-governance or performance changes at the firms involved in the years following the fraud. They find that, in the subsequent years, the accused firms increased the proportion of independent directors on their boards and on key monitoring committees of their boards.[21] More importantly for our purposes, they find that the long-run stock price and operating-performance measures of firms accused of fraud were comparable to a control set of matched firms. Even though they uncover large, negative cumulative abnormal returns in

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[18] *See* Max W. Berger et al., *Institutional Investors as Lead Plaintiffs: Is There a New and Changing Landscape?*, 75 ST. JOHN'S L. REV. 31, 31-32 (2001) (reviewing the expanding role of lead institutions in securities class actions and their impact on the contours of settlements); Keith L. Johnson, *Deterrence of Corporate Fraud Through Securities Litigation: The Role of Institutional Investors*, LAW & CONTEMP. PROBS., Autumn 1997, at 155, 156-58 (reviewing the multiple settlement benefits that institutional investors provide in securities class actions, including oversight of class counsel and sophistication in resources).

[19] For a recent summary of this literature, see James D. Cox & Randall S. Thomas, *Mapping the American Shareholder Litigation Experience: A Survey of Empirical Studies of the Enforcement of the U.S. Securities Laws*, 6 EUR. COMPANY & FIN. L. REV. 164 (2009). For a slightly older but very comprehensive survey, see Stephen J. Choi, *The Evidence on Securities Class Actions*, 57 VAND. L. REV. 1465, 1468-1504 (2004).

[20] Dalia Marciukaityte et al., *Governance and Performance Changes after Accusations of Corporate Fraud*, FIN. ANALYSTS J., May–June 2006, at 32.

[21] *Id.* at 34-37.

stock price in the two-day period following the announcement of the fraud, they observed no statistically significant abnormal returns for the one- and five-year buy-and-hold strategies. Their findings are consistent with the theory of no abnormal stock performance in the post-fraud period.[22] Finally, for the five years following the disclosure of the fraud, they observe no "significant long-term effect" in any of the operating performance measures that they examine.[23]

Although this study does not use firms targeted in securities fraud class actions as the basis for its sample, it does shed some light on post-accusation financial performance of fraud companies. For our purposes, the study finds that firms experiencing fraud may recover quickly from the fraud and readjust their corporate governance structures to ensure that they do not experience another similar incident. It also suggests using a set of potential measures of operating performance, including return on assets and market-to-book ratio, which are useful as parameters in our study.

A second study related to ours is by Professors Karpoff, Lee, and Martin.[24] Using a sample of government enforcement actions against 585 firms from 1978 to 2002, they find that, while the litigation sanctions from SEC penalties are far from trivial, averaging $23.5 million per firm, the reputational sanction suffered by the offending entity for committing fraud is huge, with the decline in the present value of future cash flow being in excess of 7.5 times the litigation sanction.[25] The authors calculate that for every dollar of the firm's market value inflated by the fraudulent representation upon disclosure of the violation, the firm ultimately loses a dollar *plus* an additional $3.08.[26] Moreover, the loss is larger if the firm survives (about sixty-six percent of this amount is reputational cost with the balance being market value adjustments and legal defense costs).[27] So understood, telling a lie and getting caught is not a value-enriching strategy.

In the face of such serious costs borne by the firm as a result of its managers' deceptions, it is not surprising that, in a related paper, the same authors report that nearly ninety-four percent of the individuals identified as being responsible for the false statements lose their jobs

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[22] *Id.* at 37-38.

[23] *Id.* at 40.

[24] Jonathan M. Karpoff et al., *The Cost to Firms of Cooking the Books*, 43 J. FIN. & QUANTITATIVE ANALYSIS 581 (2008).

[25] *Id.*

[26] *Id.*

[27] *Id.* at 581-82.

by the end of the enforcement proceedings, and that a majority of them are fired by their firms.[28] Culpable managers are more likely to lose their jobs when their misconduct is accompanied by insider trading, their conduct is harmful to the company, the firm is young or financially troubled, or when the firm has an independent board.[29] These findings suggest that markets do play an important role in punishing fraud and that shareholder litigation serves a secondary function in this regard, although litigation does add meaningful monetary sanctions and may stimulate the firm to discipline the wrongdoers harshly. However, these papers do not explore private securities class actions' long-term impact on the targeted firms' financial-performance metrics.

A large number of studies have examined the stock price effects of the various events leading up to, and including, the filing of a private securities fraud class action. These studies consistently find that the disclosure of financial fraud yields a large negative market reaction to the bad news.[30] The filing of a securities fraud lawsuit arising out of the same events that led to the fraudulent conduct, or corrective disclosures, leads to a separate and statistically significant decline in the company's stock price.[31] There is some evidence that, at the time of the filing of the case, the stock market efficiently estimates the strength

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[28] *See* Jonathan M. Karpoff et al., *The Consequences to Managers for Financial Misrepresentation*, 88 J. FIN. ECON. 193, 209, 212 (2008) (finding that 93.6% of those identified in the government prosecution lose their job, and that for responsible parties who are officers, 92.4% lose their jobs; observing that firing occurs more quickly when the board chair is not held by the firm's chief executive officer).

[29] *See id.* at 213 (concluding that culpable managers are more likely to retain their positions when they have significant holdings in the firm or the SEC drops charges against them). Directors also suffer reputational consequences when the SEC files charges against their companies or when their firms pay large settlements in private securities fraud class actions. *See* Eric Helland, *Reputational Penalties and the Merits of Class-Action Securities Litigation*, 49 J.L. & ECON. 365, 366 (2006) (finding that a reputational penalty only followed suits with settlement amounts in the top quartile or in which the SEC also brought action). However, outside of these two situations, the filing of a private securities fraud class action appears to have no reputational effect on directors. *Id.*

[30] *See, e.g.*, Stephen P. Ferris & A.C. Pritchard, *Stock Price Reactions to Securities Fraud Class Actions Under the Private Securities Litigation Reform Act* 1 (Univ. of Mich. John M. Olin Ctr. for Law & Econ., Paper No. 01-009, 2001), *available at* http://ssrn.com/abstract=288216 (finding "a large and statistically significant negative [stock market] reaction" to "the revelation of potential fraud"); *see also* Sanjai Bhagat, John Bizjak & Jeffrey L. Coles, *The Shareholder Wealth Implications of Corporate Lawsuits*, FIN. MGMT., Winter 1998, at 5, 6-7 (reporting an average loss of 0.97% of the market value of defendant firms' equity during the two-day period following the announcement of a lawsuit, but no significant loss in the two-day period following settlement).

[31] *See* Ferris & Pritchard, *supra* note 30, at 1 (observing a negative price reaction to both allegations of fraud and the filing of a class action).

of the plaintiff's case.[32] This is consistent with findings in other studies that settlement values are related to the seriousness of the claims in the case, the length of the class period (which measures the period of time over which shareholders were misled), and the degree of overoptimism in the firm's disclosures during the class period.[33]

A final paper that relates to our work is by Professors Cheng, Huang, Li, and Lobo.[34] This study uses a set of securities fraud class actions to examine the determinants of their likelihood of surviving a motion to dismiss and, for those surviving, the determinants of any settlement amounts, plus any subsequent governance changes at the targeted firms.[35] Most relevant for our purposes, the authors find that suits with institutional lead plaintiffs are associated with greater improvements in board independence than suits with individual lead plaintiffs.[36] This suggests that the presence of an institutional lead plaintiff in a securities class action may be associated with corporate governance improvements. The study does not, however, examine changes in operating performance of targeted firms and therefore is silent on whether the presence of an institutional lead plaintiff is likely to lead to improved performance in the post-fraud period.

## III. EMPIRICAL ANALYSIS OF THE IMPACT OF SECURITIES CLASS ACTIONS ON DEFENDANTS' FINANCIAL HEALTH AND STOCK MARKET PERFORMANCE

### A. *Description of Data*

Our sample consists of 480 companies that were defendants in settled securities class actions whose class period commenced after 1996 (the inaugural year of the PSLRA). Because we examine whether the defendant's financial well-being and stock market performance changed relative to its peer group across different time periods be-

[32] *See* Paul A. Griffin et al., *Stock Price Response to News of Securities Fraud Litigation: An Analysis of Sequential and Conditional Information*, 40 ABACUS 21, 25 (2004) (finding evidence that the filing of stronger fraud cases correlate to larger stock price declines).

[33] *See* James D. Beck & Sanjai Bhagat, *Shareholder Litigation: Share Price Movements, News Releases, and Settlement Amounts*, 18 MANAGERIAL & DECISION ECON. 563, 564 (1997) (noting that these findings are limited to a sample of settled cases that were studied); Cox, Thomas & Bai, *supra* note 15, at 376 (discovering that provable losses, total assets, and presence of SEC action are positively correlated with settlement amount).

[34] C.S. Agnes Cheng et al., *Institutional Monitoring Through Shareholder Litigation*, 95 J. FIN. ECON. 356 (2010).

[35] *Id.* at 356.

[36] *Id.* at 357.

fore, during, and after the class action, we have set this time restriction to avoid the confounding effect of the implementation of the PSLRA for cases with a class period starting prior to 1996. We use settled suits, rather than complaints filed, because settled suits reflect the full impact of litigation and also are more likely indicative that the firm has committed, with scienter, a material misrepresentation.

PACER[37] was our main source for much of the information bearing on the litigation for our sample firms, such as the identity of the lead plaintiff, the complaint and settlement dates, and the settlement amount. We also reviewed SEC Litigation Releases[38] and the LexisNexis electronic database[39] to ascertain whether there was a parallel SEC enforcement proceeding. Our sources for financial restatements made by defendant companies were reports by the U.S. Government Accountability Office (GAO),[40] and LexisNexis searches for the restatement period when that information was missing from the GAO reports. COMPUSTAT[41] was our source for the data used to calculate financial ratios, and CRSP[42] was our source for the stock price data used to calculate stock returns.

We compare the performance of sample defendants with that of a cohort of comparable companies for each time period as defined below. For any given time period, a company is deemed "comparable" to a sample defendant if it satisfies three criteria: (1) it has the same SIC[43] code; (2) it is in the same asset-size group; and (3) it has not

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[37] PACER, http://www.pacer.psc.uscourts.gov/ (last visited Apr. 15, 2010), is an online database supported by the Administrative Office of the U.S. Courts. It provides online access to U.S. appellate and district court opinions.

[38] The SEC issues these releases, describing civil lawsuits it has brought in federal court. They can be found at http://sec.gov/litigation/litreleases.shtml.

[39] LexisNexis Academic, http://academic.lexisnexis.com/ (last visited Apr. 15, 2010).

[40] For financial restatement data from 1997 to 2002, see U.S. GEN. ACCOUNTING OFFICE, GAO-03-138, FINANCIAL STATEMENT RESTATEMENTS: TRENDS, MARKET IMPACTS, REGULATORY RESPONSES, AND REMAINING CHALLENGES (2002). For financial restatement data from 2002 to 2005, see U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-06-678, FINANCIAL RESTATEMENTS: UPDATE OF PUBLIC COMPANY TRENDS, MARKET IMPACTS, AND REGULATORY ENFORCEMENT ACTIVITIES (2006).

[41] Standard and Poor's Capital IQ Compustat, http://www.standardandpoors.com/products-services/capitaliq-compustat/en/us (last visited Apr. 15, 2010). This database was accessed through Wharton Research Data Services, http://wrds.wharton.upenn.edu/ (last visited Apr. 15, 2010).

[42] Center for Research in Security Prices, http://www.crsp.com/products/stocks.htm (last visited Apr. 15, 2010). This database was accessed through Wharton Research Data Services, http://wrds.wharton.upenn.edu/ (last visited Apr. 15, 2010).

[43] The United States government uses the Standard Industrial Classification (SIC) system to classify industries by four-digit codes. *See* SEC, CF SIC Code List, http://

been involved in any securities class action litigation during the relevant time period. We use the following increments to match asset size: less than $10 million, $10 to $50 million, $50 to $100 million, $100 to $500 million, $500 million to $1 billion, $1 to $5 billion, and $5 billion or higher. If we identify multiple comparable companies for any sample defendant in any time period, we rank them by the difference between their asset size and the asset size of the sample defendant, ultimately choosing up to three companies with the smallest difference. If we do not identify a comparable company for a sample defendant in any given time period, we do not include observations for that sample defendant in those time periods in our analysis.

We focus on the following time periods in our analysis: (1) one year before the start of the class period ("Pre-class Period"); (2) the filing of the complaint to one year thereafter, provided no settlement had been reached by then ("Year 1 Post-lawsuit"); (3) one to two years after the start of the lawsuit if no settlement had been reached by then ("Year 2 Post-lawsuit"); (4) two to three years after the start of the lawsuit if no settlement had been reached by then ("Year 3 Post-lawsuit"); (5) the year in which settlement was reached ("Year of Settlement"); (6) one year after settlement was reached ("Year 1 Post-settlement"); (7) one to two years after settlement was reached ("Year 2 Post-settlement"); and (8) two to three years after settlement was reached ("Year 3 Post-settlement").

We focus on the following parameters in comparing sample defendants' performance with that of comparable companies: (1) the Asset Turnover,[44] to capture the company's efficiency in asset utilization for generating revenues; (2) the Return-on-Assets ratio,[45] to capture the company's overall profitability; (3) the Earnings Before Interest and Tax payments ("EBIT")-to-Total Assets ratio, to capture the company's income from operations; (4) the Current Ratio,[46] to capture the company's debt-service capability and liquidity level; (5) Altman's Z-score,[47] to capture the company's overall financial-distress lev-

www.sec.gov/info/edgar/siccodes.htm (last visited Apr. 15, 2010) (providing a list of SIC codes indicating business type).

[44] Asset turnover is the ratio of sales to total assets.

[45] Return on assets is the ratio of net income to total assets.

[46] Current ratio is the ratio of current assets to current liabilities.

[47] Altman's Z-score is a multivariate measurement of the financial health of a company and a powerful diagnostic tool that forecasts the probability that a company will enter bankruptcy within a two-year period.

Altman's Z-score = $.012X_1 + .014X_2 + .033X_3 + .006X_4 + 0.999X_5$.

el and propensity for bankruptcy; (6) the Market-to-Book ratio,[48] to capture a company's growth opportunities;[49] and (7) the One-Year Stock Return,[50] to capture the annual stock price appreciation (without adding in dividends).[51]

Except for the One-Year Stock Price Returns, we use the financial ratios reported by sample defendants and comparable companies as of the end of their respective fiscal years from 1996 to 2008. For example, for a settlement firm that had a Pre-class Period starting on September 15, 2000, a lawsuit filed on March 10, 2003, and a settlement announced on July 8, 2005, we use financial ratios for the fiscal years 1999, 2004, 2005, 2006, 2007, and 2008 for the Pre-class Period, Year 1 Post-lawsuit, Year of Settlement, Year 1 Post-settlement, Year 2 Post-settlement, and Year 3 Post-settlement, respectively. In this hypothetical, there would be no observation for Year 2 Post-lawsuit and Year 3 Post-lawsuit because those time periods coincide with, or occur after, the Year of Settlement.

For the One-Year Stock Returns, we use daily market-close prices from CRSP to calculate annual stock returns with starting and ending dates that correspond precisely to those of the time periods pertinent to our study. To use the example given above, we calculate the return for the Pre-class Period by taking the difference in the natural logarithm of the market-close price on September 14, 2000, and the natural logarithm of the market-close price on September 15, 1999.

Table 1 reports the number of observations we are able to retain for each period from our initial 480 cases, after we remove sample firms for which there were no comparable companies or for which there were missing data entries for either the sample firms or their comparable

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With $X_1$ being working capital/total assets, $X_2$ being retained earnings/total assets, $X_3$ being EBIT/total assets, $X_4$ being market value of equity/book value of total liability, and $X_5$ being sales/total assets. *See* Edward I. Altman, *Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy*, 23 J. FIN. 589, 594-96 (1968) (describing the variables incorporated into the Z-score).

[48] Market-to-book is the ratio of the market price for the company's stocks to the company's book value per share.

[49] Market-to-book ratio is often used to show whether the market is attaching a high (or low) value to a company's stock relative to the value of the stock calculated based on the cost value of the company's assets. A higher market-to-book ratio than peers indicates that the market expects the company to do better than those peers in the future, and a lower market-to-book ratio indicates a contrary market sentiment.

[50] The one-year stock price return is the difference in the natural logarithm of market close price on the last day and the first day of a given one-year period.

[51] In this Article, these terms, as well as the defined time periods, will be capitalized when they reference the parameters in the current study.

companies from any of our earlier-described data sources. We matched our database of securities class action settlements with Lynn M. LoPucki's Bankruptcy Research Database.[52] We find that forty-three of the companies in our sample filed for bankruptcy protection during our study time period. We will discuss the effects of this loss of sample firms on our results where they are relevant in the remainder of the Article.

**Table 1: Number of Observations**

| | | Post-lawsuit | | | | Post-settlement | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-class | Year 1 | Year 2 | Year 3 | Settle-ment | Year 1 | Year 2 | Year 3 |
| Financial Ratios | 254 | 139 | 65 | 32 | 142 | 127 | 113 | 72 |
| Stock Returns | 124 | 108 | 70 | 30 | N/A | 93 | 92 | 79 |

The number of observations for Year 2 and Year 3 for post-lawsuit time periods decreases because some cases settled before those periods ended, as was illustrated in the example given above. In that example, there was no observation for Year 2 Post-lawsuit and Year 3 Post-lawsuit because a settlement occurred during Year 2 Post-lawsuit.

### B. *Summary Statistics*

Summary statistics are reported in Tables 2 and 3 below. Table 2 reports the mean and median values of financial ratios and stock returns for sample defendants at specified time periods. It shows how those parameters have changed before, during, and after the completion of securities class actions. Table 3 reports the number and percentage of sample defendants that underperformed compared to their peer groups in the financial parameters during the relevant time periods. Together, these two tables provide the first clue regarding how sample defendants fared after the start of class actions, both in terms of changes in the values of the financial parameters and in terms of changes in the relative performance of sample de-

[52] Professor LoPucki generously provided his database to us for this purpose. The database can be accessed from http://www.lopucki.law.ucla.edu/. We thank Professor LoPucki for his permission to use his data.

fendants to the performance of comparable companies. If securities class actions impacted the financial health and stock market performance of sample defendants, we should see time-varying patterns in at least some of these statistics.

**Table 2: Summary Statistics of Financial Ratios and Stock Returns of Sample Defendants**

| | | Post-lawsuit | | | | Post-settlement | | |
|---|---|---|---|---|---|---|---|---|
| **Financial Parameters** | **Pre-class** | **Year 1** | **Year 2** | **Year 3** | **Settle-ment** | **Year 1** | **Year 2** | **Year 3** |
| Asset Turnover | | | | | | | | |
| - Mean | 0.95 | 1.07 | 1.12 | 1.10 | 1.04 | 1.01 | 1.03 | 1.05 |
| - Median | 0.79 | 0.77 | 0.78 | 0.79 | 0.86 | 0.86 | 0.84 | 0.85 |
| Return-on-Assets | | | | | | | | |
| - Mean | -0.14 | -0.31 | -0.21 | -0.09 | -0.11 | -0.29 | -0.01 | -0.02 |
| - Median | 0.02 | -0.05 | 0.00 | 0.02 | 0.01 | 0.03 | 0.03 | 0.04 |
| EBIT/Total Assets | | | | | | | | |
| - Mean | -0.09 | -0.13 | -0.09 | -0.09 | -0.05 | -0.26 | -0.03 | -0.09 |
| - Median | 0.06 | 0.01 | 0.03 | 0.04 | 0.04 | 0.06 | 0.06 | 0.06 |
| Current Ratio | | | | | | | | |
| - Mean | 2.93 | 2.94 | 2.84 | 3.56 | 3.06 | 3.14 | 2.61 | 2.73 |
| - Median | 1.59 | 1.59 | 1.47 | 1.57 | 1.80 | 1.80 | 1.66 | 1.65 |
| Altman's Z-score | | | | | | | | |
| - Mean | 6.17 | 2.96 | 2.90 | 3.93 | 3.20 | 3.87 | 3.48 | 3.17 |
| - Median | 4.23 | 2.07 | 2.40 | 2.36 | 2.52 | 2.94 | 3.32 | 2.93 |
| Market-to-Book Ratio | | | | | | | | |
| - Mean | 6.84 | 4.80 | 3.95 | 2.17 | 3.64 | 3.56 | 3.78 | 3.30 |
| - Median | 3.67 | 1.80 | 1.97 | 2.00 | 2.02 | 2.27 | 2.21 | 2.28 |
| One-Year Stock Return | | | | | | | | |
| - Mean | 0.13 | -0.23 | 0.03 | 0.13 | N/A | 0.06 | 0.08 | 0.02 |
| - Median | 0.07 | -0.12 | 0.04 | 0.11 | N/A | 0.08 | 0.06 | 0.04 |

**Table 3: Number and Percentage of Sample Defendants Underperforming Comparable Companies**

| | | Post-lawsuit | | | | Post-settlement | | |
|---|---|---|---|---|---|---|---|---|
| **Financial Parameters** | **Pre-class** | **Year 1** | **Year 2** | **Year 3** | **Settle-ment** | **Year 1** | **Year 2** | **Year 3** |
| Asset Turnover | | | | | | | | |
| - Number | 166 | 80 | 37 | 17 | 78 | 74 | 65 | 39 |
| - Percentage | 65.60% | 57.60% | 57.80% | 54.80% | 55.70% | 59.20% | 59.10% | 55.70% |
| Return-on-Assets | | | | | | | | |
| - Number | 143 | 85 | 35 | 20 | 78 | 64 | 64 | 43 |
| - Percentage | 56.50% | 61.20% | 54.70% | 64.50% | 55.70% | 51.20% | 58.20% | 61.40% |
| EBIT/Total Assets | | | | | | | | |
| - Number | 145 | 90 | 37 | 22 | 79 | 71 | 66 | 48 |
| - Percentage | 58.70% | 65.70% | 58.70% | 71.00% | 56.80% | 58.20% | 61.70% | 68.60% |
| Current Ratio | | | | | | | | |
| - Number | 101 | 64 | 24 | 16 | 72 | 65 | 60 | 36 |
| - Percentage | 45.30% | 52.50% | 42.10% | 55.20% | 57.10% | 59.10% | 62.50% | 55.40% |
| Altman's Z-score | | | | | | | | |
| - Number | 68 | 59 | 30 | 15 | 56 | 57 | 53 | 38 |
| - Percentage | 43.90% | 56.20% | 60.00% | 62.50% | 52.30% | 56.40% | 63.10% | 64.40% |
| Market-to-Book Ratio | | | | | | | | |
| - Number | 69 | 66 | 27 | 14 | 60 | 61 | 56 | 33 |
| - Percentage | 34.80% | 55.90% | 56.30% | 56.00% | 50.00% | 57.00% | 60.20% | 55.00% |
| One-Year Stock Return | | | | | | | | |
| - Number | 64 | 67 | 31 | 12 | N/A | 50 | 45 | 32 |
| - Percentage | 51.60% | 62.00% | 44.30% | 40.00% | N/A | 53.80% | 48.90% | 40.50% |

Our initial focus is whether and how securities class actions affected sample defendants' sales levels. Sales revenues are the source of a company's profit and hence an important metric of its performance. A priori, the effects of securities class actions were not clear to us because there were competing arguments that could lead revenue performance in different directions. On one hand, sales levels depend on factors such as the company's market share, product quality,

and the extent and efficiency of sales channels, all of which change relatively slowly over time with factors such as customer tastes, manufacturing techniques, and marketing strategies. On the other hand, allegations of fraud may hurt the company's reputation and cause customers to sever business ties.[53] In addition, lawsuits may prompt management to increase product prices (thereby reducing price competitiveness) in order to offset any anticipated increase in the company's financial burden due to settlement payments or to fully reflect costs that may have been fraudulently underreported earlier.

The efficiency in revenue generation with existing assets is reflected in the Asset Turnover (sales to total assets) ratio. In terms of changes in this ratio over time, Table 2 shows a higher mean in every post-lawsuit and post-settlement period, and a higher median in most post-lawsuit and post-settlement periods, than in the Pre-class Period.[54] These numbers suggest that sample defendants' sales levels in the post-lawsuit periods did not decline after the start of the class action. In terms of changes in sample defendants' relative performance to their peer groups, Table 3 shows that the percentage of sample defendants with an inferior Asset Turnover ratio than their peers was actually lower in each of the post-lawsuit periods than the Pre-class Period level of 65.6%. Hence, our data reflects that defendant firms in our sample did not on average suffer from reduced sales opportunities as a result of their involvement in securities class actions. However, our sample has a possible upward selection bias caused by the exclusion of forty-three firms that went bankrupt during our sample period, perhaps due to diminished sales revenues. Financial data for such firms were unavailable from COMPUSTAT and the lack of data resulted in these firms' exclusion from our data sample.

Our next focus is the sample defendants' profitability, which was captured in the Return-on-Assets and the EBIT/Total Assets ratios. In terms of Return-on-Assets, Table 2 shows that the mean and median values were lower than that of the cohort in the first two years after the lawsuit, as well as in the first year after settlement, than in the Pre-

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[53] *See* Jonathan M. Karpoff & John R. Lott, Jr., *The Reputational Penalty Firms Bear from Committing Criminal Fraud*, 36 J.L. & ECON. 757, 790-93 (1993) (finding a decrease, albeit small, in company earnings following an announcement that the company engaged in fraud).

[54] Significance tests have shown that these changes are insignificant. In the *t*-test for the difference in the mean, the *p*-values are 0.82, 0.68, 0.96, 0.95, 1.00, 0.97, and 0.93 from Year 1 Post-lawsuit to Year 3 Post-settlement, respectively. In the Wilcoxon Rank Sum test for the difference in the median, the *p*-values are 0.13, 0.13, 0.29, 0.12, 0.13, 0.11, and 0.12, respectively.

class Period. Significance tests showed that the differences were significant for the median[55] but insignificant for the mean.[56] In terms of sample defendants' relative performance, Table 3 shows a higher underperforming percentage in Year 1 Post-lawsuit, Year 3 Post-lawsuit, and Year 3 Post-settlement. These numbers suggest some deterioration in defendants' ultimate profitability vis-à-vis firms in their cohort in the post-lawsuit periods.

In terms of the EBIT/Total Assets ratio, Table 2 shows that the mean was lower in the first year after the lawsuit and the first and third year after settlement than the Pre-class Period, and the median was lower in each year after the start of the lawsuit until Year 1 Post-settlement. The differences in the mean values between post-lawsuit periods and the Pre-class Period were insignificant,[57] but the differences in the median were significant.[58] Table 3 reports a higher percentage of defendant firms underperforming compared to their peers in four out of seven post-lawsuit periods. A lower EBIT-to-total-assets ratio indicates deterioration in the net-operating-income levels, which, in the absence of any reduction in sales revenues, marks an increase in operating costs and a decrease in operating efficiency.

We next examine the sample defendants' liquidity (i.e., the ability to repay short-term liabilities with short-term assets), as reflected in the Current Ratio parameter. The higher the current ratio, the more able the company is to satisfy its short-term obligations as they mature.[59] We pay special attention to the ratio in the settlement year and thereafter because settlements, to the extent they exceed insurance coverage, must be paid out of the defendants' liquid assets and thus reduce the funds available to meet future short-term obligations. The summary statistics in Table 2 show that the Current Ratio had a higher

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[55] For Return-on-Assets, the Wilcoxon Rank Sum test showed a *p*-value that was less than 0.0001 between Year 1 Post-lawsuit and the Pre-class Period, a *p*-value of 0.06 between Year 2 Post-lawsuit and the Pre-class Period, and a *p*-value of 0.04 between Year 1 Post-settlement and the Pre-class Period. For EBIT/Total Assets, the Wilcoxon Rank Sum test showed a *p*-value that was less than 0.0001 between Year 1 Post-lawsuit and the Pre-class Period, a *p*-value of 0.03 between Year 2 Post-lawsuit and the Pre-class Period, and a *p*-value of 0.1 between Year of Settlement and the Pre-class Period.

[56] The *t*-test showed a *p*-value that was close to 1.00 as between each year post-lawsuit and the Pre-class Period.

[57] The *p*-values in the *t*-tests were close to 0.

[58] The *p*-values in the Wilcoxon Rank Sum tests were less than 0.0001, 0.03, 0.04, and 0.1 for Year 1 Post-lawsuit, Year 2 Post-lawsuit, Year 3 Post-lawsuit, and the Year of Settlement, respectively.

[59] A higher current ratio reflects a higher proportion of current assets relative to current liabilities, indicating greater liquidity.

mean in the Year of Settlement and Year 1 Post-settlement than in the Pre-class Period, and a higher median in each period from settlement to three years thereafter.[60] Although these numbers do not suggest deterioration in sample defendants' liquidity levels in the post-settlement periods compared to the Pre-class Period level, the relative performance numbers in Table 3 show a substantial increase in sample defendant firms underperforming compared to their cohort with respect to their Current Ratio in each post-settlement period.

Altman's Z-score is a multivariate measurement of a company's financial health and is a powerful predictor of the likelihood of bankruptcy within a two-year period.[61] Its calculation is based on the summation of five financial ratios (i.e., return on assets, sales to total assets, debt to equity, working capital to total assets, and retained earnings to total assets), each of which is multiplied by a predetermined weight factor.[62] A Z-score of 2.99 or above indicates that bankruptcy is not likely, and a Z-score of 1.80 or less indicates that bankruptcy is likely, while a Z-score between 1.81 and 2.99 is in a grey area.[63] Obviously, a higher Z-score is desirable.

A priori, we expected some deterioration in sample defendants' Altman's Z-scores post-lawsuit because the uncertainty of the class action's outcome prior to settlement, the increased financial burden after settlement, and the combined reputational costs and distractions of the suit are factors that might impair the company's operational efficiency and also reduce liquid assets available for working capital and debt coverage. This expectation was borne out in the summary statistics. Table 2 shows that the defendant's Altman's Z-score was drastically lower vis-à-vis its cohort in every post-lawsuit period than in the Pre-class Period in both the mean and the median. Moreover, the median was below the healthy level of 3.00 in most of the post-lawsuit periods, and the mean was lower still in the first two years of the law-

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[60] The differences in the mean were insignificant with *p*-values in *t*-tests close to 1.00, but the differences in the median were mostly significant, with *p*-values being 0.01, 0.01, 0.05, 0.13, 0.15, 0.04, and 0.09 for the post-lawsuit and post-settlement periods.

[61] The real-world application of the Z-score successfully predicted seventy-two percent of corporate bankruptcies two years prior to those companies filing for Chapter 7. Gregory J. Eidleman, *Z Scores—A Guide to Failure Prediction*, CPA J., Feb. 1995, at 52.

[62] *See supra* note 47.

[63] *See* Steven Katz, Steven Lilien & Bert Nelson, *Stock Market Behavior Around Bankruptcy Model Distress and Recovery Predictions*, FIN. ANALYSTS J., Jan.–Feb. 1985, at 70, 70-71 (defining the meanings of Z-score ranges).

suit.[64] These numbers suggest that sample defendants were subject to a higher level of financial distress in the post-lawsuit periods. These results may understate the true level of financial distress of targeted firms because they do not include the forty-three firms in our sample that filed for Chapter 11 protection during the relevant time period. In terms of sample defendant firms' relative performance to their peers, Table 3 shows a substantial increase post-lawsuit in the underperforming percentage from the Pre-class Period level (from 43.9% to a range of 52 to 64%). Thus, sample defendant firms' distress levels appear to have increased in association with their involvement with a securities class action in both absolute and comparative terms.

We are also interested in the stock market performance of sample defendant firms' stock prices, because the market is an important channel through which shareholders realize gains from their investments in the defendant companies. We used two measures to capture stock market performances: the Market-to-Book ratio and the annual Stock Return. Market-to-book ratio measures the value of the company's stock in the current marketplace relative to the historical accounting value of the company's assets. Annual return is a measure of the increase in the stock's price over a period of one year. Shareholders want higher returns over time, so a high value in both measures is desirable from their perspective.[65] Because the occurrence of fraud by company management is a sign of weak governance and future settlement payments will impose additional financial burdens on the company, a priori we anticipated negative stock market responses to the news of the securities class actions and, hence, inferior Market-to-Book ratios in the post-lawsuit periods. There is abundant evidence of plummeting stock prices following an announcement that a company is the target of a securities class action.[66] However, we had no ex ante basis for predicting how long stock prices would remain at their depressed levels after the initial announcement of the filing of the class action. We therefore looked for clues from the defendants' Market-to-Book ratios and annual Stock Returns.

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[64] The *p*-values for the Wilcoxon Rank Sum test were between 0.002 and 0.004, suggesting that the difference across time periods was highly significant. This observation holds true for the *p*-values for the *t*-test, except for Year 3 Post-lawsuit, which had a *p*-value of 0.15.

[65] *See also* Jonathan M. Karpoff, Paul H. Malatesta & Ralph A. Walkling, *Corporate Governance and Shareholder Initiatives: Empirical Evidence*, 42 J. FIN. ECON. 365, 392 (1996) (finding that market-to-book ratio is negatively correlated with the probability of the submission of corporate-governance proposals by shareholders).

[66] *See supra* notes 30-31 and accompanying text.

In terms of the Market-to-Book ratio, Table 2 shows that the mean and median values for sample defendants were lower in every post-lawsuit period than the Pre-class Period. Significance tests show that the differences were generally significant.[67] There was no evidence of positive change in the post-settlement periods. The Market-to-Book ratios in the post-settlement periods reflected mostly lower means but higher medians compared to the Year of Settlement. However, the differences were insignificant.[68] Compared to their cohort companies, about 35% of sample defendants had a lower Market-to-Book ratio in the Pre-class Period, but that percentage increased to over 50% in every post-lawsuit period. Moreover, the underperforming percentage was higher in post-settlement periods than in the Year of Settlement.

In terms of annual Stock Returns, the impact of securities class actions was most evident in the first year after the filing of the lawsuit: the mean return dropped from a Pre-class Period level of 13% to -23%, while the median dropped from the Pre-class Period level of 7% to -12%.[69] The mean and median returns were also mostly lower after the first year of the lawsuit (except for Year 3 Post-lawsuit), but the differences were insignificant.[70] Comparing the annual returns of sample defendant firms with those of the cohort companies, we found that 62% of sample defendants were underperforming their cohort in Year 1 Post-lawsuit, a substantial increase from the Pre-class Period level of 51.6%. The underperforming percentage improved to better than Pre-class Period levels in most time periods after Year 1 Post-lawsuit.

In sum, the above descriptive statistics report notable and statistically significant negative changes for firms that are the subject of securities class actions versus their cohort, particularly with respect to their operations in terms of efficiency (through EBIT/Total Assets), short-term liquidity (through the Current Ratio), overall financial

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[67] The *p*-values of the Wilcoxon Rank Sum test for the median were less than 0.0001 for each post-lawsuit time period. The *p*-values for the *t*-test for the mean were 0.5, 0.38, 0.23, 0.04, 0.04, 0.08, and 0.03 for Year 1 Post-lawsuit through Year 3 Post-settlement, respectively.

[68] The *p*-values for the *t*-test for the differences in the mean were close to 1.00, and the *p*-value for the Wilcoxon Rank Sum test for the differences in the median between Year of Settlement and Year 3 Post-settlement was 0.38.

[69] The differences were significant for both the mean and the median, with *p*-values of less than 0.0001 in the significance tests.

[70] The *p*-values for the *t*-test were 0.83, 1.00, 0.95, 0.99, and 0.69 from Year 2 Post-lawsuit through Year 3 Post-settlement, respectively, and the *p*-values for the Wilcoxon Rank Sum test were 0.27, 0.28, 0.38, 0.49, and 0.20, respectively.

health (through Altman's Z-score), and stock market performance (through the Market-to-Book ratio).

### *C. Multivariate Regressions*

Having described the summary statistics of key financial parameters in the previous Section, we now use multivariate analysis to examine the performance of sample defendants along those parameters across different time periods and relative to their comparable companies. In order to preserve the comparative nature of our analysis, we focus on the question of how each of our sample firms performs in comparison to its matched firms. Thus, our dependent variables are constructed by determining whether the defendant firms performed better or worse than the matched sample firms, as we explain more fully below.

#### 1. Model Specification

We ran a logit regression using as dependent variables, in separate equations, the underperformance measures for Sales/Total Assets, Return-on-Asset, EBIT/Total Assets, the Current Ratio, Altman's Z-score, Market-to-Book ratio, and One-Year Stock Return, respectively. The dependent variable was a dummy that takes the value of "1" if the sample company underperforms its comparables in the parameter for the examined time period, and is "0" otherwise. For example, if a sample defendant company had an Altman's Z-score of 4.80 during the Pre-class Period and the average Z-score of comparable companies for the same time period was 5.20, the defendant was regarded as underperforming its peers and thus received an entry of "1" for the dependent variable for the Pre-class Period. If the same defendant firm had a Z-score of 6.50 for Year 1 Post-lawsuit, and the average Z-score of comparable companies for the same time period was 6.10, the defendant was not underperforming and thus received an entry of "0" for the dependent variable for Year 1 Post-lawsuit.

In our regressions, we used the following independent variables. First, we included a dummy variable for each of the time periods specified in Section III.A of this Article except for the Pre-class Period. The Pre-class Period was the base group in the regressions so that the coefficients on the time-period dummies reflect how the probability of sample defendants underperforming their peer groups changed (if at all) in post-litigation periods relative to the Pre-class Period. For example, under this model specification, a significant and positive coefficient for the dummy variable for Year 1 Post-lawsuit in the Market-to-

Book ratio regression would suggest that, compared to the Pre-class Period, sample defendants were more likely to underperform their peers in terms of the Market-to-Book ratio one year after the class-action filing.

Second, we added a dummy variable for cases in which there was an SEC enforcement action. This variable was assigned the value of "1" if there was a parallel SEC enforcement action against the defendant and the observation was from a time period after the start of the lawsuit but before the settlement of the case, and "0" otherwise. An SEC enforcement action is relevant to post-lawsuit observations because it lends support to the merits of the plaintiffs' claims and enhances the likelihood that the dispute would be resolved in favor of the plaintiffs. Our previous research has shown that settlement amounts are positively influenced by the presence of a parallel SEC enforcement action against the class-action defendant.[71] The anticipation of a higher settlement amount may in turn affect the defendant's fiscal policies, corporate morale, and operational efficiency, as well as the stock market's response to the pending lawsuit.

Third, we inserted a dummy variable for the presence of an institutional lead plaintiff in the securities class action. We assigned a value of "1" to the variable if the lead plaintiff of the lawsuit was an institution rather than an individual (or a group of individuals), and studied the time period in between the filing of the lawsuit and settlement. Our prior research has shown that the presence of an institutional lead plaintiff is associated with larger settlements.[72] Therefore, the participation of an institution as the lead plaintiff may affect the anticipated outcome of the case, and that, again, could affect our measures of firm underperformance.

Fourth, we put in a variable for the length of the class period. The length of the class period is a proxy for the period of fraud and is factored into the calculation of provable losses. Provable losses bear strong influence to the settlement amount of the case and hence the anticipated financial consequence of the lawsuit on the defendant.[73] Naturally, the length of the class period is irrelevant for financial performance and stock market return observations that are associated with time periods pre-filing and post-settlement. For those observations, the length of class period variable received an entry of "0."

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[71] *See* Cox, Thomas & Bai, *supra* note 15, at 376 (noting strong positive correlation between the two).

[72] *Id.* at 378-79.

[73] *Id.* at 376-78.

Fifth, we added a dummy variable for the filing of financial restatements that overlapped with the class period if the filing had occurred prior to the observation of financial metrics for any given time period between the filing of the lawsuit and the settlement of the case. The filing of financial restatements may reflect that a material misrepresentation in the firm's financial statements has occurred and thus provide support for the merits of the plaintiffs' claims. This in turn may affect people's anticipation of the outcome of the case and the resulting financial burden on the defendant.

Sixth, we included the ratio of provable loss to total assets for all observations relating to the time period after the filing of the lawsuit but before the settlement of the case. Our prior research has shown that provable losses are an important determinant of the final settlement amount of a securities class action: higher provable losses typically lead to higher absolute settlement amounts.[74] For this reason, provable losses are potentially a powerful predictor of the financial burdens to be imposed on the defendant by the class action and hence relevant to our measure of underperformance.

Finally, we inserted a variable for the ratio of settlement amount to total assets, if the observation occurred after the settlement of the case. The settlement amount affects our measure of defendants' underperformance because it translates directly into the scale of the financial burden faced by the defendants in the post-settlement years. For example, defendants that were subject to the misfortune of a large settlement payment might experience tighter liquidity constraints, increased difficulty in obtaining outside financing, and a more stressed stock market performance.

### 2. Regression Results

Table 4 reports the regression results for sample defendants' Asset Turnover ratio—the amount of sales that are generated from each dollar of assets—which measures the company's efficiency at using its assets in generating sales or revenues. As seen earlier in Section III.B, the summary statistics did not reveal any evidence of a reduction in defendant companies' sales levels as a result of the securities class actions. This conclusion is also supported by our multivariate regression after controlling for factors discussed in the model specifications.

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[74] *Id.*

**Table 4: Logit Regression: Sample Defendants Underperforming in Sales Turnover**

| Parameter | Coefficient | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | 0.66 | 23.22 | <.0001 |
| Year 1 Post-lawsuit | -0.17 | 0.42 | 0.52 |
| Year 2 Post-lawsuit | -0.15 | 0.22 | 0.64 |
| Year 3 Post-lawsuit | -0.16 | 0.14 | 0.71 |
| Year of Settlement | -0.23 | 0.72 | 0.40 |
| Year 1 Post-settlement | -0.35 | 2.32 | 0.13 |
| Year 2 Post-settlement | -0.34 | 2.07 | 0.15 |
| Year 3 Post-settlement | -0.44 | 2.48 | 0.12 |
| Parallel SEC Action | -0.39 | 1.89 | 0.17 |
| Institutional Lead Plaintiff | -0.32 | 1.77 | 0.18 |
| Length of Class Period | 0.01 | 0.45 | 0.50 |
| Financial Restatement | -0.49 | 3.02 | 0.08* |
| Settlement/Total Assets | 0.00 | 0.52 | 0.47 |
| Provable Loss/Total Assets | -0.01 | 1.04 | 0.31 |

* Significant at 10%.

The coefficients on the time-period dummies and the control variables are all insignificant, except for the dummy variable for the defendant's filing of financial restatements.[75] This result suggests that the probability of defendants underperforming their peer groups did not change from the Pre-class Period level (i.e., the start of the securities class action) and its eventual settlement level. The sales networks of sample defendants appear to be robust, contrary to the hypothesis that customers react to reports of financial chicanery by severing business relationships with those who have allegedly defrauded their own shareholders (as opposed to customers). Thus, it appears that the anticipated and actual settlement amounts did not affect revenue activities, as indicated by the insignificance of the coefficients on the control variables, such as the parallel presence of an SEC enforcement

[75] Recall that a negative sign indicates that firms settling securities fraud class actions are less likely to underperform their peers; thus, we observe that the presence of a financial restatement makes it more likely that a firm will outperform its comparable companies. This is a curious result for which we cannot provide a compelling interpretation.

action, the participation of institutions as the lead plaintiffs, the length of class periods, the provable loss, and actual settlement amounts.

Table 5 reports the regression results for the EBIT/Total Assets ratio. As discussed earlier, this ratio reflects a company's operational efficiency.[76] Bearing in mind the results of Table 4, which shows a general absence of any evidence of diminished sales revenues, the change in the EBIT/Total Assets ratio signifies changes in the company's operating costs. The summary statistics described earlier in this Article have shown that sample defendants manifested inferior EBIT/Total Asset ratios (higher operating costs) in the post-lawsuit and pre-settlement periods than in the Pre-class Period, and higher percentages of underperformance (relative to peer groups) throughout most post-lawsuit periods, including the years after the settlement of the case.[77] The decline in operating efficiency may well reflect the ongoing forces that caused management to falsely report the firm's performance in the first place. Also, revelation of the earlier false reporting introduces new forces that adversely impact the firm's operations as the lawsuit diverts management's attention, lowers company morale, tarnishes its stature, and deprives it of external financing opportunities, among other effects.

The logit regression results in Table 5 confirm that sample defendants' operational efficiency deteriorates in the early years following the commencement of the lawsuit. For the post-settlement periods, defendant firms with high settlement amounts had a higher probability of underperforming their peer groups than companies facing lower settlement amounts. This could be attributed to several factors. First, the earlier, underreported financial problems are correlated with the ultimate settlement amount, so firms that ultimately incur large settlements also are firms that experience greater operational challenges. Second, firms that incur larger settlements are firms whose defalcations had a larger impact. We would expect those firms to incur tighter financial constraints, diminished financing opportunities, or higher financing costs, and to suffer the resulting deprivation of capital needed to enhance operational efficiency.[78]

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[76] *See supra* Section III.B (describing the significance of the parameters in this study).

[77] *Id.*

[78] We also ran a logit regression on the Return-on-Asset data. The results are consistent with the summary statistics described in earlier parts of this Article in that they do not suggest any significant change in the sample defendants' overall profitability relative to their comparable companies in the post-lawsuit period. We are not reporting the regression results in a separate table because of space constraints and because the return-on-asset ratio, while reflecting a company's overall profitability, does not directly reveal

**Table 5: Logit Regression: Sample Defendants Underperforming in EBIT/Total Assets**

| Parameter | Coefficient | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | 0.34 | 6.41 | 0.01 |
| Year 1 Post-lawsuit | 0.52 | 3.78 | 0.05** |
| Year 2 Post-lawsuit | 0.20 | 0.42 | 0.52 |
| Year 3 Post-lawsuit | 0.81 | 3.10 | 0.08* |
| Year of Settlement | 0.02 | 0.01 | 0.94 |
| Year 1 Post-settlement | -0.06 | 0.06 | 0.81 |
| Year 2 Post-settlement | 0.09 | 0.13 | 0.72 |
| Year 3 Post-settlement | 0.43 | 2.09 | 0.15 |
| Parallel SEC Action | -0.09 | 0.09 | 0.76 |
| Institutional Lead Plaintiff | -0.25 | 0.99 | 0.32 |
| Length of Class Period | 0.00 | 0.18 | 0.67 |
| Financial Restatement | -0.20 | 0.46 | 0.50 |
| Settlement/Total Assets | 0.002 | 3.31 | 0.07* |
| Provable Loss/Total Assets | 0.01 | 0.62 | 0.43 |

* Significant at 10%.

** Significant at 5%.

We were also concerned about changes in the liquidity level of defendant firms in securities class actions. The earlier summary statistics reported a substantial increase in the percentage of sample defendant firms that underperformed compared to their cohort in terms of the Current Ratio in years following the class actions' settlements. We were not surprised by this result, because defendants' insurance might not have provided full coverage for the settlement amount, in which case the firm would record the balance as a short-term debt obligation to be paid out of cash or other liquid assets. The regression results, which are reported in Table 6, are consistent with the summary statistics.

the company's profitability from core business operations since the ratio includes non-operating items such as investments in other firms, taxes, and interest expenses.

**Table 6: Logit Regression: Sample Defendants Underperforming in Current Ratio**

| Parameter | Coefficient | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | -0.19 | 1.88 | 0.17 |
| Year 1 Post-lawsuit | 0.18 | 0.45 | 0.50 |
| Year 2 Post-lawsuit | -0.33 | 0.97 | 0.32 |
| Year 3 Post-lawsuit | 0.17 | 0.16 | 0.69 |
| Year of Settlement | 0.16 | 0.30 | 0.58 |
| Year 1 Post-settlement | 0.40 | 2.64 | 0.10* |
| Year 2 Post-settlement | 0.58 | 5.02 | 0.03** |
| Year 3 Post-settlement | 0.26 | 0.81 | 0.37 |
| Parallel SEC Action | 0.42 | 1.91 | 0.17 |
| Institutional Lead Plaintiff | -0.23 | 0.76 | 0.38 |
| Length of Class Period | 0.003 | 0.14 | 0.71 |
| Financial Restatement | 0.23 | 0.53 | 0.47 |
| Settlement/Total Assets | 0.002 | 4.73 | 0.03** |
| Provable Loss/Total Assets | 0.02 | 1.12 | 0.29 |

* Significant at 10%.

** Significant at 5%.

The dummy variables for the pre-settlement periods were uniformly insignificant, but the dummy variables for the two years immediately after the settlement were both positive and significant. This suggests that sample defendants were more likely to experience lower liquidity levels than their peers in the post-settlement years than in the Pre-class Period. Moreover, this probability increased with the settlement amount, as evidenced by the positive and higher significant coefficient for the ratio of the settlement amount to the firm's total assets (Settlement/Total Assets). These numbers are consistent with the theory that insurance provided less than full coverage of the settlement amounts and that the defendants paid the discrepancy out of their current assets. The settlement payment exacerbated liquidity constraints, making the defendants more vulnerable to liquidity crunches and prone to bankruptcy. The numbers in Table 6 are inconsistent with an alternative hypothesis on causality that would suggest that the inferior post-settlement performances of defendant firms were not caused by the li-

quidity constraint of settlements, but rather were simply the results of progression along a course of decline that started in the years prior to the lawsuit. Under this alternative hypothesis, we would expect to see more significant deterioration in pre-settlement periods than in post-settlement periods, because the former were closer to the commission of fraud. However, the numbers in Table 6 suggest the contrary.

The Altman's Z-score regression results reported in Table 7 below further support the theory of settlement-induced liquidity constraint.

**Table 7: Logit Regression: Sample Defendants Underperforming in Altman's Z-score**

| Parameter | Coefficient | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | -0.29 | 2.98 | 0.08 |
| Year 1 Post-lawsuit | 0.29 | 0.98 | 0.32 |
| Year 2 Post-lawsuit | 0.45 | 1.55 | 0.21 |
| Year 3 Post-lawsuit | 0.54 | 1.30 | 0.25 |
| Year of Settlement | 0.11 | 0.13 | 0.71 |
| Year 1 Post-settlement | 0.57 | 4.47 | 0.03** |
| Year 2 Post-settlement | 0.87 | 9.24 | 0.002** |
| Year 3 Post-settlement | 0.89 | 7.71 | 0.006** |
| Parallel SEC Action | 0.28 | 0.69 | 0.41 |
| Institutional Lead Plaintiff | 0.18 | 0.41 | 0.52 |
| Length of Class Period | 0.01 | 0.52 | 0.47 |
| Financial Restatement | 0.23 | 0.48 | 0.49 |
| Settlement/Total Assets | -0.0004 | 0.09 | 0.77 |
| Provable Loss/Total Assets | 0.03 | 0.15 | 0.70 |

** Significant at 5%.

As mentioned earlier, the Altman's Z-score reflects a company's overall financial distress level; it is a measure that includes return on assets, the ratio of sales to total assets, the ratio of debt to equity, the ratio of working capital to total assets, and the ratio of retained earnings to total assets.[79] Earlier, we found that the Z-score parameter confirmed our expectation that class actions were financially stressful

[79] *See supra* Section III.B.

events for the defendant companies, given the uncertainty in outcome before settlement and the liquidity constraints imposed on defendants after settlement.[80] The multivariate regression supports this conclusion. The coefficients were positive for each post-lawsuit period (indicating a greater likelihood of underperformance by defendants on this measure), but only those for post-settlement periods were significant at the 5% level, suggesting that sample defendant firms were more likely than their peers to have lower Z-scores in the post-settlement periods. Moreover, this increased likelihood was not merely present in defendants facing large settlement amounts, but was present across the sample of defendant firms.[81]

We note that the coefficient on the settlement variable, while negative, is insignificant. The standard interpretation of this result would be that settlement amounts do not affect the sample firms' Altman's Z-scores, or more generally, that settlement size is unrelated to the likelihood the firm will file for bankruptcy. This interpretation would lend further support to the hypothesis that defendant firms were subject to distress even prior to the lawsuit and that the lower Z-score was the result of a natural course of deterioration unrelated to the class action. While this is a possible interpretation, we note a few pieces of evidence that are inconsistent with this interpretation and suggest that the lower Z-score was likely attributed to the liquidity constraints imposed by the settlement. First, the post-lawsuit but pre-settlement period coefficients in the regression are insignificant, while the post-settlement coefficients are significant. This result suggests that the payment of the settlement may have exacerbated the firms' financial troubles. Second, if the financial stress were simply a manifestation of a downward trajectory that started before the filing of the class action, we would also expect to see signs of deterioration in key operating parameters such as sales revenue and net income. As discussed earlier, our data do not show these signs. Third, the lower Market-to-Book ratios in the post-settlement period for sample firms (which we report in Table 8) could also lower these firms' Altman's Z-score. However, if the lower Z-score was attributable to a lower market value of equity, we should have seen significance for post-lawsuit, pre-settlement periods. Next, lower EBIT and/or lower sales could also lead to a lower Z-

[80] *Id.*

[81] We should add that some firms that were initially dropped from our sample for lack of financial ratio information may have gone bankrupt after the lawsuit was filed. Their disappearance from our sample means that these results are conservative estimates of the effect of settled lawsuits on the Altman's Z-score measure.

score, but we have shown that the lower EBIT was limited to the post-lawsuit, but pre-settlement, periods in Table 5, and that defendants' sales revenues did not change in Table 4. In addition, lower retained earnings could also lead to a lower Z-score, but we do not see changes in Return-on-Assets, and we have no reason to believe that defendants lower the plowback ratio only in post-settlement years and not in pre-settlement years. Finally, the only factor not listed above that affects a Z-score is the short-term liquidity, and we have shown in Table 6 that defendants had a significantly lower Current Ratio in post-settlement years, indicating an increase in liquidity constraints post-settlement. These factors combined suggest the lower-than-peer Z-score may be connected with settlement size. Moreover, even though we are not seeing significance for the coefficient of the Settlement/Total Asset ratio to the underperformance probability of defendant firms, the Pearson correlation[82] of the settlement size and the value of the defendants' Z-scores for post-settlement observations was negative and significant,[83] suggesting the Z-scores were lower for firms with large settlements.

Our final inquiries focus on the stock price performance of sample defendant firms. As we have discussed, the stock market is the primary channel through which shareholders (including plaintiffs in securities class actions) receive compensation for their investments.[84] In the long run, the market does not reward lying; previous research documents a negative stock market response to news of securities class actions.[85] If this negative response persists for an extended period of time, even after the conclusion of the case (i.e., the settlement), the value to shareholders from bringing the class action and extracting large settlement payments should be offset by their losses in the stock market. Our earlier summary statistics reported persistently inferior Market-to-Book ratio for sample defendants throughout the entire post-lawsuit and post-settlement periods.[86] We now use a multivariate regression to examine whether this result was robust after controlling for other

[82] The correlation between two variables is a number between -1 and +1 that measures the degree to which the variables are related. The Pearson correlation is the most common measure of such a relationship. It is obtained by dividing the covariance of the two variables by the product of their standard deviations. For more discussion of the Pearson correlation, see ALLEN L. EDWARDS, AN INTRODUCTION TO LINEAR REGRESSION AND CORRELATION 33-46 (1976).

[83] The Pearson correlation was -0.18, and the *p*-value was 0.004.

[84] *See supra* Section III.B.

[85] *See supra* note 30.

[86] *See supra* text accompanying notes 67-68.

factors that might also be driving the variations in the summary statistics. The regression results are reported in Table 8 below.

**Table 8: Logit Regression: Sample Defendants Underperforming in Market-to-Book Ratio**

| Parameter | Coefficient | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | -0.64 | 17.30 | <.0001 |
| Year 1 Post-lawsuit | 0.65 | 5.24 | 0.02** |
| Year 2 Post-lawsuit | 0.61 | 2.96 | 0.09* |
| Year 3 Post-lawsuit | 0.59 | 1.64 | 0.20 |
| Year of Settlement | 0.29 | 0.99 | 0.32 |
| Year 1 Post-settlement | 0.85 | 11.36 | 0.001** |
| Year 2 Post-settlement | 1.01 | 14.53 | 0.0001** |
| Year 3 Post-settlement | 0.82 | 7.32 | 0.01** |
| Parallel SEC Action | -0.23 | 0.51 | 0.48 |
| Institutional Lead Plaintiff | 0.60 | 5.21 | 0.02** |
| Length of Class Period | 0.001 | 0.02 | 0.90 |
| Financial Restatement | 0.57 | 3.04 | 0.08* |
| Settlement/Total Assets | 0.001 | 1.43 | 0.23 |
| Provable Loss/Total Assets | 0.02 | 0.15 | 0.70 |

* Significant at 10%.

** Significant at 5%.

The persistence of the pressure on defendants' stock prices is striking and statistically significant. The coefficients on the time-period dummies were positive and highly significant, not only during the first two years after the start of the class action, but also into each of the three years after the settlement of the case. This result means that sample defendants were more likely to have lower Market-to-Book ratios than their peers in the post-lawsuit periods than in the Pre-class Period. Market price plummeted immediately after the start of the lawsuit and did not recover even three years after the conclusion of the case. The positive and significant coefficients on the institutional-lead-plaintiff dummy and the financial-restatement dummy were not surprising, because these factors typically correspond to higher settlement amounts that defendants must pay.

We also performed a logit regression to show any change in the likelihood of sample defendants underperforming their comparable companies in One-Year Stock Returns before, during, and after the conclusion of the securities class action. Table 9 reports the results. Persistent deteriorations in annual returns suggest a continued price decline, while superior positive returns suggest price recovery.

**Table 9: Logit Regression: Sample Defendants Underperforming in One-Year Stock Return**

| Parameter | Coefficient | Chi-Square | Pr > ChiSq |
|---|---|---|---|
| Intercept | 0.76 | 22.18 | <.0001 |
| Year 1 Post-lawsuit | 0.51 | 3.64 | 0.06* |
| Year 2 Post-lawsuit | -0.10 | 0.12 | 0.73 |
| Year 3 Post-lawsuit | -0.14 | 0.17 | 0.68 |
| Year 1 Post-settlement | 0.28 | 1.08 | 0.30 |
| Year 2 Post-settlement | 0.05 | 0.04 | 0.85 |
| Year 3 Post-settlement | -0.20 | 0.53 | 0.47 |
| Parallel SEC Action | 0.20 | 0.82 | 0.37 |
| Institutional Lead Plaintiff | -0.03 | 0.02 | 0.89 |
| Length of Class Period | -0.01 | 1.07 | 0.30 |
| Financial Restatement (Nonclass Period) | -0.23 | 0.47 | 0.49 |
| Financial Restatement (Class Period) | 0.43 | 1.30 | 0.25 |
| Settlement/Total Assets | 0.85 | 0.30 | 0.58 |
| Provable Loss/Total Assets | -0.05 | 1.12 | 0.29 |

* Significant at 10%.

Consistent with the summary statistics, the coefficients on the time-period dummies were mostly insignificant, except for Year 1 Post-lawsuit, which suggests that sample defendant firms' relative stock market performance deteriorated from the Pre-class Period level in the year immediately after the lawsuit was filed, but remained stable thereafter.[87] The stable Stock Returns after the first year of the lawsuit

[87] We also ran an ordinary-least-squares (OLS) regression to see if the one-year returns of the defendants (as opposed to their performance compared to their peers) changed before, during, and after the completion of class actions, using the returns of

and the persistently low Market-to-Book ratios jointly suggest that the initiation of securities class actions had an instantaneous negative impact on stock prices, but that the impact was mostly absorbed within the first year of the lawsuit. Prices were stable afterwards but remained at low levels until years after the settlement of the lawsuit.

## CONCLUSION

In this Article, we observe several important results. Defendant firms that settle securities class actions experience no significant declines in sales opportunities as a result of the lawsuit and settlement, but do undergo a reduced level of operating efficiency while the lawsuit was pending (but not after it is settled). Most significantly, we also observe that, after settlement, defendant firms experience liquidity problems, as well as worsening Altman's Z-scores.[88] Here, the distinction between causation and correlation is important. For example, do our findings regarding the deterioration of the Altman's Z-scores suggest that settlements drive firms toward financial distress (i.e., settlements are causally related to the worsening situation), or do they suggest that the financial deterioration in earlier time periods continues downward regardless of the settlement or its size (i.e., settlements are merely correlated with weakening financial performance), or do they represent some combination of both? To be sure, there is great intuitive appeal to the view that settlement payments exacerbated liquidity constraints on the defendants and enhanced their vulnerability to financial distress in post-settlement years.

In a sense, there is something in our results for both sides of the debate over the effects of securities litigation. One side could point toward our findings as evidence that the litigation is not a zero-sum game for wrongdoers in which only the insurer pays. If litigation were such a zero-sum game, we would not find suggestions that settlements are associated with weakening Altman's Z-scores. On the other hand, others could claim that settlements, if not the entire litigation process, are a menace because they drain funds from the corporation that could better be directed towards strengthening its financial position. Somewhat

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comparable companies as a control variable on the right-hand side. The OLS results also suggest that the one-year return deteriorated in the year immediately after the start of the lawsuit but remained stable thereafter. To conserve space, we are not reporting the OLS results here.

[88] These findings are reinforced by the fact that forty-three of the 480 firms in our sample filed for protection under Chapter 11 of the Bankruptcy Code.

counter to this view, however, is our finding that settlement size has a significant effect on the observed decline of the Current Ratio.

While we will continue to build on the findings we present, probing further into the relationship between settlements and the increasing financial distress we observed for firms involved in securities class action, we believe there are some immediate, albeit tentative, suggestions from our findings for the future conduct of private securities litigation. Although uncertainty persists about the precise connection between settlements and financial distress, there is no uncertainty that firms involved in securities class action litigation experience statistically greater risks of financial distress than their cohort firms. Since the burdens of ongoing embroilment in securities class action contribute to the firm experiencing value-decreasing pressures, our findings lend strong support for the view that such suits are better directed toward the officers, advisors, and other individuals who bear responsibility for the fraudulent representation(s) that spawned the suit.[89] Suits so directed do not pose the same burdens on the subject corporation as do suits whose prosecution and ultimate settlement are focused on the corporation itself. Moreover, the rising levels of compensation garnered by firm executives in the past two decades suggest that today—more so than, say, a quarter century ago—suits targeting only executives who are responsible for the fraud yield a financial target worthy of even the most avaricious class of plaintiffs and their attorneys. This approach is supported further by our findings that a firm targeted in a securities class action incurs a substantial market penalty with significant declines in the value of its shares. We observe that the negative return associated with the filing of the suit is not recovered in later years. Thus, we might well believe that further embroilment in the litigation unnecessarily penalizes companies and inhibits the suit from pursuing those most responsible for the fraud endured by investors.

Though our findings support a greater role for individual (as opposed to entity) liability for securities fraud, this proposed shift in focus of private suits faces strong doctrinal headwinds. Supreme Court jurisprudence has narrowed the scope of liability in securities fraud litigation. In *Central Bank of Denver v. First Interstate Bank of Denver*, the Supreme Court reversed decades of precedent imposing aiding-and-

[89] *See, e.g.*, James D. Cox, *The Social Meaning of Shareholder Suits*, 65 BROOK. L. REV. 3, 26 (1999) (proposing the imposition of liability on individuals responsible for the fraudulent practices, a practice which would affirm societal values that underlie the violated norms, such as truthfulness, so that future compliance by others is enhanced).

abetting liability under Rule 10b-5,[90] and later, in *Stoneridge Investment Partners, LLC v. Scientific-Atlanta, Inc.*, the Court absolved "remote" participants in a scheme to defraud investors.[91] The Supreme Court's narrow view of who is subject to primary liability under the SEC's antifraud provision has prompted the lower courts to repeatedly reach results at odds with imposing just deserts on violators. For example, *Pugh v. Tribune Co.* found that the Supreme Court's reasoning in *Stoneridge* insulated from liability a senior executive who had inflated his subsidiary's revenues and income.[92] In the wake of such decisions, the focus on entity liability is likely to continue, and just deserts are likely to remain an unfulfilled public policy objective founded on data such as what we have presented here.

More broadly, our findings tell an interesting story not only about the possible motivations for lying but also about the implications of being caught cheating. While a weakening in the firm's sales revenues does not appear to motivate false financial reporting, the inability to maintain desirable levels of performance in other areas may lead managers to fib. Poor management or a deteriorating operating environment pressures managers to falsely paint a different picture of the true situation for the public. In the end, truth does prevail, the managers' chicanery is detected, and the adverse winds that drove them into the troubled waters do not abate. The remaining question is whether the litigation and settlement caused those winds to quicken.

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[90] 511 U.S. 164, 191 (1994).

[91] 552 U.S. 148, 159 (2008).

[92] 521 F.3d 686, 697 (7th Cir. 2008). *See also, e.g., In re* Nature's Sunshine Prods. Sec. Litig., No. 06-0267, 2008 WL 4442150 (D. Utah Sept. 23, 2008) (declining to find liability under Rule 10b-5 for a CEO who falsely represented facts to the firm's auditor in order to obtain an unqualified audit opinion).