Economic Consequences:
The Real Costs of U.S. Securities Class Action Litigation

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EXECUTIVE SUMMARY

The recent decision of the U.S. Supreme Court to hear an appeal in *Halliburton v. Erica P. John Fund* has revived the questions about the societal utility of securities fraud class action lawsuits. Since the passage of the Private Securities Litigation Reform Act (PSLRA) in 1995, thousands of such class action lawsuits have been filed alleging trillions in shareholder damages. The principal argument in support of the current system of private securities class action litigation, typically advanced by the securities class action plaintiffs' attorneys whose fees are contingent on the size of any recovery, is that this type of litigation provides a significant benefit to their clients by winning billions of dollars in settlements from companies to be distributed back to allegedly harmed investors.

Although the merits of such claims are almost never tested at trial as most of these cases settle or are dismissed, the contention that such lawsuits benefit harmed investors has been questioned in several ways. Academics have commented on the cost of such litigation and how securities class actions merely shift money from one group of investors to another. This study provides additional evidence on whether such lawsuits help redress harmed shareholders. If all shareholders at the end of the class period were also class members, the announcement of a lawsuit to recover damages for the class members would at best be a zero-sum game. Their expected recoveries would have an offsetting reduction in the share price by the same amount. If, on the other hand, the overlap is less than perfect, expected settlement payments would represent a wealth transfer from current shareholders to class members who are not current shareholders. However, other costs of class action lawsuits such as plaintiffs' lawyers' contingency fees and various direct and indirect costs have no corresponding benefits to the class members, and the share price drop associated with these inefficiencies may dwarf expected recovery by class members. This study finds that shareholders experience a stock price drop associated with the filing of a securities fraud class action lawsuit and that because of the losses associated with the litigation, they lose much more than they gain in any subsequent settlement amount.

Our methodology for the first part of the paper is that we calculate the wealth lost by shareholders upon announcement of such lawsuits soon after the end of the class period, at which time shareholders experiencing this wealth loss are (largely) the same shareholders on whose behalf the lawsuit is being filed. In the second part of the paper, we demonstrate, using actual claimant trading data from a large class action settlement involving allegations of artificial stock inflation, that a significant percent of the settlement proceeds are allocated to plaintiffs who do not trade in a manner consistent with the presumption of reliance upon which the class was certified. In other words, settlement funds go to class members who almost certainly could not recover if the case were litigated. We further show, using this same claimant data and a review of 50 Plans of Allocation (POAs) for other large settlements that the POAs for distributing settlements to allegedly harmed shareholders often lead to a substantial redistribution of wealth across plaintiffs that bears little resemblance to their alleged economic injury.

Shareholder Value Destruction from Filing of Lawsuits: To calculate the costs associated with securities class action lawsuits, we analyze company stock price reactions to announcements of such lawsuits. We use a comprehensive sample of 1,456 federal class action securities cases involving allegations of artificial stock price inflation that were filed since the

passage of PSLRA and subsequently settled. Our empirical analysis demonstrates that a private securities class action lawsuit, filed within 30 trading days after the date that the suit defines to be the end of the class period, results in a cumulative loss of 4.44% of the stock's price.

By focusing on the lawsuits filed soon after the end of the class period, we measure the effect on wealth of the same group of shareholders on whose behalf these lawsuits are filed and who expect to participate in any future recoveries. In our sample of settled cases, the total shareholder wealth loss is at least $262 billion. Extrapolating these findings to not-settled cases (i.e., dismissed and not-yet settled cases) during the same time period and combining the two sets of results, our study calculates the total shareholder wealth loss as a result of securities class action lawsuit announcements to be at least $701 billion compared to the $109 billion in aggregate settlement dollars (before plaintiff attorneys get their cut of about 18% on average) that the shareholders have received on already settled cases ($68 billion) and expected settlements that will be realized on cases not yet settled ($41 billion). The total wealth loss averages to about $39 billion per year, in order to collect an average of $6 billion in settlements per year ($5 billion per year after plaintiff attorneys' fees). In other words, because of the filing of securities class actions, shareholders incrementally lost more than six times the settlement amount (or more than seven and half times the amount that shareholders would receive after plaintiffs' attorneys' fees).

It is important to note that the wealth loss we document is measured on events that are already largely anticipated by the market. Thus, while it is beyond the scope of this paper to quantify how much additional wealth loss may have resulted from anticipation of such lawsuits, we believe the $701 billion wealth loss represents an extremely low estimate of the total cost of these lawsuits to the very same shareholders on whose behalf they are filed.

Post-Settlement Distortions: We also analyze distortionary effects that occur after a securities class action settlement is reached. Even when allegedly affected shareholders do finally have the opportunity to recover (which is virtually always through settlement as trials rarely occur), the distribution of settlement dollars back to allegedly affected shareholders bears little relationship to the economic theory behind the presumption of reliance used to certify the class and is disconnected from the economics of plaintiff's own theories of alleged harm these shareholders purportedly suffered. It seems that once a settlement is reached and the "hydraulic pressure" is relieved, whether some participants in the settlement had ever relied on integrity of market price in the first place or whether the settlement amounts claimed by class members are well matched to their alleged economic injury become an afterthought.

The presumption of reliance based on the "fraud-on-the-market" (FOTM) doctrine for class certification purposes, as authorized by the U.S. Supreme Court's decision in *Basic Inc. v. Levinson,* 485 U.S. 224 (1988), relieves plaintiffs from having to demonstrate individual reliance on (or even awareness of) any alleged misstatements in order to claim damages resulting from the alleged fraud, even though this presumption can be rebutted by defendants after class-wide damages have been determined in a trial. It is important to note that as posited by modern financial theory, the prototypical investor that believes in market efficiency of the kind envisioned in *Basic* should invest in a diversified portfolio and only has two reasons to trade: (1) net investment or divestment for consumption purposes; and (2) rebalancing of the diversified portfolio between asset classes. Such trading would by definition be infrequent and account for

only a small fraction of the total volume observed. On the other hand, consider a more frequent (or "active") trader who might try to "beat the market" such as a sophisticated institutional investor who might apply a proprietary trading model or who might trade using a volatility-based rather than a price-based strategy. As a result of more frequent trading this type of investor would likely have a much higher share of the alleged total damages. And hence, it is precisely such active traders that may be shown not to have relied on the integrity of the market price or on the allegedly false statement but nevertheless remained in the class through settlement (because of the presumption at the certification stage) that might collect the largest share of the settlement.

To empirically examine whether class members did in fact rely on the efficiency of the market, we analyzed the actual trading patterns of class claimants in a typical major securities class action settlement and found that some of the claimants who were allocated the largest share of the settlement distribution traded hundreds of times during the class period and traded in a manner indicating that they did not rely on the integrity of the market price even though they claimed reliance on efficient market for class certification.

We also analyzed the same class action trading data for the POA for settlement distribution in order to explore whether the settlement monies were actually distributed to those who suffered net harm from the alleged stock inflation. We find that because this POA ignored the netting of each claimant's total potential gains from selling at allegedly inflated prices against any alleged losses, there was little relationship between the claimants' total net economic loss from the alleged fraud and their share of the settlement distribution. Our findings on this POA are not unique. We also reviewed POAs for the 50 largest settlements in our sample, which collectively represent about 60% of the total $68 billion in total settlements in our database, and found that not one of these POAs used stock inflation-based netting of gains to calculate the respective plaintiff's share of the settlement fund(s).

Our overall conclusion is that private securities class actions significantly harm investors and the economy, and they do not provide an efficient mechanism to compensate victims of alleged wrongdoing. Instead, they further harm the alleged victims (as well as other innocent shareholders). Ultimately, the current securities litigation system results in arbitrary wealth redistribution and the settlement amounts paid are relatively minor when compared to the actual investor wealth destroyed by such lawsuits.

Section 1: Introduction

Congress passed the Private Securities Litigation Reform Act (PSLRA) in December 1995 in an attempt to deter meritless securities lawsuits.[1] Yet, the filing of post-PSLRA securities class actions filed in the United States has continued unabated.[2] Since enactment of the PSLRA, 4,226 federal securities class actions have been filed alleging trillions of investor losses,[3] and over 40% of corporations listed on major U.S. stock exchanges have been targeted by a securities class action suit.[4]

Virtually all of these post-PSLRA cases are either settled or dismissed; trial verdicts were reached in only 14 instances.[5] Presumably, defendants choose to settle rather than face the risk of a potentially catastrophic damage award at trial. This litigation risk is exacerbated by the fact that class certification motions (if a case proceeds to that stage) are rarely denied,[6] prompting an increase in plaintiffs' aggregate damage claims.[7] Plaintiffs' lawyers receive a share of the settlement before any distribution to the plaintiff class, with a larger percentage on average for smaller settlements.[8] Studies suggest that plaintiffs' attorneys have an incentive to file cases quickly[9] (typically following a large stock price drop) and settle promptly.[10]

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[1] *See* Hardy (2000-2001), pages 565 - 592, noting "In essence, the PSLRA creates a heightened pleading standard requiring a stronger showing of fraudulent intent in order to bring a securities fraud lawsuit. By creating this heightened pleading standard, Congress attempted to deter frivolous securities fraud lawsuits brought by private plaintiffs, "to protect investors and to maintain confidence in the securities markets.""

[2] *See* Perino (2003), studying a database of class actions filed from 1996 to 2001 and noting "the PSLRA did not work as intended" and that "as many, if not more, class actions are filed after the Act as before." Perino (2003) did note, however, that "[t]here is statistically significant evidence" suggesting "that the Act improved overall case quality at least in the circuit that most strictly interprets one of the Act's key provisions, a heightened pleading standard."

[3] *See* NERA (2014), pages 33, 36. NERA defines investor losses as a rough proxy for the amount investors lost by investing in the defendant company instead of the broader stock market during the class period. *See* NERA (2014), page 8.

[4] *See* Bondi (2010), pages 615-616.

[5] *See* NERA (2014), page 36.

[6] Class certification was denied in fewer than 2% of cases between 2002 and 2010 due to a decision based on the merits. *See* Cornerstone Research (2014), page 9.

[7] *See* Silver (2003), page 1369.

[8] Over the 1996–2013 period, average plaintiffs' attorneys' fees were 31% for settlements of $100 million or less, 20% for settlements between $100 million and $1 billion, and 9% for settlements above $1 billion.

[9] In 2013, the median lag time between the end of the class period and filing of a class action was 16 days compared

The recent decision of the U.S. Supreme Court to hear an appeal in *Halliburton v. Erica P. John Fund* has revived questions about the societal utility of such lawsuits. The principal argument in support of the current system of private securities class action litigation, typically advanced by the securities class action plaintiffs' attorneys whose fees are contingent on the size of any recovery, is that this type of litigation provides a significant benefit to their clients by winning billions of dollars in settlements from companies to be distributed back to allegedly harmed investors.

That contention has been questioned in several ways including the argument that securities class actions merely shift money from one group of investors to another.[11] The perverse incentives created by the current legal regime for securities class action lawsuits inflict significant harm on shareholders, including those who were supposedly injured by the fraud. Moreover, even when settlements are reached and the settlement money is distributed back to investors who sustained losses, the economic reality of the settlement distribution process is disconnected from the rationale for the cases and contains substantial distortions. This paper provides empirical support for such criticisms of the current securities class action system. We next lay out the organization of the remainder of this paper.

Section 2 presents an empirical analysis of one of the primary and most direct potential adverse effects of securities class action litigation – the shareholder value destroyed through negative reaction of the stock price of defendant firms following news of securities class action lawsuits.

Plaintiffs invoke the "fraud-on-the-market" (FOTM) doctrine for class certification purposes. If the market is efficient, as the FOTM theory assumes, the stock price reaction to the filing of a securities class action lawsuit would reflect the market's expectation of various costs that the

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to 40 days in 2012. *See* NERA (2014), page 16.

[10] Klausner et al. (2013) found that a significant fraction of securities class action cases are settled quickly, even before the court ruled on the first motion to dismiss, and early settlements are generally smaller in dollar terms but larger when measured as a percentage of "shareholder losses." Klausner et al. (2013) explain that such findings follow from the fact that "[l]arge companies tend to settle later than smaller companies and, not surprisingly, large company settlements tend to be larger in absolute terms than small company settlements" while "[o]n the other hand, small companies tend to settle for a larger fraction of shareholder losses than do larger companies."

[11] *See* e.g., Pritchard (2009). These two groups could also overlap to a significant degree, implying that investors are, in a sense, suing themselves. *See* e.g., Grundfest (2008).

lawsuit will impose on the firm's shareholders. One of these costs is the expected settlement amount that the firm has to bear. If all shareholders at the end of the class period were also class members, the announcement of a lawsuit to recover damages for the class members would at best be a zero-sum game. Their expected recoveries would have an offsetting reduction in the share price by the same amount.

If there is less than perfect overlap between class members and shareholders at the end of the class period, expected settlement payments would represent a wealth transfer from current shareholders who are not class members to class members who are not current shareholders. For class members who are also current shareholders, settlement proceeds in one pocket would only offset their losses that came from their other pocket as shareholders. If settlement amount is the predominant reason for the share price drop, the resulting wealth loss of current shareholders cannot exceed the expected wealth increase to class members. However, other costs of class action lawsuits such as plaintiffs' lawyers' contingency fees and various direct and indirect costs have no corresponding benefits to the class members, and the share price drop associated with these inefficiencies may dwarf expected recovery by class members. As a result, a class action lawsuit filing may result in large wealth loss aggregated across current shareholders and class members and the share price drop would far exceed expected settlement amount. In other words, under the current securities litigation system, shareholder class actions cannot be said to be a device to compensate class members for their damages in any meaningful sense.

Our analysis is based on the most current and comprehensive database of such lawsuits and covers 1,456 settled securities fraud class action cases that were filed over the 18-year period from December 1995 (i.e., post-PSLRA) through January 2014.[12]

Despite the apparently large $68 billion aggregate settlement value across our sample that at first impression appears to be a boon to allegedly harmed shareholders, we find that, for our sample of cases that did settle (and were not dismissed), news of the filing of the lawsuits alone destroys four times as much shareholder value (about $262 billion).

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[12] Griffin, Grundfest, and Perino (2000) and Ferris and Pritchard (2001) have also analyzed stock price reaction to securities class action lawsuit filings, but these studies analyze a smaller sample of less recent filings from 1994-1997 and 1995-1999, respectively.

To examine the incremental effect on shareholder value of these class actions, our study focuses on settlements in cases in which the news of a lawsuit's filing occurred within 30 trading days after the end of the class period. We exclude any price reactions within or at the end of the alleged class periods. These criteria ensure that measurement of the incremental wealth effect of the filing of such lawsuits does not overlap with any purported effects of corrective disclosures. In addition, given the proximity of the lawsuit filing to the end of the class period, the affected shareholders are likely members of the plaintiff class (i.e., the purported victims on whose behalf the class action was filed).

The significant net price drops following news of the filing of the lawsuits suggests that shareholders, even those who expect to receive some portion of a future settlement, view the net effect of securities class actions negatively because the costs of such litigation (which includes legal defense costs, damaged reputation and competitiveness of the defendants, and diverted managerial attention) outweigh the potential settlement "benefit." To the extent there is turnover in ownership of shares soon after the class period, the wealth loss harms not only the victims of the alleged fraud but also the new shareholders who may not have bought the stock during the class period and therefore would not be entitled to collect the benefits (however small) of any settlement.

It should be noted that our $262 billion estimate of shareholder value destruction related to securities class actions only focuses on post-PSLRA cases that settled and thus ignores the very large number of dismissed cases, as well as cases that were still ongoing as of January 2014. Between 1996 and 2014, there were 2,457 securities class actions that were either dismissed or have not yet settled. A reasonable extrapolation of the shareholder value that is destroyed, including the loss of the settled cases, is $701 billion.

This $701 billion estimate of net shareholder wealth loss is a substantial understatement because it does not account for any negative share price effect prior to the actual lawsuit announcement that stems from anticipation of the lawsuit filing. Gande and Lewis (2009) note that a focus on price reactions on lawsuit filing dates understates the magnitude of shareholder losses because securities class actions are anticipated by investors following large price drops.[13]

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[13] Ferris and Prichard (2001) also note that the negative price reaction at the end of the class period (which is

Griffin, Grundfest, and Perino (2000) similarly state that while "several studies document that the stock market reacts swiftly and negatively to a corrective disclosure that leads to securities class action litigation," this result is "generally unsurprising and most likely overstate[s] the stock price response to a corrective disclosure because [it] reflect[s] the impact of a self-selected set of negative news events based on knowledge that the firm would later be sued in a securities class action."[14] Thus our sample of shareholder class action announcements represents announcements that were likely anticipated. Furthermore, because we did not select any announcement until at least one trading day after the final class period had ended,[15] we often ignore earlier announcements of such lawsuits and pick stale announcements.[16]

Our $701 billion net shareholder value destruction figure also does not account for a host of other likely substantial adverse effects of securities litigation on shareholders and the wider U.S. economy.   These effects include reduced firm innovation and investment, more guarded voluntary corporate disclosures, and higher insurance premiums that are not measureable in terms of stock price reaction but are nonetheless substantial.

In Section 3, we analyze distortionary effects that occur after a settlement is reached. Even when allegedly affected shareholders are eligible to share in a settlement (which is almost always the case as trials rarely occur), the distribution of settlement dollars back to class members bears little relationship to the economic theory behind the presumption of reliance used to certify the class and is disconnected from the economics of plaintiff's own theories of alleged harm these shareholders purportedly suffered. It seems that once a settlement is reached, the "hydraulic pressure"[17] is relieved, and whether the settlement distribution process accurately allocates settlement funds among members of the class becomes an afterthought.

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typically very large) also partially reflects investors' anticipation of a lawsuit filing.

[14] *See* Griffin, Grundfest, and Perino (2000), page 7.

[15] Often the final class period is longer than the class period alleged in earlier lawsuits. In many cases, after a lawsuit has been filed, a subsequent negative announcement accompanied by a large drop in stock price leads to an amendment of the lawsuit extending the class period to include the period of the later price drop.

[16] Over 30% of our sample of lawsuit announcements had at least one prior lawsuit announcement.

[17] *See* Silver (2003), quoting *Newton v. Merrill Lynch et al*.

To illustrate this point, Section 3.1 analyzes the actual trading records of particular class members submitted as part of the claims process in a typical major securities class action settlement. We empirically demonstrate that investors who received the largest share of the settlement frequently traded the security at issue, indicating that they attempted to capitalize on temporary market pricing inefficiencies. That is, the data reviewed suggest that some of these class members did not assume that the stock at issue traded in an efficient market even though their class representative claimed class-wide reliance by invoking the FOTM presumption. If the case had been tried, the alleged reliance of such plaintiffs could be challenged by the defendants regarding the rebuttable presumption of reliance on the alleged misstatements and the claimants would likely be at risk for not receiving a share of the damages award. Yet, as the case settled before trial, these plaintiffs were not subject to such scrutiny and consequently garnered a share of the settlement to which they potentially were not entitled at the expense of other class members.

To further explain the point, in Section 3.2 we note that further distortions can arise because the method by which shares of the settlement are allocated bear little logical connection to the net harm alleged to have been suffered by the claimants. Using actual investor trading records from the same class action settlement claims process described in Section 3.1, we analyzed the POA for the settlement distribution to explore whether the settlement monies were actually distributed to those who suffered net harm from the alleged stock inflation. We find that certain class members sold shares during the class period at prices allegedly inflated by the claimed false statements and thus had inflation-based gains from selling. The POA, however, ignored these gains for the purposes of calculating each class member's share of the settlement. As a result, there was little relationship between the alleged victims' total net inflation-based damages from the alleged fraud and their share of the settlement distribution.

In particular, we document based on our replication of the POA: (1) that of the 50 claimants that would have had the largest share of the settlement under the POA (which are typically large institutional investors[18]), nine (or 18%) had net gains from the alleged stock inflation; and (2) that 15% of the total settlement amount was allocated to claimants with net gains. Importantly,

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[18] Our data does not provide the identity of the claimants.

this result is applicable to the wider universe of class action settlements as our review of the 50 POAs for the largest settlements in our sample (which include mega-settlements like WorldCom, Tyco, and Cendant, accounting for about 60% of aggregate settlement dollars across our sample of cases) revealed that not one of these applied proper netting of inflation-based gains.

Finally, Section 4 provides our conclusions.

Section 2: Announcements of the Filing of a Securities Fraud Class Action Destroy Billions in Shareholder Value.

News of a lawsuit filing may be viewed as a negative development by shareholders because a filing signals increased legal defense costs for the defendant firm which include the expected cost of settling the case,[19] defense attorneys' fees to litigate the matter until it is resolved,[20] potentially higher insurance premiums, and other significant non-damage costs such as "lost management time, and loss of reputation."[21] According to plaintiffs' attorneys, however, settlements convey a benefit to some shareholders, namely those who purchased the stock during the class period and, as class members, would be expected recipients of any future settlement. Such shareholders, in theory, could view news of a lawsuit as beneficial.

In this section, we empirically examine the merits of the claim that securities class action lawsuits (and the settlements extracted) represent a benefit to class members.[22] We do so by examining the average stock price reactions across a comprehensive sample of federal securities

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[19] Such a settlement entails deadweight costs such as fees that the plaintiff attorney collects and undisbursed sums, which the court can dispose of in a variety of ways based on its assessment of the undisbursed sum's "next best" use e.g., give the sum to charity, or to the state or federal government or add it to settlements that would be made to identified class members. *See* Forde (1996).

[20] Coffee (2006) stated "Less is known about the costs of defense counsel, but senior insurance industry experts have estimated that defense costs in securities litigation are often in the range of 25% to 35% of the settlement, and sometimes reach 50% or even 100% of the settlement." *See* Coffee (2006) citing Baker and Griffith (2007) at footnote 38.

[21] *See* Gande and Lewis (2009), page 830.

[22] For instance, Robbins, Geller, Rudman and Dowd LLP, who are considered "the most prominent securities class action attorneys in the country" advertises themselves to be "leaders in the battle against corporate securities fraud, recovering tens of billions of dollars to date for our individual investor and pension fund clients and the classes of investors they represent." *See* http://www.rgrdlaw.com/services-securities-fraud.html.

cases that were filed after December 1995 (i.e., post-PSLRA), and subsequently settled.[23] We consider the defendant firm's stock price reaction to lawsuit filing announcements as well as to news of settlements. As we demonstrate, the net impact of such announcements destroys hundreds of billions of dollars in wealth of shareholders on whose behalf the lawsuit is ostensibly filed. In other words, class actions actually compound the wealth loss of these alleged class member victims and that of innocent future shareholders even after the potential future settlement is considered.

2.1   Data

For our analysis, we first obtained data for 6,826 separate securities class action cases contained in the Securities Class Action Services (SCAS) database from December 22, 1995 (i.e., post-PSLRA) through January 2014. This data set included all securities class actions. We next identified all settled class action cases (i.e., we removed active or dismissed cases and those few cases that went to verdict) that involved allegations that the target companies' common stock was inflated due to securities fraud under Securities Exchange Act Section 10b-5 and Section 11.[24] We further restricted our sample to cases for which other relevant data to perform our analyses were available, including class period (start and end) dates, the settlement date and amounts, and relevant stock price data over the identified class period as well as sufficient prior data required to calculate abnormal returns following news of at least one lawsuit filing announcement.[25] We also supplemented the data from SCAS with a comprehensive search for news of the lawsuit's filing and/or announcement of pending settlement (and all subsequent such

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[23] It is important to note at the outset that while we employ standard statistical techniques such as event studies in our empirical analysis, that does not mean that we necessarily assume that all stocks included in our analyses traded at all times in an efficient market. Instead, our conclusions are based on average outcomes across a large sample of stocks and we are simply documenting the wealth effects of such announcements. In contrast, plaintiffs in securities class actions must demonstrate that the particular security at issue in that case traded throughout the alleged class period in a market that is considered semistrong form efficient. *See* Bajaj *et al.* (forthcoming).

[24] We also excluded analyst and "IPO Laddering" cases. This number is from NERA (2014), Figure 1.

[25] As we discuss in more detail later, we require price data to calculate among other things, the defendant firm's market capitalization (or market value of equity) at particular points in time, and the stock's abnormal (or market-adjusted returns) over particular periods, and to calculate various measures of potential investor loss (PIL). We obtained relevant price data from the University of Chicago's Center for Research in Security Prices (CRSP), which is a well-known historical U.S. database for stock (NASDAQ, AMEX, NYSE), indices, bond, and mutual fund securities, used by academic and corporate communities for financial, economic, and accounting research. *See* www.crsp.com.

announcements) by reviewing all relevant news archived by *Factiva*, a comprehensive news database.[26]

Applying these criteria, we ultimately identified a sample of 1,456 settled cases, which represents over $68 billion in settlement dollars. However, to analyze the effect of such lawsuits on shareholders who are likely to benefit from any settlement that class plaintiffs may eventually receive,[27] we further restricted our sample to those cases where the first news of a lawsuit filing was within 30 trading days after the class period ended. Applying these additional criteria we ultimately identified a sample of 717 settled cases (which we refer to as our "Analyzed Settlements"), which represents $42 billion in settlement dollars.

To the best of our knowledge, our empirical analysis related to shareholder wealth effects associated with securities lawsuits and settlements is based on the most current and comprehensive dataset of settlements of post-PSLRA securities fraud class actions.

2.2   Summary Statistics

Tables 1-5 describe summary statistics regarding our sample of Analyzed Settlements. Table 1 illustrates the speed with which cases filed in a particular year settled and shows that average settlements increase the longer it takes for a case to settle, as Klausner et al. (2013) and Bajaj et al. (2003) also found. For instance, of the 73 cases that were filed in 2004 and eventually settled by 2014, only seven had settled within a year (i.e., by 2005), for an average settlement of $19.7 million. In contrast, 19 of these 73 cases filed in 2005 settled in three years (in 2007) for an average amount more than twice as high ($45.6 million).

[INSERT TABLE 1]

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[26] We identified the earliest lawsuit filing announcement date (and all other news dates related to our analysis) through a search of relevant news in *Factiva,* a comprehensive news database provided by Dow Jones. *See* http://www.dowjones.com/factiva/. For such a date to be included in our empirical analysis, we required stock price data prior to the identified announcement date. Hence, for the purposes of our analysis, the first relevant news date is the date when the news was identified and relevant price data were also available. Subsequent news dates used in our analysis are identified in analogous manner.

[27] Of course to be a class member, a shareholder would have had to *buy* the stock during the alleged class period. Those shareholders who had only bought the stock before the start of the class period and still held such shares as of the date of lawsuit filing announcement would thus not be class members. However, to isolate this subset, we would require the actual trading records of all current shareholders in every case we considered. Such records are unavailable.

In Tables 2-4, the Analyzed Settlements are classified by the year (range) in which they settled.[28] Table 2 reports the number of Analyzed Settlements that belong to a particular year range and various alternative (average) measures of "potential investor losses" (PIL) related to such settled cases, which are defined as follows:[29]

1. *"Maximum Market Capitalization Drop"* (in $ million): The dollar value change in the defendant firm's market capitalization from the trading day with the highest market capitalization during the class period to the trading day immediately following the end of the class period. (Column C)

2. *"Cumulative Class Period Abnormal Return"* (%): Cumulative percentage change in the defendant firm's stock price over the class period, adjusted for changes in the market index and other explanatory variables considered in our four-factor pricing model.[30] (Column D)

3. *"Cumulative Abnormal Class Period Market Capitalization Drop"* ($ million): Loss of market capitalization over the class period adjusted for the concurrent change in the market index and other explanatory variables considered in the four-factor pricing model.[31] (Column E)

4. *"End of Class Period Abnormal Return"* (%): Last day of class period abnormal return, which is the abnormal return of a defendant company's stock on the last trading day in the class period and the first trading day following the respective class period. (Column F)

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[28] Each case's settlement date is identified by the SCAS database. In our sample of Analyzed Settlements the earliest such date was May 2, 1997 (and the first news related to this settlement also occurred on May 2, 1997 according to our *Factiva* search). The last settlement date identified by SCAS across our sample of Analyzed Settlements was May 12, 2014 (and news of this impending settlement was first announced on September 24, 2013).

[29] Such potential losses are not necessarily recoverable as damages but are rough measures of the size of investors' potential claims that may be relevant in settlement discussions. *See* NERA (2014).

[30] This cumulative abnormal return (CAR) is determined by first calculating the defendant firm's daily *abnormal* (logarithmic) stock return, summing up all such daily abnormal returns over the period under consideration, i.e., the entire class period in this analysis, and the converting the CAR back to arithmetic return terms. Each day's abnormal return is defined as the difference between the stock's actual and *expected* return on that day. The expected return is estimated by regressing the stock's daily return against the daily changes in four explanatory variables over a 252-trading day period starting 282 trading days prior to the alleged class period. The four explanatory variables used are those identified by the well-known Fama-French-Carhart four factor model, namely: (i) the return on a large portfolio representing the entire stock market; (ii) the difference of returns between small and large stocks; (iii) the difference of returns between stocks with high market value to book value of equity (MV/BV) ratios and stocks with low MV/BV ratios; and (iv) a "momentum factor" which represents the difference in returns between stocks with high past returns and stocks with low past returns. Next, given the estimated relationship between the stock's return and each of the four factors, and observed changes in these four factors, the stock's expected return on the day at issue can be calculated. *See* Fama and French (1993) and Carhart (1997) for a discussion about these factors' explanatory power.

[31] For each firm this figure is calculated as the sum over the class period of the stock's daily "abnormal" market capitalization change (i.e., that day's abnormal return times the company's market capitalization at the close of the previous trading day).

5. *"End of Class Period Abnormal Market Capitalization Drop"* ($ million): Last day of class period abnormal change in market capitalization, which is the abnormal change on the last trading day in the class period and the first trading day following the respective class period. (Column G)
6. *"Potential Damages Based on Proportional Trading Model"* ($ million): potential damages using a standard proportional trading model. (Column H)

[INSERT TABLE 2]

Across all Analyzed Settlements the average Maximum Market Capitalization Drop over the class period is $5.52 billion, but only about half as much (or $3.36 billion) after adjusting for market and other risk factors.

As our analysis examines the price reaction following lawsuit filing announcements and settlement announcements, Table 3 reports some average statistics related to the timing of such announcements. Table 3 reports the average class period length (614 days), and the average time between first news of a lawsuit filing and the reported settlement date (1,243 days).

[INSERT TABLE 3]

Table 4 reports average settlement amounts and various composite settlement ratios,[32] including: total settlement as a percentage of the defendant firms' aggregate (i) market capitalization at the end of their respective class periods (Column C); (ii) Average Class Period Market Capitalization (Column D); (iii) Maximum Market Capitalization Drop (Column E); (iv) Cumulative Abnormal Class Period Market Capitalization Drop (Column F); and (v) Cumulative Proportional Trading Model-based Potential Damages (Column G). Thus, across all Analyzed Settlements, on average, total settlements were 1.55% of the defendant firms' end-of-class period market capitalizations. Total settlements were 1.09% of the Total Class Period Maximum Market Capitalization Drop and 1.96% of the total potential damages using a proportional trading model.

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[32] To calculate a composite ratio both the numerator and denominator represent "total" values of variables, which are calculated by adding up the values of these variables for each of the cases. The numerator in every composite ratio shown in Table 4 is the "Total Settlement Amount" for the corresponding settlement year range (i.e., the sum of the settlement amount for each Analyzed Settlement in a particular range).

[INSERT TABLE 4]

Table 5A reports similar settlement ratios but calculated across different sub-sets of Analyzed Settlements. Instead of sorting such cases by time range intervals as in Table 4, in Table 5A, they are sorted by a particular commonly-used PIL measure, Maximum Market Capitalization Drop.[33] Table 5A shows that as PIL increases:

1. *The average settlement increases* (Column B), e.g., from $3.6 million across the 122 cases with PIL less than $200 million to $234 million across the 133 cases with PILs over $4 billion. The average settlement across all Analyzed Settlements is $54.4 million.

2. *The settlement ratio (as a percentage of PIL) declines* (Column C), e.g., from 3.68% for cases with PIL less than $200 million to 0.96% for cases with PILs over $4 billion.[34] These findings are consistent with those of Klausner et al. (2013) and Bajaj et al. (2003), and likely due to the fact that cases against larger companies result in larger settlements (in dollar terms) but smaller in percentage of PIL terms.

[INSERT TABLE 5A]

Table 5B reports similar settlement ratios but instead of sorting by Maximum Market Capitalization Drop, they are sorted by another PIL measure, Total Potential Losses (or Damages) using a proportional trading model. This table shows patterns similar to that of Table 5A. The average settlement increases (Column B), e.g., from $8.1 million across the 92 cases with trading model-based potential damages less than $50 million to $199 million across the 168 cases with trading model-based potential damages over $1.5 billion. The settlement ratio (as a percentage of trading model-based potential damages) declines (Column C), e.g., from 46.08% for cases less than $50 million to 1.78% for cases over $1.5 billion.

[INSERT TABLE 5B]

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[33] *See* Cornerstone (2014).

[34] The other ratios shown in Table 5A also display a similar monotonicity in general, i.e., decreasing as the PIL (defined as Maximum Market Capitalization Drop) increases. *See* Column D and E.

2.3   *Wealth Effects of Lawsuit Filing and Settlement Announcements on Defendant Firm*
        Shareholders

Table 6 reports the average cumulative abnormal return (CAR)[35] following lawsuit filings (rows 1 to 4), settlement announcements (rows 5 through 8), and the combination of all filing and settlement news dates (rows 9 and 10).[36] Before discussing the results in more detail, we note that our CAR analysis excludes any price reaction to any filing announcement within the class period.[37,38] We do so because price reactions within the class period may arguably be due to two effects that cannot readily be disentangled: (i) disclosure of alleged fraud rather than disclosure of the lawsuit filing; and also (ii) the anticipation of a lawsuit (and the concomitant increase in legal defense costs to the firm) given the firm's release of some bad news (such as a restatement) that typically is identified as a curative disclosure of alleged fraud (and the basis for claiming damages) in a securities class action.[39,40]

[INSERT TABLE 6]

Table 6 shows the following:

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[35] CAR is calculated using a 2-day "window" ("t=0 to t=1"), i.e., it includes identified news date (of a lawsuit filing or settlement) and the following date. An identified news date is one for which news was identified in *Factiva* and the relevant price data to calculate CAR were available.

[36] There may be multiple lawsuits filed against the same company related to the same allegations. In such cases, we calculate the daily abnormal return over the defined window for the (1) first, (2) second (3) third and subsequent filing announcement dates (combined); and (4) all such filing announcement dates combined. When multiple dates are considered jointly, we add these daily abnormal returns, not counting the same day more than once (even though the CAR windows around two announcements may overlap), and excluding any days that lie with a firm's class period, as reported in the complaint obtained from SCAS. This yields the CAR for all announcements of lawsuits related to the same allegations (or case) against the firm at issue. The average CAR reported in Table 6 is then calculated as the simple average of all such firm-specific CARs.

[37] Securities class action lawsuit filing announcements are often followed by subsequent lawsuits that allege a longer class period, especially if there is additional bad news and the company's stock price is observed to have further declined.

[38] We define the end of the class period to be the end of the class period as reported in the SCAS database *plus one trading day*. This is because the negative news that may coincide with the end of the class period may have been announced after trading hours and we wanted to exclude the effect of this news from our analysis.

[39] *See* Gande and Lewis (2009).

[40] The end of the class period is typically picked by the plaintiffs' attorneys with the benefit of hindsight, i.e.*,* after a large price decline in the company stock price was observed. The complaint typically alleges that such a price drop (and any prior decline) was caused by corrective disclosure (or multiple disclosures) about some alleged prior misstatement, regardless of the merits of such a claim.

First, row 1 shows that when all lawsuit filing announcement dates' effects are considered jointly (excluding overlapping days and, as noted earlier, days within the class period), the combined effect is significantly negative (-4.44% and statistically significant at the 99% level[41]). This result indicates that news of lawsuits has an unambiguously negative effect on defendant firms' stock prices on a market-adjusted basis.

Rows 2 through 4 show similar results when we focus separately on the wealth effects of only the first filing, or of the second or of the third and all subsequent filings, respectively. The first lawsuit filing announcement has a significantly negative price reaction of -2.95% which is also statistically significant at the 99% level. Notably, even after such news was released, subsequent news about litigation related to the same allegations also had a significantly negative price reaction (e.g., -2.00% in row 4).

In short, we find that news of lawsuit filings destroys 4.4% of stockholder value, even though we exclude any price decline in anticipation of a lawsuit that occurs before the end of the class period.[42] Notably, because our sample is restricted to lawsuit announcements within 30 trading days after the end of the class period, we evaluate the effect of the announcements on those shareholders who are likely to benefit from any settlement that class plaintiffs may eventually receive.

Second, as shown in rows 5-8 of Table 6, defendant firms' stock prices increase on a market-adjusted basis following settlement news. While the price reaction is statistically significant on the first news of settlement (row 6), the reaction is statistically insignificant after the first announcement of settlement (rows 7-8).

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[41] The observed CARs are statistically significant at the 99% confidence level, i.e., the odds that the result can be due to chance alone is less than 1%.

[42] As noted earlier, Gande and Lewis (2009) find that such class actions are often anticipated by investors, resulting in a price decline even before the lawsuit filing date. This "partial anticipation effect" is greater the more likely the firm is to be sued and concomitantly the smaller is the price effect on the actual filing date. As these authors also note, "[i]nvestors file federal securities class action lawsuits following the disclosure of a material misstatement or omission of fact. Since these disclosures are invariably bad news, stock prices are expected to decline. There are two components to this expected loss: i) a response to the incremental information contained in the announcement that triggers the lawsuit, and ii) the deadweight loss associated with the damage awards that are likely to be paid to impaired shareholders. …[I]t is difficult to decompose the stock price reaction into its separate components." As noted above, to avoid co-mingling these effects we, like Ferris and Pritchard (2001), exclude the abnormal return during a class period in calculating CARs related to lawsuit filings.

These results indicate that the first news of settlement positively impacts a defendant firm's stock prices. One might have thought that news of a settlement would result in a negative impact on stock price because the decision by a settling company to pay corporate resources to settle the lawsuit would make the company's equity less valuable, not more. Of course, the market may have anticipated that the company will settle and the actual settlement may be more or less than anticipated. Failure of the lawsuit and avoidance of payment of settlement by the company, or payment of lower settlement than anticipated should result in a positive effect on stock price and a larger than anticipated settlement should have a negative effect on the stock price. On average, unless we believe that investors have systematically under-predicted settlement for hundreds of cases settled during our sample period of 18 years, the observed positive price reaction to settlement news is consistent with investors being relieved that such settlement will end costly litigation and reduce "litigation overhang." As explained in Section 2.4 below, this overhang comes from direct costs of litigation including not only out-of-pocket costs of defending against lawsuits but also indirect costs such as curtailment of corporate investments.

It is worth noting that the average positive price effect of all settlement news (Table 6, row 5) is much smaller in magnitude compared to the negative impact of news of all lawsuit filings documented in Table 6, row 1.

Finally, when both news of lawsuit filings and settlements are considered jointly, the results are unambiguous (Table 6, rows 9 and 10). News of a settlement does not recover the wealth loss shareholders experience upon news of a lawsuit filing. The net reaction is significantly negative, ranging from -3.99% for all observations with at least one settlement announcement (496) to -2.19% for all observations with at least one filing announcement and at least one settlement announcement (309).[43]

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[43] As defendant firms may merge with other firms after news of a lawsuit filing was announced, stock price data for such firms may not be available on settlement announcement dates even though such price data were available on lawsuit filing dates. Therefore, to analyze the average combined effect of lawsuit filing and settlement news on a firm's stock price across our sample for the figures shown in row 9, for each firm we included CARs related to all lawsuit filing dates (which mean that we included at one such lawsuit filing date, when only one was available) and CARs on settlement announcement dates wherever available.

To analyze the average combined effect of lawsuit filing and settlement news on a firm's stock price across our sample for the figures shown in row 10, for each firm we included CARs related to all lawsuit filing dates (which mean that we included at one such lawsuit filing date, when only one was available) but also ensured that for this firm's CARs to be included in the calculation of the average number shown in the Table 6 (row 10) it also had at

Overall, these results show that even though news of a settlement subsequently has a small positive impact on defendant firm's stock price, the net result of the news of a lawsuit filing is unambiguously negative, destroying more than 4% of shareholders' wealth, even without consideration of the price decline in anticipation of a lawsuit that occurs before the end of the class period.

2.4   Aggregate Wealth Loss

Since December 1995 (post-PSLRA), 3,913 securities fraud class actions were filed in federal courts through 2013.[44] We separately calculate the wealth loss for the cases that settled (1,456) and cases that did not settle (2,457 = 1,236 dismissed + 1,221 pending). [45]

For the cases that settled, we demonstrate in Table 6 that the wealth loss for shareholders was 4.44% on announcement of securities class action lawsuits.[46] This average wealth loss of 4.44%, when applied to the available end of class period market capitalization, amounts to shareholder wealth loss of $262 billion for the cases that settled.[47]

Because we do not have the relevant information for all the 2,457 not-settled cases, we collected a sample of securities class action cases filed between 1996 and 1999 (inclusive). Using this sample, we conducted an event study of shareholder class action lawsuit announcements in a manner identical to those reported in Table 6. The event study shows that the wealth loss for shareholders in settled cases was 4.09% and for shareholders in not-settled cases, the wealth loss was 1.58%. In other words, the effect of lawsuit announcements on non-

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least one CAR on settlement announcement date. As this selection criterion is stricter, the average CAR across all firms shown in row 10 is based on fewer cases than in row 9.

[44] *See* NERA (2014), Figure 1. As discussed in note 24 above, we excluded analyst and IPO laddering cases from this number.

[45] For years 2000 through 2013, we use NERA (2014), Figures 1 and 25 to obtain the cases dismissed or pending. We combine this data with number of dismissed cases for years 1996 to 1999 in our sample to obtain total dismissed cases for years 1996 through 2013.

[46] As noted above, we considered only those announcements that occurred within 30 trading days following the end of the class period.

[47] We have the end of class period market capitalization information for 969 of the 1,456 settled cases. The average market capitalization for these 969 cases was $4.06 billion. We use this average for all settled cases to determine the total shareholder wealth loss for the group.

settled cases was 39% of the effect lawsuit announcements on settled cases.[48] But the average market capitalization for not-settled cases in this sample was $4.55 billion whereas the average market capitalization was $1.77 billion for settled cases. Using this average wealth loss of 1.58% and average market capitalization of $4.55 billion observed in our sample, we calculate the aggregate wealth loss for all 2,457 non-settled cases to be $439 billion, which amounts to about $179 million per case ($439 billion/2,457 cases), similar to the average per case loss of $180 million for our settlement sample ($262 billion/1,456 cases).

Combining these two results, we calculate the total shareholder wealth loss to be $701 billion (=$262 billion + $439 billion) for all 3,913 cases. In contrast, the so far received and expected future settlement amount to be received by plaintiffs in post-PSLRA cases is $109 billion.[49] This averages to at least $39 billion lost per year, in order to collect an average of $6 billion in settlements per year. Shareholders' net wealth loss is thus more than <u>six times</u> the gain from settlements.

It is worth noting that the $109 billion settlement number is inclusive of plaintiffs' attorneys' fees and does not represent the amounts actually distributed to plaintiffs. The SCAS database shows that for the settled cases, plaintiffs' attorney's fees were 18% of total settlement.[50] Of the $109 billion, the amount distributed to shareholders was less than $90 billion ($109 billion minus 18% is $89.4 billion). Thus, announcement of these lawsuits destroys shareholders' wealth that is more than 7.5 times their recovery after attorneys' fees are subtracted ($701 billion/$89.4 billion equals 7.8).

This $701 billion estimate of net shareholder wealth loss is likely a substantial understatement because it does not account for any negative share price effect prior to the actual

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[48] 39% = 1.58% / 4.09%.

[49] The expected settlement amount consists of two parts: (1) actual $68 billion from the 1,456 cases that settled (with an average settlement amount of $46.8 million); and (2) expected $41 billion from the cases that are still pending. The dismissed cases, of course, do not add to the settlement total. Based on our analysis of cases filed between 1996 and 1999, we expect 72% (or 881) of the 1,221 cases still pending to settle. The $41 billion is based on the assumption that the average settlement amount for the 881 cases is also $46.8 million, the average settlement amount for the 1,456 settled cases.

[50] 18% = Total attorneys' fees ($11.7 billion) / Total settlement ($65 billion). The total settlement amount considered here is smaller than the $68 billion used earlier because the fee information is available for 1,411 cases and not all 1,456 cases.

lawsuit announcement that may have been anticipated. Gande and Lewis (2009) note that a focus on price reactions on lawsuit filing dates understates the magnitude of shareholder losses because securities class actions are anticipated by investors following large price drops.[51] Griffin, Grundfest, and Perino (2000) similarly state that while "several studies document that the stock market reacts swiftly and negatively to a corrective disclosure that leads to securities class action litigation", this result is "generally unsurprising and most likely overstate[s] the stock price response to a corrective disclosure because [it] reflect[s] the impact of a self-selected set of negative news events based on knowledge that the firm would later be sued in a securities class action."[52] Griffin, Grundfest, and Perino (2000) further note that "given the legal rules of damage recovery, it would be irrational for a plaintiff to file a class action complaint against these firms absent a significant price decline that supports a claim for damages."[53] Furthermore, because we did not select any announcement until at least one trading day after the final class period has ended results in our ignoring earlier announcement of such lawsuits, i.e., we often pick stale news. Often the final class period is longer than initial class period alleged in earlier lawsuits. In many cases, after shareholder class action lawsuits have been filed, a subsequent negative announcement accompanied by a large drop in stock price leads to amended lawsuits to cover a longer class period to include the period of a later price drop. In our sample of announcements in Table 6, in over 30% of the cases, there had been at least one earlier announcement of a shareholder class action with same or similar allegations. This is another reason why our measurement of shareholder wealth loss is understated and the full measure of the shareholder wealth destruction by such lawsuits is likely to be substantially larger.

Moreover, our $701 billion net shareholder value destruction figure also does not account for a host of other likely substantial adverse effects of securities litigation on shareholders and the wider U.S. economy. First, given the frequency with which U.S. firms are sued, all U.S. firms must buy costly Directors and Officers (D&O) insurance coverage.[54] Additionally, the

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[51] Ferris and Prichard (2001) also note that the negative price reaction at the end of the class period (which is typically very large) also partially reflects investors' anticipation of a lawsuit filing.

[52] *See* Griffin, Grundfest, and Perino (2000), page 7 (underline added).

[53] *See* Griffin, Grundfest, and Perino (2000), page 7.

[54] Virtually every public company in the U.S. purchases D&O insurance, which costs six times more for a Fortune 500 company in the United States than in Europe. *See* Committee on Capital Markets Regulation, (2006), page 78.

premiums for such insurance may often increase after a lawsuit is filed. Yet, such securities class actions have little deterrence effect.[55] Corporate officers such as the chief executive officer are almost always named as defendants,[56] but rarely pay for the settlement.[57] In fact, the presence of insurance actually increases the odds of getting sued as the settlement depends on such insurance coverage.[58]

Second, the risk of litigation hampers innovation. Research and development that can result in tremendous benefits to society at large (such as the development of a life-saving drug) costs billions and fails most of the time.[59] When such bad news is released, the company's stock price falls, often leading to a class action alleging the price drop was "caused" by the curative disclosure of some earlier misstatement or omission — a claim whose merits are unlikely to ever be evaluated at trial.[60] The costs of defending and settling meritless securities class actions leave less available for investment in research and development and tends to repress innovation directly. This innovation reduction effect is also consistent with corporate finance theory. The required rate of return on corporate investments (hurdle rate) depends on the stock price, according to Fischer and Merton (1984).[61] The hurdle rate increases as the company's stock price drops (for instance, in anticipation of a lawsuit, or given the expected ongoing legal defense costs that a firm facing such litigation is expected to bear) as shareholders demand a

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[55] *See* Coffee (2006), page 1537 and Alexander (1996), 1487-1537.

[56] According to a PricewaterhouseCoopers study, CEOs were named as codefendants in 95%-98% of all U.S. securities class actions in 2002-2004. *See* Coffee (2006), Table 4.

[57] According to a study cited by Coffee (2006), insiders pay only 0.4% on average whereas insurance companies and the defendant firms pay 68% and 31% of the settlement, respectively. *See* Coffee (2006), page 1550.

[58] As Coffee (2006) notes, "The reality is that corporate insiders are sued in order for the plaintiffs to gain access to their insurance, but their personal liability appears not to be seriously pursued." *See also* Baker & Griffith (2009), pages 755, 786, 804-805.

[59] For instance, 95% of experimental medicines that are studied in humans fail to be both effective and safe. In part because so many drugs fail, large pharmaceutical companies work on dozens of drug projects at once and spend $5 billion per new medicine. *See* Herper (2013).

[60] On average (from 2000-2012), 8.9% of all health care firms in the S&P 500 were sued in a year. Larger health care firms were more likely targets. Health care firms that belonged to the S&P 500 and were sued contributed 15.9% on average to the market capitalization of all health care firms in the S&P 500. *See* Stanford Clearinghouse & Cornerstone (2014), pages 20-21.

[61] *See* Fischer and Merton (1984), page 27.

higher rate of return on their investment. An increase in hurdle rate inhibits corporate investments and in turn reduces job creation.[62]

Third, such litigation inhibits voluntary disclosures by firms rather than enhancing openness and transparency.[63] Rogers and Van Buskirk (2007) empirically document that after being named in disclosure-related litigation, firms reduce the amount of information they voluntarily provide to investors[64] because managers "emerge from the litigation process…believing that plaintiff attorneys will use such disclosures to accuse managers of misconduct, even when the disclosures were made in good faith."[65] Thus the effect of such lawsuits may make U.S. capital markets less efficient rather than more efficient.

Finally, it is widely perceived that the legal system in the U.S. imposes greater costs on businesses than the legal systems of other major capital markets. Senior executives from nine of ten foreign companies that delisted from the United States between 2003 and 2007 cited litigation risk as a factor.[66] Indeed, foreign firms that do choose to list on U.S. public exchanges have faced a growing number of securities class actions in recent years.[67,68]

Overall we conclude that the net adverse economic impact of securities class actions is much larger than the settlements they produce. The cost to the company from such lawsuits, including the cost of a potential future settlement reduces the price of the

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[62] *See* Fischer and Merton (1984) and Thakor (2005).

[63] *See* e.g., 15 U.S.C. § 78m (requiring certain disclosures by securities issuers).

[64] Firms do so by cutting the number of conference calls hosted, issuing earnings forecasts for shorter horizons and forecast that are "less likely to be quantitative. When quantitative forecasts are issued, these forecasts are less precise (i.e., wider range estimates)." *See* Rogers and Van Buskirk (2007).

[65] Similarly, Bratton and Wachter (2011), page 114, note that because "plaintiffs' lawyers can base accusations of misconduct on managemen's own voluntary disclosures," "it is better to say less to avoid another lawsuit."

[66] *See* Financial Services Forum (2007).

[67] Securities class actions against foreign firms have averaged 41 cases annually over the 2011-2013 period compared to the historical average of 18 cases per year from 1997-2010. *See* Cornerstone Research (2014), page 18.

[68] Further, "[T] he attractiveness of a stock market to Global IPOs represents a good indicator of the competitiveness and efficiency of that equity market in general" according to Zingales (2007). By this indicator there is clear evidence that the U.S. capital markets are losing their shine, in part due to the severe threat of litigation. U.S. exchanges' share of such global IPOs as of the fourth quarter of 2013 was at its lowest level since 2008. As of the fourth quarter of 2013, the US share of global IPOs by foreign companies was 7%. This is a substantial decline from the 11.4% recorded in 2012, and also remains far below the historical average of 26.8%. *See* Committee on Capital Markets Regulations (2014).

company stock and such costs are borne largely by shareholders at the end of the class period when these lawsuits are filed. Thus, these lawsuits inflict incremental economic harm to the same shareholders on whose behalf such lawsuits are filed.

> **Section 3: The Securities Class Action Settlement Distribution Process Is Disconnected from the Economic Theories on which Plaintiffs Base their Reliance Presumption and Damage Claims**

While our empirical analysis above focused on the initial stage of securities class actions, namely the stock price impact on the lawsuit filing date(s), in this Section we analyze the final stages of class action securities cases--the distribution of settlement proceeds. We show that even when allegedly affected shareholders do finally have the opportunity to recover some portion of their purported losses (which is almost always through settlement as trials rarely occur), the distribution of the settlement dollars back to allegedly affected shareholders bears little relationship to the economic theory behind the presumption of reliance used to certify the class and is disconnected from the economics of plaintiff's own theories of alleged harm these shareholders purportedly suffered. It seems that once a settlement is reached, whether the settlement distribution process accurately allocates settlement funds among members of the class becomes an afterthought. Hence, not only do securities class action lawsuits cause substantial destruction of shareholder value that is incremental to any class period losses suffered by alleged victims (as our large-sample empirical results presented above demonstrate), but once shareholders do recover through settlement, the actual process of distribution is disconnected from the rationale behind the cases.

3.1   The Distribution of Securities Class Action Settlements Is Disconnected from the Economic Theories on which Plaintiffs Base the Reliance Presumption to Certify the Class

The U.S. Supreme Court's 1988 decision in *Basic Inc. v. Levinson* endorsed the FOTM theory, which permits securities fraud plaintiffs to invoke a rebuttable presumption of reliance[69] on public, material misrepresentations regarding securities traded in an efficient market.[70] This presumption relieves plaintiffs from having to demonstrate individual reliance on (or even

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[69] In a securities class action under §10(b) of the Securities Exchange Act of 1934 and Securities Rule 10b–5 thereunder, plaintiffs must prove, among other things, reliance on a material misrepresentation or omission made by the defendant, in order to claim damages. *See* e.g.*, Amgen* (2013).

[70] *See Basic* (1988), 241-249.

awareness of) any alleged misstatements in order to claim damages resulting from the alleged fraud. Recent U.S. Supreme Court opinions in *Amgen Inc. v. Connecticut Retirement Plans and Trust Funds* and the pending of *Halliburton* case have brought *Basic*'s central FOTM premise to the fore.[71]

In order to invoke the presumption of reliance and therefore certification of the proposed class, plaintiffs are only required to show that the stock traded in a semi-strong efficient market during the class period. Individual questions about whether or not some class members relied on market efficiency are generally not examined until after certification is granted. Of course, the granting of class certification, or even its expectation, creates tremendous pressure for defendants to settle, and such cases are almost always settled before the class members' identities and trading records are known.

After a case has settled, defendants have no ability to examine whether the presumption of reliance by some of the proposed class members could have been rebutted because the amount paid to settle is unaffected by how the funds are distributed among the class members. Thus class members are allowed to collect a share of the settlement even when their actual trading behavior is at odds with any presumption of reliance.

In facilitating class certification through the presumption of reliance, *Basic* seemed to envision a class consisting almost entirely of passive buy-and-hold investors who trade infrequently and do not expect to outperform the market.[72] Indeed, *Basic* noted that "it is hard to imagine that there is ever a buyer or seller who does not rely on market integrity".[73] As posited by modern financial theory, the prototypical investor that believes in market efficiency of the kind envisioned in *Basic* should invest in a diversified portfolio and only has two reasons to trade: (1) net investment or divestment for consumption purposes; and (2) rebalancing of the diversified portfolio between asset classes. Such trading would by definition be infrequent and account for only a small fraction of the total volume observed.

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[71] *See* e.g., Langevoort (2013).

[72] *See also Amgen*, noting that the FOTM presumption rests on the premise that "most investors … know [] that they have little hope of outperforming the market in the long run based solely on their analysis of publicly available information."

[73] *See Basic*, at 246-7.

Notably, in class actions involving stock inflation, most passive investors who are class members typically would have minimal damages as they would have held most of their shares of the stock prior to the class period and bought little during the class period (and hence bought few shares at allegedly inflated prices). But a more frequent (or "active") trader who might try to "beat the market" such as a sophisticated institutional investor who might apply a proprietary trading model[74] or who might trade using a volatility-based rather than a price-based strategy, would likely have a much higher share of the total damages.[75] Such active traders, however, are the precise group not likely to have relied on either the integrity of the market price or on the allegedly false statement but nevertheless may collect the largest share of the settlement.[76] If so, this would introduce significant distortion into the settlement process as such investors would garner a share of the fixed settlement amount to which they potentially were not entitled at the expense of other class members.

To illustrate whether actual trading behavior in a settled case might bear out this logic, we analyzed actual trading data for over 130,000 separate claimants in a typical $100-plus million class action settlement where billions of shareholder wealth loss was alleged to have been caused by the revelation of a fraudulent scheme to hide the company's poor financial performance (Case Study).[77] For our analysis, we first identified the 50 claimants with the largest claim amounts (implying the largest pro-rata dollar shares of the total settlement) according to our replication of the case's Plan of Allocation (POA).[78] POAs are a key part of the settlement distribution process

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[74] *See* e.g., the discussion of class Opt-Out plaintiff GAMCO in *Vivendi S.A.* (2014) at page 6 noting that discovery of GAMCO's internal documents revealed that GAMCO believed its own private valuation of Vivendi's stock was a more "reliable measure of a company's value than public market capitalization, which 'can be irrational and sentimental, thereby providing value-based investors an opportunity to make a profit.'"

[75] Some traders, such as "high-frequency traders", might trade hundreds or thousands of times in one day. *See* Jones (2013).

[76] As *Basic* at 248 noted, "Any showing that severs the link between the alleged misrepresentation and either the price received (or paid) by the plaintiff, or his decision to trade at a fair market price, will be sufficient to rebut the presumption."

[77] The underlying data are confidential and were obtained by the authors as part of a separate consulting project unrelated to this whitepaper. The specific details of the actual case are obscured to preserve anonymity. However, in our opinion, this case is not unusual in how it played out and the parties involved (including their trading strategies).

[78] The POA stipulated that each recognized claim amount was to be calculated based on the date of purchase and sale (after applying a trade matching algorithm, which in this case was First-In-First-Out or "FIFO") and whether such sales resulted in out-of-pocket losses or gains bounded at the bottom by certain loss amounts tied to the alleged disclosures.
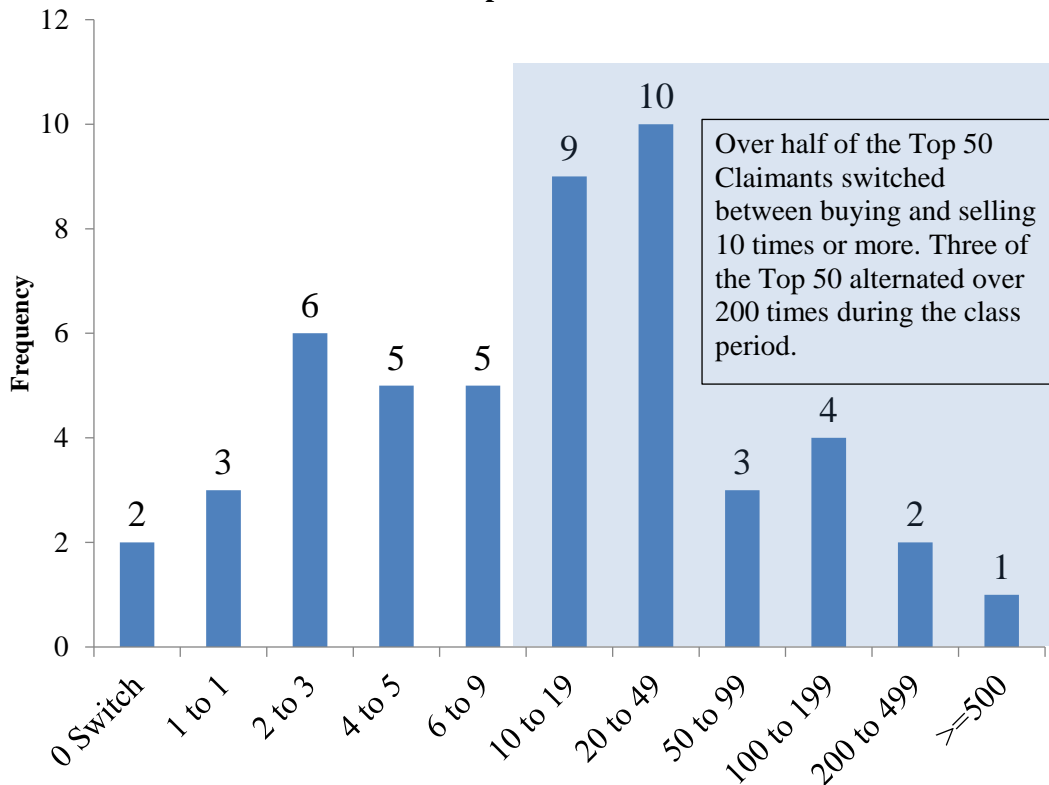
and specify an overarching set of rules according to which each class member's share of the settlement is to be calculated.

Based on our analysis of the POA, we estimate that these 50 claimants would have been allocated about 30% of the total settlement.[79] Next, we counted, over the purported class period, the number of times each claimant switched from buying shares to selling shares. Frequent switching from buying to selling and back to buying could indicate speculative intent in an attempt to profit from perceived market pricing inefficiencies.[80] Figure 1 below shows the frequency distribution of the number of times the Top 50 claimants switched between buying and selling over the class period.

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[79] As is typical for securities class action POAs, the claim amount is used to determine the claimants' pro rata dollar share of total settlement amount. For example, if a particular claimant's claim amount under the POA was $100, the total of claim amounts across all claimants was $2,000, but the final settlement was $500, then this claimant would get a pro rata share ($100 / $2,000) of the $500 or $25.

[80] *See* e.g. Francis, 2009, at 3050 noting "A strong argument for the buy-and-hold strategy is the efficient market hypothesis, which presumes that stock prices already reflect all available information. Active short-term investment strategies, on the other hand, such as "market timing," involve making buy-or-sell decisions of securities by attempting to predict future market price movements. Whether market timing is ever a viable investment strategy is controversial, since the efficient market hypothesis suggests that share prices already reflect all relevant information, and prices often exhibit "random walk" behavior that cannot be predicted with consistency."

Figure 1: Distribution of Alternating Buy and Sell Pattern for Top 50 Claimants

Each blue bar represents the frequency count for ranges shown on the horizontal axis; those ranges count the number of times the claimant alternated between buying and selling over the class period. For example, the blue bar showing a value of 9 for the "10 to 19" category means that nine of the Top 50 claimants switched from buying to selling between 10 and 19 times over the class period. Notably, Figure 1 shows that two of the Top 50 switched from buying to selling between 200 and 499 times and one of the Top 50 switched over 500 times. This type of active trading behavior could indicate complex trading strategies that may have little to do with the integrity of the market price.[81]

While these are only examples of the largest settlement claimants[82] from one case study, numerous other examples of similar trading patterns are not difficult to find among the 130,000

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[81] *See* Tetlock (2007) noting that "liquidity is a proxy for non-informational or noise trading, which can impede market efficiency."

[82] According to our replication of the POA, as noted above.

plus claimants in this case. The evidence Vivendi, S.A., a defendant in a rare securities case where a verdict was rendered (when defendant has, at least in principle, the right to challenge the presumption of reliance through discovery), provided in its *amicus* brief filed in *Halliburton* in support of petitioners, suggests that such examples are not uncommon across other cases.[83]

While more detailed analysis and discovery would be needed to further determine whether the class action claimants in our case study relied on the integrity of the market price in the manner contemplated by *Basic*, our primary point here is that class action settlements proceed on the presumption of reliance but then distribute large shares of the settlement to class members (typically large institutions) without any analysis of whether that presumption was a reasonable one. Yet, those plaintiffs for whom the presumption of reliance may have been unjustified garner a share of the settlement (because the validity of the presumption is not analyzed post-settlement). Because the settlement fund is a fixed amount, these allocations would reduce the share available for buy-and-hold investors and other less sophisticated investors that may have unambiguously relied on the market price and the alleged misrepresentations.

3.2   Because They Do Not Properly Allow for Full Netting of a Claimant's Gains and Losses from the Alleged Fraud, POAs for Securities Class Action Settlements Allocate a Large Share of Settlements to Investors Who, by the Logic of Plaintiffs' Own Allegations, Suffered No Net Harm from the Alleged Fraud

According to extant research, courts have entertained various damage theories offered by plaintiffs.[84] In some cases, courts have viewed damages simply as fair compensation to plaintiffs which should not include any windfall gain that certain plaintiffs could have obtained from selling securities at allegedly artificially inflated prices. Other courts have disallowed such "netting" of fraud-related gains and losses. Accordingly, once a settlement is reached, the issue of "netting" plays a significant economic role.

For example, if a class member held 1,000 shares prior to the class period (and therefore before the stock price allegedly was artificially inflated[85]) and then sold these shares during the

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[83] *See* Vivendi S.A. (2014), pages 6-8.

[84] *See,* e.g., Francis (2009).

[85] Artificial stock inflation in the context of securities litigation can be understood to simply mean that the stock was trading at a price higher than it would have absent the alleged misrepresentations or omissions. *See* e.g., Cornell and Morgan, page 897. Damages arise when a shareholder purchases a share of the stock at an artificially inflated price

class period when the stock was allegedly inflated by $1.00, this shareholder would, as a matter of economic logic, have benefitted from the alleged fraud by $1,000. If this class member then bought 500 shares the day after he sold the 1,000 shares, when the stock was still allegedly inflated by $1.00, and held those shares until the end of the class period after the allegedly inflation had dissipated, he would have been harmed $500 by the alleged fraud on this particular transaction. However, his <u>net</u> harm across <u>all</u> of his transaction would be negative $500, i.e., he was a net beneficiary of the fraud.

According to the logic of most securities litigation settlement POAs,[86] which ignore the netting of such gains from the sale of pre-class period holdings at artificially-inflated prices,[87] this claimant would get a pro-rata share of the settlement based only on his $500 harm generated by his second transaction—his $1,000 benefit would be disregarded.[88] Indeed, we reviewed the common stock portions of the POAs for the Top 50 cases (in terms of settlement size in our sample of 1,456 settlements which, in dollar terms, covers about 60% of the aggregate $68 billion in our sample) and not one implemented the full inflation-based netting of gains from the sale of pre-class period holdings in the manner described above in our hypothetical example (a manner which we define hereafter as "full inflation-based netting").

In some cases, these POAs ignore the issue of netting completely, and in others permit some sort of netting but only of investor <u>losses</u> rather than inflation-based damages, which of course may have dramatically different implications about each class member's relative size of the

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and then sells that share at a lower level of inflation (i.e., after a corrective disclosure) or holds the share until all inflation has been dissipated (typically at the end of the alleged class period). By the same token, as a matter of economic logic, a shareholder could also be a beneficiary of the artificial inflation if that shareholder sells a share at a higher level of inflation than the level prevailing when the share was purchased. For example, if the shareholder bought only one share which was prior to the class period when there was no alleged inflation and then sold that share during the alleged inflationary period, that shareholder would have earned an economic gain from the alleged fraud.

[86] Settlement POAs, as noted above, provide an overarching set of rules by which each claimant's share of the settlement fund is to be calculated.

[87] *See,* e.g., the recent 2013 POA for *In Re Diamond Foods, Inc., Securities Litigation,* Case No.: 1 1-cv-05386-WHA, which states that "Class Period sales will be first matched with any pre-Class Period holdings and then matched with purchases during the Class Period in chronological order ("FIFO Matching"). Sales matched to pre-Class Period purchases shall have no loss or gain for the purpose of calculating Recognized Loss."

[88] Many such calculations use either FIFO or LIFO ("Last-In-First-Out") to match purchases and sales. We note that our recommended approach, which nets inflationary gains and losses across <u>all</u> transactions, does not depend on the choice of such an algorithm.

settlement pie. To see this difference, consider a plaintiff who had no shares prior to the class period and during the class period buys one share of the allegedly inflated stock at $100 and then sells it for $10, incurring an investment loss of $90. Assume further that the alleged artificial inflation associated with the stock was only $1 at the time of purchase and remained unchanged by the time the stock was sold. The plaintiff's inflation-based damages would be zero and hence there would be a dramatic difference between out of pocket losses and inflation-based damages tied to the allegation of artificial inflation. This difference is well-understood, even by plaintiffs' experts retained to assist in the design of POAs.[89] Finally, in some cases, the POA permits netting of common stock damages over some sub-intervals, but requires netting of common stock losses over other sub-intervals, with additional *ad hoc* criteria that again distorts the distribution of the settlement across class members who file claims.

Because these POAs ignore inflation-based netting of sales of pre-class period holdings, class members who bought some stock during the class period but who incurred no net economic harm (i.e., had net gains from the alleged artificial stock inflation) can garner a lion's share of the settlement at the expense of other class members. We next illustrate this distortionary effect using the actual claims data from the Case Study outlined above which, as noted, uses actual claimant trading data for all claimants (numbering over 130,000) in a typical $100-plus million class action settlement.

For our analysis, we first estimated each claimant's "recognized claim" amount according to the POA used in that case to determine each claimant's pro-rata share of the settlement fund. The POA stipulated that each recognized claim amount was to be calculated based on the date of purchase and sale (after applying a trade matching algorithm, which in this case was First-In-First-Out or FIFO[90]) and whether such sales resulted in out-of-pocket losses or gains bounded at the bottom by certain loss amounts tied to the alleged disclosures. Notably, even though the

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[89] *See* e.g., *In re World Com Inc. Securities Litigation* Supplement Plan of Allocation which notes that the plan was developed in conjunction with Plaintiffs' damages expert and that "This Action is intended to compensate Class Members for <u>damages</u> incurred due to the defendants' alleged violations of the federal securities laws, and cannot compensate Class Members for <u>losses</u> they may have experienced in the value of their WorldCom Securities due to other causes." (Emphasis added). The POA further notes that in certain cases, the investor might "have lost nearly the entire value of her WorldCom stock" but "the damages due to factors that were unique to WorldCom and that are recoverable in a federal securities law case would be substantially less."

[90] We explain how this algorithm works in a simplified hypothetical example below.

plaintiffs' alleged damages were based on artificial inflation caused by alleged misrepresentations and/or omissions, the POA did not consider any potential economic gains to shareholders from selling the company's stock at allegedly inflated prices during the class period.

To illustrate the effect of not considering full inflation-based netting, we calculated the netting-based "claim amounts" for the 50 claimants with the largest pro-rata dollar shares of the settlement according to our POA-based claim replication (the "Top 50" as noted above). Figure 2 below plots, for each of the Top 50, the percent change in the pro-rata dollar share of the settlement each claimant would be allocated under a netting-based allocation method. So, for example, if a claimant would have been allocated a $2,000,000 share of the total settlement under the original POA-based method, but under a netting-based calculation would have been allocated $1,000,000, the figure would plot a bar with a value of -50% [=($1,000,000 - $2,000,000)/$2,000,000].

Figure 2: Percent Change in Estimated Pro-Rata Dollar Share of the Total Settlement for Top POA Claimants when Switching to a Full Inflation-Based Netting Method

16 of the 21 that increase have equal claim amounts under the original POA and the netting-based methods, but their pro-rata dollar allocation of the settlement increases because the total number of claimants decreases under netting.

21 of the Top 50 would have a lower pro-rata settlement allocation

29 of the Top 50 would have a higher pro-rata settlement allocation

9 out of the Top 50 claimants had net gains and would receive nothing under the full netting-based method.

Top 50 POA-Based Claimants (sorted by percent increase in pro-rata settlement share)

As the Figure shows, 21 of the Top 50 would have a lower pro rata settlement share; and nine (shown as red bars with a -100% value) would have had no allocation at all under the netting-based method. The remaining 29 of the Top 50 would have a higher share.[91] Hence, for the Top 50 claimants who we estimate were allocated about 30% of the total settlement amount, there is a severe disconnect in the POA between the economic harm (or net benefit) and the actual allocation of the distribution. We also calculated the aggregate claim amount for the Top 50 under both the POA and the netting-based method and found that the total damages are over 25% lower under the netting-based method. **Expanding our analysis to the entire pool of 130,000 plus claimants, we calculated that about 15% of the settlement allocation according to the POA was given to class members that had net gains from the alleged stock inflation**.

Hence, because all 50 of the POAs we reviewed (covering about 60% of the settlement dollars in our comprehensive sample of post-PSLRA securities class action settlements) did not apply full inflation-based netting, the significant distortionary effects illustrated in our case study are likely present throughout the universe of class action securities settlements.

Section 4: Conclusion

Since the U.S. Supreme Court's *Basic* decision, plaintiffs have been allowed to invoke the "fraud-on-the-market" presumption to "facilitate" private securities class actions. As a result, thousands of cases have been filed alleging billions of dollars in shareholder damages purportedly caused by corporate securities fraud. The merits of such claims are almost never tested at trial as most cases are either dismissed or receive *in terrorem* settlements.

In justifying private securities class action litigation, securities class action plaintiffs' attorneys, whose fees are contingent on the size of the settlement, claim that settlement payments represent a significant benefit to their clients. To the contrary, our empirical analysis of over 1,400 settlements from 1996 to the present demonstrates that the shareholders who are alleged victims on whose behalf these lawsuits are ostensibly filed have actually suffered an incremental wealth loss due to the filing of such suits that is over $262 billion.

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[91] Of these 29, sixteen actually had the same claim amounts under the original POA and netting-based methods but their pro rata dollar allocation of the settlement increases because the total number of claimants (and hence the total claim amount) decreases.

This result is significant because by focusing on effects of announcements soon after the end of the class period, we measured the effect on wealth of the same group of shareholders on whose behalf these lawsuits are filed and who expect to participate in future recoveries, if any. Since we only measured wealth loss upon announcements occurring after the class period has ended and excluded all in-class period price reactions, this wealth loss cannot be said to be related to purported revelation of the alleged fraud. In fact, because these lawsuits are expected to be filed following negative news accompanied by a significant drop in stock price, we measured only the component of wealth destruction that was not anticipated at the time of the purported revelation of the fraud that led to these lawsuits.

Notably, our analysis only covered settled cases. A reasonable extrapolation of the wealth destruction we documented to account for filed cases that have resulted in no settlement as of the date of our study increased the incremental wealth loss from $262 to $701 billion. In contrast, the expected settlement amount received by plaintiffs in post-PSLRA cases is less than $90 billion with $19 billion going to plaintiffs' attorneys as contingency fees. Moreover, the $701 billion estimate is a lower bound conservative estimate because it does not include the price effect of the anticipation of the lawsuit prior to the filing date, which the academic literature has noted is significant.

We also empirically demonstrated through the analysis of actual claims data in a typical large securities class action settlement that the distribution of the final settlement may have little to do with economic theories on which plaintiffs base their reliance and damage claims. Our analysis of class member trading patterns showed that the trading patterns of class members who were allocated the largest share of the settlement amount indicate that they attempted to profit from inefficiencies in market prices even though the same plaintiffs claimed reliance on efficient markets as the basis for class certification. We also showed that there is a tenuous relationship between those shareholders purportedly harmed by the alleged fraud and those who eventually collect the settlement monies (after a significant portion is kept by the class action attorneys). In particular, we document that a major share of the settlement distribution likely goes to those that were net beneficiaries of the alleged fraud.

Our overall conclusion is that private securities class actions significantly harm investors and the economy, and they do not actually compensate victims of alleged wrong-doing. Instead, they further harm the alleged victims as well as other innocent shareholders. Settlements in such cases are relatively minor compared to the overall shareholder wealth destroyed by such lawsuits and result in arbitrary wealth redistribution.

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TABLE 1: NUMBER OF CASES SETTLED AND AVERAGE SETTLEMENT AMOUNT ($ MILLIONS)
BY FILING YEAR FOR THE "ANALYZED SETTLEMENTS"

YEAR FILED	1996-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013-2014	Overall
1996	7 $9.2	8 $18.7	5 $8.9	8 $8.9	4 $7.9		1 $14.3	2 $1.8	0	0	0	0	0	0	0	0	0	35 $10.8
1997	1 $17.9	3 $9.2	13 $38.9	7 $20.1	11 $28.9	4 $27.2	3 $106.7	1 $49.5	1 $7.5	4 $5.2	0	0	0	0	0	0	0	48 $31.6
1998	0	0	10 $5.6	26 $13.0	7 $32.8	17 $15.3	9 $23.3	3 $15.3	1 $27.9	2 $16.0	1 $79.8	1 $2.0	0	0	0	0	1 $1.1	78 $16.5
1999	0	0	0	7 $17.0	21 $28.5	11 $13.1	11 $63.7	5 $108.6	0	2 $481.5	1 $6.1	1 $14.9	0	0	0	0	0	59 $52.3
2000	0	0	0	0	10 $23.3	15 $26.9	16 $46.7	11 $30.7	6 $23.6	3 $81.0	4 $29.6	1 $15.0	2 $378.3	0	0	0	0	68 $44.0
2001	0	0	0	0	0	7 $29.9	12 $8.6	12 $17.6	8 $43.7	4 $2,036.6	2 $14.1	1 $5.0	1 $165.0	0	0	0	0	47 $196.1
2002	0	0	0	0	0	0	4 $30.0	17 $48.4	15 $69.7	13 $250.0	13 $326.2	5 $10.4	0	1 $1.5	1 $3.4	1 $38.0	1 $5.3	71 $134.9
2003	0	0	0	0	0	0	0	8 $19.8	14 $14.4	8 $194.0	9 $21.0	6 $39.6	1 $33.0	3 $4.8	1 $7.0	0	0	50 $47.9
2004	0	0	0	0	0	0	0	0	7 $19.7	14 $81.3	19 $45.6	11 $26.9	12 $44.7	5 $30.7	2 $1.5	2 $93.3	1 $153.0	73 $47.5
2005	0	0	0	0	0	0	0	0	0	2 $3.0	19 $16.3	13 $11.7	9 $57.9	4 $8.6	1 $1.9	1 $3.8	0	49 $21.0
2006	0	0	0	0	0	0	0	0	0	0	1 $9.2	13 $12.8	7 $35.8	9 $36.9	1 $42.0	3 $19.5	1 $8.1	35 $24.8
2007	0	0	0	0	0	0	0	0	0	0	0	2 $4.8	10 $60.6	5 $26.5	3 $344.2	4 $26.4	4 $175.1	28 $92.4
2008	0	0	0	0	0	0	0	0	0	0	0	0	1 $4.5	9 $39.0	8 $26.7	12 $104.5	5 $145.6	35 $72.9
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	1 $43.0	6 $36.0	1 $10.5	8 $15.7	16 $24.7
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 $2.0	7 $8.9	5 $12.2	13 $9.6
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2 $14.5	9 $22.9	11 $21.4
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 $12.0	1 $12.0
Total Cases	8	11	28	48	53	54	56	59	52	52	69	54	43	37	24	33	36	717
Average Settlement	$10.3	$16.1	$21.7	$13.9	$26.6	$20.8	$39.5	$36.8	$36.7	$295.2	$84.7	$17.6	$66.8	$28.7	$63.4	$53.0	$55.6	$58.2
Total Settlement Value	$82	$177	$607	$670	$1,410	$1,125	$2,214	$2,173	$1,910	$15,352	$5,846	$951	$2,873	$1,063	$1,521	$1,748	$2,001	######

TABLE 2: POTENTIAL INVESTOR LOSSES (PIL) IN SETTLED SECURITIES CLASS ACTIONS

Our data sample contains 717 securities litigation settlements collected from Securities Class Action Services (SCAS) with settlement announcements occurring between May 2, 1997 and February 1, 2014 where: (1) we could identify a federal court filing; (2) which involved allegations of common stock inflation resulting from omissions or misrepresentations; and (3) we had news of the first lawsuit filing within 30 days from the end of the class period ("Analyzed Settlements"). The table below summarizes aggregate potential investor losses over each case's respective class period by settlement year range measured several ways. The columns in the table below show the following: [A] the number of settlements in each year range; [B] the average across settlements of the average market capitalization of common equity of the defendant firm during the class period; [C] the average across settlements of the maximum market capitalization drop which is the sum of the dollar value change in a defendant company's market capitalization from the trading day in the respective class period with the maximum distribution-adjusted price to the close of trading on the first trading day following the end of the respective class period; [D] the average across settlements of the cumulative class period abnormal return, which is the cumulative abnormal return on a defendant company's stock return over respective class period after controlling for market-wide factors (using a Fama-French-Carhart four factor market model estimated over the 252-trading day period starting 282 trading days prior to respective class period); [E] the average across settlements of the cumulative abnormal class period market capitalization drop which is the sum of the cumulative changes in the market capitalization of a defendant company's stock over respective class period after controlling for market-wide factors (using the model as described previously); [F] the average across settlements of the last day of class period abnormal return, which is the abnormal return of a defendant company's stock on the last trading day in the class period and the first trading day following the respective class period; [G] the average across settlements of the last day of class period abnormal market capitalization drop, which is the sum of the abnormal market capitalization change of a defendant company on the last trading day in the class period and the first trading day following the class period; and [H] damages estimated using a proportional trading model over the class period.

| | [A] | [B] | [C] | [D] | [E] | [F] | [G] | [H] |
| | | | | | Cumulative Abnormal Class Period Market Capitalization Drop ($ million) | | "End of Class Period Abnormal Market Capitalization Drop ($ million)" | "Potential Damages Based on Proportional Trading Model ($ million)" |
Settlement Year Range	Number of Settlements	"Average Market Capitalization in Class Period ($ million)"	"Maximum Market Capitalization Drop ($ million)"	Cumulative Class Period Abnormal Return (%)		End of Class Period Abnormal Return (%)		
1996-2000	95	1,350	899	-51.27%	750	-20.26%	153	528
2001-2005	274	4,540	4,660	-50.70%	3,280	-25.61%	501	2,110
2006-2010	255	7,070	6,400	-29.64%	2,700	-21.31%	728	3,840
2011-2014	93	14,600	10,400	-50.88%	8,040	-23.87%	902	5,800
TOTAL	717	6,304	5,517	-43.31%	3,356	-23.13%	589	2,985

TABLE 3: LENGTH OF CLASS PERIOD
AND TIME TO SETTLEMENT

The columns in the table below show: [A] number of settlements per year range; [B] average length of the class periods (in days); [C] the average number of days from the first lawsuit filing date to the settlement date.

Settlement Year Range	[A] Number of Settlements	[B] Average Length of Class Period (days)	[C] Average Time to Settlement after First Lawsuit Filing Date (days)
1995-2000	95	456	773
2001-2005	274	538	1,131
2006-2010	255	749	1,437
2011-2014	93	627	1,525
TOTAL	717	614	1,243

TABLE 4: SETTLEMENT AMOUNTS

The columns in the table below show the following for each year range: [A] the number of settlements; [B] the average settlement amount; [C] the ratio of the total settlement amount to the total end of class period market capitalization; [D] the ratio of total settlement amount to total average class period market capitalization; [E] the ratio of the total settlement amount to the total maximum class period market capitalization drop (see description in Table 2 for more details); [F] the ratio of the total settlement amount to the total abnormal class period market capitalization drop (see description in Table 2 for more details); [G] the ratio of the total settlement amount to the total potential losses estimated using a proportional trading model.

	[A]	[B]	[C]	[D]	[E]	[F]	[G]
Settlement Year Range	Number of Settlements	"Average Settlement Amount ($ millions)"	Ratio of Total Settlement Amount to End of Class Period Market Capitalization	Ratio of Total Settlement Amount to Average Class Period Market Capitalization	Ratio of Total Settlement Amount to Total Class Period Maximum Market Capitalization Drop	Ratio of Total Settlement Amount to Total Cumulative Abnormal Class Period Market Capitalization Drop	Ratio of Total Settlement Amount to Potential Losses according to Proportional Trading Model
1995-2000	95	16.2	1.72%	1.21%	1.85%	2.16%	3.09%
2001-2005	274	32.2	1.27%	0.71%	0.72%	0.98%	1.53%
2006-2010	255	102.0	2.35%	1.45%	1.63%	3.79%	2.68%
2011-2014	93	56.7	0.66%	0.40%	0.56%	0.70%	1.00%
TOTAL	717	58.2	1.55%	0.93%	1.09%	1.73%	1.96%

TABLE 5A: SETTLEMENT CLASSIFIED BY POTENTIAL INVESTOR LOSSES (PIL)
AS MEASURED BY MAXIMUM MARKET CAPITALIZATION DROP

The columns in the table below show the following statistics classified by ranges of potential investment losses. Potential Investment Losses are calculated as the market capitalization drop from the highest distribution-adjusted price during the class period to the end of the class period (see Table 2 for details). The columns show, for each PIL category: [A] the number of settlements ; [B] the average settlement amounts; [C] the ratio of the total settlement amount to the total maximum class period market capitalization drop (see description in Table 2 for more details); [D] the ratio of the total settlement amount to the total end of class period market capitalization; [E] the ratio of the total settlement amount to the total potential losses estimated using a proportional trading model. When data are missing for some observations, averages are calculated using all the observations for which data is available.

"Potential Investor Losses as Measured by Maximum Market Capitalization Drop ($ millions)"	[A] Number of Settlements	[B] "Average Settlement Amount ($ millions)"	[C] Ratio of Total Settlement Amount to Total Potential Investor Losses as measured by Maximum Market Capitalization Drop	[D] Ratio of Total Settlement Amount to End of Class Period Market Capitalization	[E] Ratio of Total Settlement Amount to Potential Losses according to Proportional Trading Model
Less than 200	111	3.7	3.59%	2.03%	5.96%
200 - 499	138	16.3	4.96%	6.85%	7.18%
500 - 1249	160	12.9	1.61%	1.86%	2.61%
1250 - 3999	132	33.6	1.53%	1.61%	2.39%
Over 4,000	132	236.0	0.96%	1.44%	1.75%
TOTAL	717	58.2	1.09%	1.55%	1.96%

AGGREGATE SETTLEMENT DOLLARS   **$41,729**

TABLE 5B: SETTLEMENT CLASSIFIED BY POTENTIAL INVESTOR LOSSES (PIL) AS MEASURED BY PROPORTIONAL TRADING MODEL

The columns in the table below show the following statistics classified by ranges of potential investment losses. Potential Investment Losses are calculated as plaintiff style damages calculated using proportional trading model. The columns show, for each PIL category: [A] the number of settlements; [B] the average settlement amounts; [C] the ratio of the total settlement amount to the total potential losses estimated using a proportional trading model; [D] the ratio of the total settlement amount to the total end of class period market capitalization; [E] the ratio of the total settlement amount to the total maximum class period market capitalization drop (see description in Table 2 for more details). When data are missing for some observations, averages are calculated using all the observations for which data is available.

"Potential Investor Losses as measured by Proportional Trading Model ($ millions)"	[A] Number of Settlements	[B] "Average Settlement Amount ($ millions)"	[C] Ratio of Total Settlement Amount to Total Potential Losses according to Proportional Trading Model	[D] Ratio of Total Settlement Amount to End of Class Period Market Capitalization	[E] Ratio of Total Settlement Amount to Maximum Market Capitalization Drop
Less than 50	92	8.1	46.08%	0.35%	0.74%
50 - 199	139	5.2	4.43%	1.67%	1.82%
200 - 499	141	18.3	5.63%	3.28%	2.85%
500 - 1,499	159	21.5	2.38%	1.06%	1.29%
Over 1,500	168	199.0	1.78%	1.59%	1.01%
TOTAL	717	58.2	1.96%	1.55%	1.09%

AGGREGATE SETTLEMENT DOLLARS   **$41,729**

TABLE 6: CUMULATIVE ABNORMAL RETURNS (CAR) ON FILINGS AND SETTLEMENTS OF LAWSUITS

This table summarizes the CAR surrounding announcements of lawsuit filings and settlements. The table displays the average of CARs for two-trading day windows starting on the announcement day. When the event allows for multiple announcements (such as multiple filing announcements which may be weeks apart), the CAR is aggregated across all the days in two-trading day windows across each announcement without duplicating the CAR for days that may lie in CAR windows of other announcements in the same event. The market model used to calculate each company's CAR is the Fama-French-Carhart four factor model described earlier. Any days overlapping with the class period are excluded in the calculation of abnormal returns. The maximum number of observations shown in Column [A], i.e., 496, is lower than the total observation count in our Analyzed Settlements sample of 717 because not all 717 have filing and settlement announcement dates with the necessary price data to perform our CAR analysis. "***", "**", and "*" indicate statistical significance at 1%, 5%, and 10% levels, respectively, in a two-tailed t-test.

Event	[A] Number of Observations	[B] Cumulative Abnormal Return (%)	[C] t-statistic	[D] Significance
All Filing Announcements	496	-4.44%	(8.31)	***
First Filing Announcements	408	-2.95%	(10.68)	***
Second Filing Announcements	381	-2.54%	(8.53)	***
Third and Subsequent Filing Announcements	410	-2.00%	(3.62)	***
All Settlement Announcements	440	0.80%	2.20	**
First Settlement Announcements	439	0.67%	2.54	**
Second Settlement Announcements	299	0.21%	0.66	
Third and Subsequent Settlement Announcements	87	0.45%	0.66	
All Filing and Settlement Announcements With At Least One Filing Announcement	496	-3.99%	(6.61)	***
All Filing and Settlement Announcements With At Least One Filing Announcement and At Least One Settlement Announcement	309	-2.19%	(2.68)	***