

# WE HAVE A CONSENSUS ON FRAUD ON THE MARKET—AND IT’S WRONG

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*Recent scholarship contends that the fraud on the market securities class action has neither deterrent nor compensatory effect and should be cut back or even abandoned entirely. This scholarship largely focuses on two critiques: circularity, which holds that shareholder class action claimants are suing themselves, making compensation impossible; and diversification, which holds that fraud constitutes a diversifiable risk, such that diversified shareholders both gain and lose from fraud in equal measure and hence are not negatively impacted. These critiques are arguably the most important and widely-used theoretical development of the last two decades in securities law, and enjoy a broad consensus.*

*Unfortunately, these critiques are wrong. After tracing the evolution of these critiques, this paper demonstrates economically that, despite widespread acceptance, none of the principal claims of these critiques are correct. In particular: fraud on the market does indeed compensate defrauded purchasers despite circularity (under certain conditions, perfectly); and diversified investors do have expected losses from fraud and have incentives to undertake deadweight precaution costs. Further, the fraud on the market remedy can deter such wasteful precaution costs. The critiques are fundamentally flawed, the academic consensus on fraud on the market is incorrect, and the panoply of reform proposals based on these critiques is without foundation. These critiques have fueled a trend of cutbacks and ongoing existential challenges to fraud on the market (as in *Halliburton*) that, in light of these results, should be rethought.*

INTRODUCTION: CALVINO AND THE PROFESSORS .....	68
I. THE INNOVATION OF FRAUD ON THE MARKET .....	73
II. THE EVOLUTION OF THE CIRCULARITY AND DIVERSIFICATION CRITIQUES .....	77
A. <i>The Diversification Critique</i> .....	77
1. Netting gains and losses: Easterbrook and Fischel ...	77
2. Mahoney’s helpless investors .....	80
3. To the modern diversification critique .....	82
B. <i>The Circularity Critique</i> .....	86
1. Marginal circularity: Cox .....	86
2. Coffee’s “compensation as unobtainable” .....	87
3. To the modern circularity critique .....	90
C. <i>Influence</i> .....	91
III. CIRCULARITY WITH FULL COMPENSATION .....	92

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A.	<i>A mathematical proof of full compensation, despite circularity</i> .....	93
B.	<i>Circularity among diversified investors</i> .....	95
C.	<i>Special problems</i> .....	97
1.	Litigation costs.....	97
2.	Uncertain adjudication.....	98
3.	Judgment proofness.....	99
D.	<i>Summing up on circularity</i> .....	101
IV.	YOU CANNOT DIVERSIFY AWAY FRAUD.....	102
A.	<i>A buyer/seller game with seller-induced price inflation</i> ..	103
B.	<i>Games of secondary market fraud</i> .....	105
1.	All investors are “uninformed”.....	106
2.	Some investors are “informed,” some are not.....	107
3.	All investors are “informed”.....	108
4.	How does compensation affect this game?.....	109
C.	<i>Does diversification affect the results?</i> .....	110
D.	<i>Summing up on diversification, and some related points</i> ..	111
	CONCLUSION.....	114

*There was a country where they were all thieves. At night everyone went out, with picks and shaded lanterns, to break into a neighbor's house. They'd get back at dawn, loaded, to find their own house had been robbed.*

*And so everyone lived in harmony and without harm, since each stole from the other . . . Trade in that country was practiced only in the form of cheating, by buyer and seller alike. . . . So life went on smoothly, with no one either rich or poor. . . .*

Italo Calvino, *The Black Sheep*

#### INTRODUCTION: CALVINO AND THE PROFESSORS

What, if anything, can we do to help the citizens of Italo Calvino's "The Black Sheep?"<sup>1</sup> A student of the law, intuitively anxious to deter crime and compensate the victimized, might suggest a number of things: an institutionalized police force to ward off thieves, private lawsuits to recover criminal gains, perhaps even a victim compensation fund.

However, following Calvino's story, any such reforms would be harmful. No one gains or loses, on net, from the crimes committed, and all the cheating evens out in the end. In fact, introducing deterrent or compensatory measures into this pristine ecosystem would only make things worse. By

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<sup>1</sup> While the epigraph provides the gist, the full text (which runs to only a few short paragraphs) may be readily found online. See, e.g., <http://garts.latech.edu/erufleth/blacksheep.htm>.

going after the thieves, the citizenry as a whole would be harming themselves; transfers to the victimized would be coming from the similarly victimized. It can do no good, only harm.<sup>2</sup>

What is perhaps most notable—from a securities law perspective, at least—about this stark parable of only a few paragraphs is that Calvino managed to anticipate, by half a century,<sup>3</sup> the very arguments today used by law and economics professors to carry on an assault against the shareholder securities class action (also known, in its modern form, as “fraud on the market”).<sup>4</sup> These arguments are the twin critiques of “circularity”<sup>5</sup> and “diversification.” The circularity critique holds that shareholder class actions amount to “shareholders suing themselves.”<sup>6</sup> The diversification critique states that the risk of being defrauded is diversifiable. Investors who hold diversified portfolios are as likely to gain from fraud as they are likely to lose from it: “the risk of being harmed by aftermarket securities fraud . . . averages to zero . . . .”<sup>7</sup> Securities fraud is of little or no consequence to them. These arguments are widely cited,<sup>8</sup> have found their way to legislators and regulatory bodies,<sup>9</sup> and are overwhelmingly held to be true. Indeed, so thorough has been the assault on fraud on the market, based largely on these critiques, that Bratton and Wachter have recently remarked that the “consensus view among academics,” apart from one “entirely theoretical” exception, is that “fraud-on-the-market . . . just doesn’t work.”<sup>10</sup>

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<sup>2</sup> This is, indeed, what happens in the story: an honest man moves to town, stays home at night, preventing others from burgling him, and inadvertently creates the evils of enforceable property rights and inequality.

<sup>3</sup> The story “La pecora nera” was written by 1944. See Italo Calvino, *PRIMA CHE TU DICA “PRONTO”*, (Arnoldo Mondadori ed. 1993) at 24, 261.

<sup>4</sup> See *infra* Part I. The term “fraud on the market” refers, technically, to the presumption that transacting investors rely on the integrity of the market price, rather than requiring the usual reliance element of fraud to be proven on an individual investor basis via traditional evidentiary means. Due to the great facility afforded by the presumption, it has also come to mean, for all intents and purposes, the modern securities class action.

<sup>5</sup> The circularity critique is sometimes also referred to as “pocket-shifting” in the securities law literature.

<sup>6</sup> Hal S. Scott, *How to Improve Five Important Areas of Financial Regulation*, in *RULES FOR GROWTH: PROMOTING INNOVATION AND GROWTH THROUGH LEGAL REFORM* 113, 145 (Kauffman Task Force on Law, Innovation, and Growth ed., 2011).

<sup>7</sup> Joseph Grundfest, *Damages and Reliance Under Section 10(b) of the Exchange Act*, 69 *BUS. LAW.* 307, 313–14 (2014).

<sup>8</sup> See *infra* Part II.C.

<sup>9</sup> See, e.g., *Evaluating S. 1551: The Liability For Aiding and Abetting Securities Violations Act of 2009: Hearing Before the S. Comm. on the Judiciary, Subcomm. on Crime and Drugs*, 111th Cong. 218–19 (2009) [hereinafter *Evaluating S. 1551*] (submission of Prof. Adam C. Pritchard) (“With no expected loss from fraud on the market, shareholders do not need to take precautions against the fraud; they can protect themselves against fraud much more cheaply through diversification. . . . The current regime for secondary-market class actions largely produces an exercise in ‘pocket shifting.’”); *id.* at 105 (submission of Prof. John C. Coffee) (“The net result [of fraud on the market] is a series of pocket-shifting wealth transfers that in the aggregate leave shareholders worse off (particularly after the deduction of the legal costs of both sides).”).

<sup>10</sup> William W. Bratton & Michael L. Wachter, *The Political Economy of Fraud on the Market*, 160 *U. PA. L. REV.* 69, 72 (2011); see also James C. Spindler, *Vicarious Liability for*

Together, the circularity and diversification critiques purport to undermine the rationales for securities class actions—namely, deterrence of fraud and compensation of fraud victims. In Calvino's terms, circularity implies that no theft-compensation mechanism would make victims better off, as their recovery must ultimately be funded by themselves: each thief loses what he stole, and receives it back again as compensation. Diversification implies that the citizens have no preference for theft to end: because each citizen is able to find a house to rob, personal losses from theft are always canceled out by gains from theft. In securities law terms, shareholder fraud class actions neither deter nor compensate because the circularity of such actions merely shifts shareholder dollars from one pocket to another; shareholders compensate themselves with what they already owned. Further, securities fraud is of negligible harm to shareholders, since the gains and losses from fraud will, in expectation, offset each other; provided there is a large number of securities into which to diversify, the law of large numbers nearly guarantees such an offset.<sup>11</sup>

However, just as Calvino's parable is absurd, even if it is difficult at first to ascertain why, these circularity and diversification critiques are also absurd. This is the point of the instant article.

The circularity critique fails mathematically: as shown herein with an economic model, penalties on the firm effectively come out of the pockets of non-plaintiff shareholders, and actually do compensate plaintiffs.<sup>12</sup> To the extent that the firm's shares have been turned over during the effective period of the fraud, it is true that the plaintiff class seeks recovery from a firm that they, in part, own. But just as a non-pro-rata dividend transfers wealth, on net, to its recipients, so, too, does the fraud on the market remedy.<sup>13</sup> What is more remarkable is that, under certain conditions, compensation is full and complete. This is so because of a feedback effect between damages and liability: prospective liability decreases stock price, which increases prospective liability, which decreases stock price, and so on. As illustrated mathematically in Part III, *infra*, the interaction between turnover, stock price, and damages works to fully compensate defrauded purchasers. While certain real life attributes of class actions (namely, litigation costs borne by purchasers, uncertain adjudication, and judgment proofness) may render

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*Bad Corporate Governance: Are We Wrong About 10b-5?*, 13 AM. L. ECON. REV. 359, 359–62 (2011) (the “entirely theoretical” exception).

<sup>11</sup> Davis has argued that the application of the law of large numbers argument may be incorrect in many cases. See Alicia J. Davis, *Are Investors' Gains and Losses from Securities Fraud Equal Over Time? Theory and Evidence* 7 (Univ. of Mich. Law Sch. Scholarship Repository, Working Paper No. 13, 2010). Dubbs raises similar points, namely, that non-diversification and lumpy turnover lead to net winners and losers, even taking the critiques as true. See Thomas A. Dubbs, *A Scotch Verdict on “Circularity” and Other Issues*, 2009 WISC. L. REV. 455, 458–60 (2009).

<sup>12</sup> See *infra* Part III.

<sup>13</sup> Park has made exactly this point regarding the similarity of fraud on the market transfers and non-pro-rata dividends. See generally James J. Park, *Shareholder Compensation as Dividend*, 108 MICH. L. REV. 323 (2009).

compensation less than complete, policy fixes are available to restore full compensation in some cases.

The diversification critique fails because it is based on a core misunderstanding of what diversification does, and does not, do.<sup>14</sup> In the most fundamental terms, diversification does nothing to negate fraud losses or to counter the incentive to guard against pricing error and asymmetric information. In any particular transaction, an investor has an incentive to guard against overpaying;<sup>15</sup> if he does not, and if there is uncertainty regarding the correct price, there is a risk of being expropriated by traders with better information. Thus, the investor has the incentive to expend precaution costs, searching for the security's true price. In a form of the Prisoners' Dilemma, both buyer and seller expend search costs, and each is made worse off. This remains true in the diversified setting. If an investor buys one security and sells another, there is a risk of being expropriated, in each trade, by traders with better information; if he does not expend precaution costs, his expected gains will be systemically lower. Diversification does not guard against those systemically lower returns. Similarly, where an investor purchases (or sells) a diversified portfolio of securities, the investor certainly wishes not to overpay (or be underpaid) for that portfolio; the relatively lower firm-specific risk of the diversified asset does not moot that concern. Drawing an example from recent history, the diversification provided by a collateralized debt obligation ("CDO") did not moot the necessity of vetting the underlying mortgages, as the 2007 financial crisis proved.<sup>16</sup> The uninformed trader, confronted with price uncertainty and potentially better-informed traders, will face expected losses. This is true even across a multitude of trades, and without regard to whether the trades are primary or secondary in nature.<sup>17</sup>

Any investor (including a diversified investor), therefore, has incentives to expend resources protecting herself from expropriation by other, better-

<sup>14</sup> See *infra* Part IV.

<sup>15</sup> Or being underpaid, if the transaction is a sale. As described in Part IV.B, *infra*, price uncertainty affects both buyers and sellers by creating a risk of expropriation by better-informed traders, which encourages them to undertake search costs.

<sup>16</sup> Sponsors of asset backed securities sometimes touted them as "informationally insensitive," which suggested, incorrectly, that such portfolios could be priced without investigation of underlying asset quality even when economic shocks occurred. See Gary B. Gorton & Andrew Metrick, *Haircuts* 6 (Nat'l Bureau of Econ. Research, Working Paper No. 15273, 2009).

<sup>17</sup> That is, it does not matter whether, *ceteris paribus*, the better-informed counterparty is the issuer, an insider, or some unaffiliated trader. Some literature distinguishes between primary and secondary trading, arguing, for instance, that penalties should attach against the issuer only in the primary sale case. See, e.g., M. Todd Henderson & Adam C. Pritchard, *From Basic to Halliburton*, 37 REGULATION 20, 25–26 (2014). While it is true that primary sales are particularly sensitive in some ways (the issuer's cost of information acquisition is likely low, and the issuer may be incentivized to create larger price uncertainties to exploit), the uninformed trader expects losses against *any* better-informed counterparty. That is, faced with a given level of uncertainty and information asymmetry, an uninformed trader's expected losses should generally be the same whether trading against the issuer or another investor. This is apparent in the trading games in which the seller can cause price uncertainty, discussed in Part IV.A, *infra*, and trading games in which the price uncertainty is exogenous to both trading parties, discussed in Part IV.B, *infra*.

informed traders. Such precaution costs are analogous to the costs of guarding against theft (such as purchasing locks or moving to a better neighborhood), and constitute a deadweight loss to society.<sup>18</sup> An extensive financial economics literature details the problems created in such an environment: illiquidity, adverse selection, and wasteful investment in research and misreporting technologies.<sup>19</sup> As just one facet of the magnitude of such costs, a recent estimate puts the amount of money under active professional management at more than \$90 trillion in 2012, generating (conservatively) at least \$600 billion of active management fees per year (not including performance-based fees); these are precaution costs.<sup>20</sup> Such costs, of course, do not diversify away.

Despite being profoundly flawed, the diversification and circularity critiques have been highly influential. Currently, the weight of academia is pitted against securities fraud class actions, largely on the basis of these critiques.<sup>21</sup> Proponents militate, *inter alia*, toward shifting liability from corporations to corporate executives,<sup>22</sup> removing fraud deterrence functions to public enforcers,<sup>23</sup> and restricting or even eliminating the private cause of action altogether.<sup>24</sup> Lobbyists,<sup>25</sup> courts,<sup>26</sup> and possibly legislators<sup>27</sup> appear

<sup>18</sup> Such a point was originally made in economics of crime fifty years ago. See Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies, and Theft*, 5 *ECON. INQUIRY* 224, 230 (1967); Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 *J. POL. ECON.* 169, 171 (1968).

<sup>19</sup> See, e.g., George A. Akerlof, *The Market for "Lemons": Quality, Uncertainty and the Market Mechanism*, 84 *Q.J. ECON.* 488, 493 (1970); Thomas E. Copeland & Dan Galai, *Information Effects on the Bid-Ask Spread*, 38 *J. FIN. ECON.* 1457, 1458 (1983); Lawrence R. Glosten & Paul R. Milgrom, *Bid, Ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders*, 14 *J. FIN. ECON.* 71, 72 (1985); Kevin Rock, *Why New Issues are Underpriced*, 15 *J. FIN. ECON.* 187, 187 (1986). For an accessible discussion of liquidity economics and an application to insider trading law, see Marcel Kahan, *Securities Laws and the Social Costs of "Inaccurate" Stock Prices*, 41 *DUKE L.J.* 977, 1017–25 (1992).

<sup>20</sup> See Charles M. C. Lee & Eric C. So, *Alphanomics: The Informational Underpinnings of Market Efficiency*, 9 *FOUND. AND TRENDS IN ACCT.* 59, 80–81 (2015). As Lee and So point out, the amount spent on information search (what they term "informational arbitrage") is greater than the estimated \$600 billion per year. *Id.* at 81.

<sup>21</sup> See, e.g., Bratton & Wachter, *supra* note 10, at 72–73 (discussing the "consensus" view).

<sup>22</sup> See, e.g., Donald C. Langevoort, *On Leaving Corporate Executives "Naked, Homeless, and Without Wheels": Corporate Fraud, Equitable Remedies, and the Debate over Entity Versus Individual Liability*, 42 *WAKE FOREST L. REV.* 627, 630 (2007).

<sup>23</sup> See, e.g., Howell E. Jackson & Mark J. Roe, *Public and Private Enforcement of Securities Laws: Resource-based Evidence*, 93 *J. FIN. ECON.* 207, 208–09 (2009).

<sup>24</sup> See Joseph A. Grundfest, *Disimplifying Private Rights of Action Under the Federal Securities Laws: The Commission's Authority*, 107 *HARV. L. REV.* 961, 965 (1994).

<sup>25</sup> See generally U.S. CHAMBER INST. FOR LEGAL REFORM, *SECURITIES CLASS ACTION LITIGATION: THE PROBLEM, ITS IMPACT, AND THE PATH TO REFORM* (2008).

<sup>26</sup> See, e.g., *In re Cal. Micro Devices Sec. Litig.*, 168 *F.R.D.* 257, 272 (N.D. Cal. 1996) ("Settlement payments . . . are to equity class members little more than the shifting of wealth from their right pocket to their left, and . . . class members were to be charged a twenty percent fee by class counsel for this 'service' . . ."); *Ackerman v. Schwartz*, 947 *F.2d* 841, 846–47 (7th Cir. 1991) (J. Easterbrook writing that a misrepresentation "causes a transfer among investors, rather than a transfer from investors to promoters or their advisers. . . . [D]amages award[s] are] unrelated to the real loss created by the error (an increase in volatility of stock

willing to challenge securities class actions on these bases as well. The stakes are high. Even if there are reasons to believe that securities class actions are imperfect, it is important to at least understand what the problems are, and are not.

This article proceeds as follows. Part I describes the existing securities class action regime. Part II details the evolution of the circularity and diversification critiques, establishes that these critiques are endemic and influential, and notes the seemingly boundless reform proposals that spring from these critiques. Part III demonstrates the fallacy of the circularity critique, showing that fraud on the market is, indeed, compensatory. Part IV demonstrates the fallacy of the diversification critique, namely, that diversification does nothing to allay fraud costs. The last Part concludes.

## I. THE INNOVATION OF FRAUD ON THE MARKET

Rule 10b-5 and Section 10b of the Securities Exchange Act of 1934 make actionable material misstatements or omissions in connection with the sale or purchase of securities.<sup>28</sup> While a private right of action is not mentioned in Section 10b itself, various federal courts began to find that an implied right of action existed, and this inference was adopted and ratified by the Supreme Court in 1971 with *Superintendent of Ins. v. Bankers Life & Cas. Co.*<sup>29</sup>

The 10b-5 cause of action “sounds in fraud,” as subsequent courts have made clear.<sup>30</sup> This means that the 10b-5 cause of action incorporates the elements of a traditional, common law fraud claim: falsity, materiality, reliance, causation, damages, and scienter. Because of the high degree of com-

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prices and a slight reduction in the propensity to invest, to the detriment of society at large.”); *Eisenstadt v. Centel Corp.*, 113 F.3d 738 (7th Cir. 1997) (J. Posner citing *Langevoort*, *infra* note 78 at 640, n.4, and lamenting that “[t]he cases do not try to net out the gains from fraud in deciding how much if any damages to award the victims of the fraud. . . . [N]o effort is made to compute the net social cost. . . . Maybe the effort should be made.”); *In re Boston Sci. Corp. Sec. Litig.*, 686 F.3d 21, 30 (1st Cir. 2012) (citing *Coffee*, *infra* note 102 at 1545–46 for the proposition that securities litigation may be especially “vexatious” because “the costs of both the company’s defense and what it pays in large legal fees to plaintiffs’ counsel is usually borne indirectly by the stockholders of the defendant company.”); *In re Citigroup Inc. Sec. Litig.*, 965 F. Supp. 2d 369, 385 (S.D.N.Y. 2013) (“The Court shares Professor Coffee’s concern that securities class actions in which the corporation and its insurers pay for the release of claims against its corporate officers and executives have essentially no deterrent value for those executives—the ones whose actions matter. The Court also laments that the shareholders, as owners, effectively pay the insurance premiums and any settlement amounts over the insurance coverage, such that most settlements are essentially transfers of wealth from all present shareholders to a subset of past and present shareholders, with significant sums siphoned off in the form of lawyers’ fees and litigation costs.”).

<sup>27</sup> See generally *Evaluating S. 1551*, *supra* note 9.

<sup>28</sup> See 15 U.S.C. § 78j (2010); 17 C.F.R. 240.10b-5 (2016).

<sup>29</sup> 404 U.S. 6, 13 n.9 (1971).

<sup>30</sup> Because fraud on the market is a “judicially implied cause of action with roots in the common law,” plaintiffs must “adequately allege and prove the traditional elements of causation and loss.” *Dura Pharmaceuticals, Inc. v. Broudo*, 544 U.S. 336, 345–46 (2005) (internal citations omitted).

monality between securities plaintiffs who are harmed by the same misrepresentation, 10b-5 claims lend themselves naturally to aggregation into class actions. Based on a single alleged misstatement, it is reasonable to suppose that the elements of materiality, loss causation, scienter, and damages<sup>31</sup> would be identical for each plaintiff's claim. This leaves, however, reliance and causation: showing that the misstatement was relied on by each plaintiff and caused each plaintiff to transact in the security during the effective period of the fraud. This presents difficulties: many investors, such as those who invest in a diversified market portfolio of securities (a strategy much recommended by modern finance theory), never read, much less rely directly upon, the firm's public statements. Yet there is little doubt that such investors may be harmed by material misstatements, which (by construction) move the market price of the security at which these investors transact.<sup>32</sup>

This problem was resolved by an unprecedented synthesis of modern finance theory and securities law—a solution which was, at the time, “widely hailed in the legal and academic communities” and which enjoyed “near-universal support.”<sup>33</sup> This heralded solution was the fraud on the market doctrine. Several courts, urged on by commentators such as Fischel,<sup>34</sup> adopted early forms of the “fraud on the market doctrine,” in which investors are presumed to rely upon the market's pricing of all publicly available information. In 1988, the Supreme Court, in *Basic, Inc. v. Levinson*, affirmed and unified the fraud on the market doctrine.<sup>35</sup>

The fraud on the market doctrine presents a true innovation in judicial administrability. All but two of the common law fraud elements may be satisfied by a demonstration of stock price movement upon the revelation of the fraud.<sup>36</sup> Such a change in price demonstrates materiality, since reasonable investors, who comprise the market, must have viewed the information as material in order to change the price at which they transact. Loss causation is clear because the change in price is exactly what the plaintiffs have lost. Damages for each plaintiff are then the price drop of the corrective

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<sup>31</sup> The difference in damages among plaintiffs depends on the individual plaintiff's transaction price, which is readily verifiable.

<sup>32</sup> In the modern interpretation of “materiality,” defined as what a reasonable investor would care about, materiality may be inferred by stock price movements, which correspond to the actions of (reasonable) marketplace investors. See *Basic, Inc. v. Levinson*, 485 U.S. 224, 231 (1988) (citing *TSC Indus. v. Northway, Inc.*, 426 U.S. 438, 449 (1976)); James C. Spindler, *Why Shareholders Want Their CEOs to Lie More After Dura Pharmaceuticals*, 95 *Geo. L.J.* 653, 661 (2007).

<sup>33</sup> Paul G. Mahoney, *Precaution Costs and Fraud in Impersonal Markets*, 78 *VA. L. REV.* 623, 624 (1992).

<sup>34</sup> Daniel R. Fischel, *Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities*, 38 *BUS. LAW.* 1 (1982).

<sup>35</sup> See 485 U.S. at 231.

<sup>36</sup> Prior to the Supreme Court's *Dura Pharmaceuticals* decision of 2005, a plaintiff could make out a fraud on the market claim with merely fraudulent price inflation, without having to show a stock price drop at the time of corrective disclosure. *Dura Pharmaceuticals* appears to have made ex post declines a necessary element of a fraud on the market claim. See generally Spindler, *supra* note 32.



disclosure multiplied by the plaintiff's net change in position from the moment just before the fraud was committed to the moment just after the corrective disclosure occurred (this period is known as the "effective period" of the fraud). Reliance, under the doctrine, is simply presumed. Only scienter, that the speaker knew that the information was false, and falsity, that the alleged misstatement was in fact false, must be proven by extrinsic evidence. While the fraud on the market theory often leads to a battle of experts to decide whether, or to what degree, a stock price movement was caused by a particular statement as opposed to other factors, this is certainly less of an evidentiary burden than a traditional fraud cause of action (in which loss causation and damages would still have to be proved).

It was not long, however, before the support that fraud on the market enjoyed began to wane. In part, this appears to have been a results-driven event, as some observers complained that, empirically, much private securities litigation appeared "meritless."<sup>37</sup> More fundamentally, however, the theoretical justification for fraud on the market itself came under attack, and from several angles. From a doctrinal perspective, for instance, Pritchard characterizes the current securities class action regime as a "parasit[ic]" invasion of judicial activism that is "impossible to defend."<sup>38</sup> Advances in the theory of efficient markets, which include research demonstrating less-than-perfect efficiency,<sup>39</sup> and its adoption by the legal academy, has led naturally to the question of whether fraud on the market works if the assumption of perfect efficiency is relaxed.<sup>40</sup> The legal literature's growing concern regarding agency costs, corporate governance, and disloyal managers, such as exists under the "managerial power" hypothesis,<sup>41</sup> has led to significant disfavor of vicarious liability.<sup>42</sup> And, most devastatingly, the circularity critique holds that the compensatory mechanics of the fraud on the market remedy are fundamentally flawed, while the diversification argument questions the wisdom of preventing fraud in the first place.

While it is difficult to trace directly the percolation of academic discontent into the realm of actual policy, it seems reasonable to suppose that the

<sup>37</sup> See, e.g., Janet Cooper Alexander, *Do the Merits Matter? A Study of Settlements in Securities Class Actions*, 43 STAN. L. REV. 497, 524 (1991).

<sup>38</sup> Adam C. Pritchard, *Halliburton II: A Loser's History*, 10 DUKE J. CONST. L. & PUB. POL'Y 27, 30 (2015).

<sup>39</sup> See, e.g., Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 393 (1980); Robert J. Shiller, *Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?*, 71 AM. ECON. REV. 421, 433–34 (1981).

<sup>40</sup> See *Halliburton Co. v. Erica P. John Fund, Inc.*, 134 S. Ct. 2398, 2405 (2014) (raising a similar concern in an existential challenge posed to fraud on the market).

<sup>41</sup> See, e.g., Lucian Ayre Bebchuk, Jesse M. Fried, & David I. Walker, *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. OF CHI. L. REV. 751, 754 (2002).

<sup>42</sup> See, e.g., Jennifer H. Arlen & William J. Carney, *Vicarious Liability for Fraud on Securities Markets: Theory and Evidence*, 1992 U. ILL. L. REV. 691, 694 (1992); Jennifer Arlen, *The Potentially Perverse Effects of Corporate Criminal Liability*, 23 J. LEGAL STUD. 833, 833–34 (1994); Langevoort, *supra* note 22, at 632.

growing academic “consensus” against fraud on the market has had at least something to do with the incremental, cumulative policy assault upon private securities litigation. The view that plaintiffs’ attorneys were abusing the class action system led Congress to pass the Private Securities Litigation Reform Act in 1995, which heightens pleading requirements and limits who may be a plaintiff;<sup>43</sup> Congress subsequently followed up with SLUSA in 1998 in order to, among other things, preempt state court securities litigation.<sup>44</sup> For its part, the judiciary has cut back the private cause of action extensively. *Central Bank of Denver v. First Interstate Bank of Denver* eliminated aiding and abetting liability.<sup>45</sup> *Janus* focused primary liability narrowly on those who had “ultimate authority over the statement, including its content and whether and how to communicate it.”<sup>46</sup> *Dura v. Broudo* placed restrictions on how losses could be proved, creating difficulties for a plaintiff who could not demonstrate an unequivocal drop in share price at the time of the revelation of the fraud.<sup>47</sup> Most recently, a direct challenge to fraud on the market was launched in *Erica P. John Fund v. Halliburton II*, in which it was argued, among other things, that imperfect markets require the wholesale jettisoning of fraud on the market; while this challenge was unsuccessful, the boldness of the challenge, and the support that it garnered, suggests that fraud on the market’s days may be numbered.<sup>48</sup>

If that is true, it is worth considering for a moment a question: what would life without fraud on the market look like? In part, this depends on how much of the private securities apparatus is jettisoned. If merely the reliance presumption is eventually overturned, one might expect that substantial private securities litigation will continue to exist, but driven by and limited to large institutional plaintiffs who do not require class aggregation to have a positive expected value claim.<sup>49</sup> On the other hand, if some more ardent reformers get their way and the private right of action is suddenly “disimplied”<sup>50</sup> or otherwise eliminated, the “private attorneys general” model would simply cease to exist, at least at the federal level. There would be, instead, a significant vacuum in the policing of the capital markets. Given that regulators and legislators abhor a vacuum, it seems likely that something would take its place. If the desires of the academic critics are any

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<sup>43</sup> See David H. Webber, *The Plight of the Individual Investor in Securities Class Actions*, 106 NW. U. L. REV. 157, 157–61 (2012).

<sup>44</sup> Securities Litigation Uniform Standards Act of 1998, Pub. L. No. 105-353, §101(c) (codified as amended at 15 U.S.C. §§ 77p, 78bb (1998)).

<sup>45</sup> See 51 U.S. 164, 179–80 (1994).

<sup>46</sup> *Janus Capital Grp., Inc. v. First Derivative Traders*, 564 U.S. 135, 149 (2011).

<sup>47</sup> See Spindler, *supra* note 32, at 666.

<sup>48</sup> See 134 S. Ct. 2398, 2414 (2014); see also Donald Langevoort, *Judgment Day for Fraud-on-the-Market?: Reflections on Amgen and the Second Coming of Halliburton*, 57 Ariz. L. Rev. 37 (2015) (providing an interesting analysis of the legal climate surrounding the case).

<sup>49</sup> See generally David H. Webber, *Shareholder Litigation Without Class Actions*, 57 ARIZ. L. REV. 201 (2015) (providing a thorough discussion of the role of institutional investors in a world without securities class actions).

<sup>50</sup> Grundfest, *supra* note 24, at 985.

guide, that something would be expanded public enforcement: An expanded role and budget for the SEC, DOJ, CFTC, and perhaps others, such as FINRA and the stock exchanges.<sup>51</sup> Judging from recent history such as Sarbanes-Oxley<sup>52</sup> and Dodd-Frank,<sup>53</sup> we should also expect *ex ante*, command-and-control style regulation that mandates substantive corporate governance controls, covering such ground as board practices and composition, executive compensation, internal controls, and operational prohibitions and mandates.<sup>54</sup> It is interesting to note, at least in passing, that the tide of law and economics opinion has turned substantially in favor of public regulation and public enforcement, rather than relying upon private rights and private enforcement.

## II. THE EVOLUTION OF THE CIRCULARITY AND DIVERSIFICATION CRITIQUES

As the assault on fraud on the market has progressed, two of the primary weapons have been the circularity and diversification critiques. The former asserts that the fraud on the market recovery mechanism is irredeemably flawed, and the latter holds that, even if it were not, it would not do any good. To understand for what, exactly, these critiques stand, it is helpful to trace their origins and to document the uses to which they have been put. Accordingly, this section outlines the evolution of the circularity and diversification critiques, pinpoints where it is that they went wrong, and finally, notes their modern forms, ubiquity, and importance in the securities reform literature.

### A. *The Diversification Critique*

#### 1. Netting gains and losses: Easterbrook and Fischel

The diversification critique owes its origins to Easterbrook and Fischel, writing in 1985 on optimal damages in securities fraud cases, at a time before the fraud on the market cause of action existed in its present form.<sup>55</sup> Because this is the ultimate “source document” to which many of the diversification critics cite, it is worth considering its argument in some detail. Though the concept was earlier made by Tullock in the context of run-of-the-

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<sup>51</sup> See, e.g., Bratton & Wachter, *supra* note 10, at 70; Jackson & Roe, *supra* note 23, at 237–38 (recommending expanded public enforcement in place of private securities litigation).

<sup>52</sup> The Sarbanes-Oxley Act of 2002, Pub. L. 107–204, 116 Stat. 745 (2002).

<sup>53</sup> The Dodd-Frank Act, Pub. L. 111–203, 124 Stat. 1376 (2010).

<sup>54</sup> Sarbanes-Oxley mandated substantial corporate governance measures, such as board composition and internal controls requirements. Dodd-Frank also governs substantial aspects of substantive corporate operations and governance, particularly for financial firms.

<sup>55</sup> See generally Frank H. Easterbrook & Daniel R. Fischel, *Optimal Damages in Securities Cases*, 52 U. CHI. L. REV. 611 (1985).

mill crime,<sup>56</sup> Easterbrook and Fischel appear to be the original importers of the concept of netting gains and losses for purposes of securities fraud, which subsequent authors utilize extensively, if not always correctly.

Easterbrook and Fischel begin their analysis of optimal secondary market fraud penalties by noting that the transfers resulting from securities fraud are not, in themselves, harmful.<sup>57</sup> In secondary market trading, arriving at optimal sanctions requires consideration of the “problem of matched gains and losses,”<sup>58</sup> since there is no deadweight loss where one gains what another loses. This is a general point, not limited to securities fraud: crime itself is not inefficient, since the perpetrator may enjoy what she gains as much or more than the victim laments what he loses.<sup>59</sup>

Rather, what is harmful is that investors undertake precaution costs to protect themselves from losses. These costs are inefficient, since they take up resources that could have been spent on something else. And, empirically, the magnitude of these is great: according to Easterbrook and Fischel, “[t]he very large size of the securities-information industry suggests that the costs of guarding against transfers are not small.”<sup>60</sup> Compensation—to an extent, at least—is desirable because “[t]he availability of an award will lead to a reduction in these expenditures.”<sup>61</sup> The degree to which compensation for losses is desirable would depend, among other things, upon the efficacy of precaution costs; for example, in the extreme where precaution costs have zero helpfulness, the total investment in precaution costs will be zero, the deadweight loss from fraud is zero, and the optimal sanction for fraud is therefore zero. The degree of losses provides an upper bound upon the optimal level of sanction.<sup>62</sup>

So, boiling down Easterbrook and Fischel’s treatment, we have that a rule against securities fraud can help to alleviate precaution costs and thereby increase social welfare. However, Easterbrook and Fischel stop short of endorsing loss-based remedies (and hence the modern fraud on the market rule) because the amount of investor fraud losses may depart radically from the deadweight costs of fraud.<sup>63</sup> Instead, they assert that an optimal rule

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<sup>56</sup> See Tullock, *supra* note 18, at 465–68.

<sup>57</sup> See Easterbrook & Fischel, *supra* note 55, at 626.

<sup>58</sup> *Id.* at 639.

<sup>59</sup> See Tullock, *supra* note 18, at 228.

<sup>60</sup> Easterbrook & Fischel, *supra* note 55, at 641. One contemporary “conservative” estimate puts these costs at at least \$600 billion per year. See Lee & So, *supra* note 20, at 80–81.

<sup>61</sup> Easterbrook & Fischel, *supra* note 55, at 641–42.

<sup>62</sup> See *id.* at 626 (“This drop in price is a ceiling on the net harm.”). This statement is no longer true if one takes into account externalities (that is, costs imposed on parties other than the corporation or its potential investors). For example, one could suppose that fraud at a systemically important institution, such as a major bank, may have negative effects that far outweigh investors’ potential losses if payment systems or credit markets break down.

<sup>63</sup> Elsewhere in Easterbrook and Fischel, they appear to consider gains earned by a bad actor (such as a firm that intentionally commits fraud) to be a form of social inefficiency. This point is sometimes picked up by subsequent authors, such as Henderson & Pritchard, *supra* note 17. However, such an assertion, from an economics perspective, is not true: a transfer is a

would tend to focus on the level of the “wrongdoer’s profits,” although it is left open who the “wrongdoer” in a secondary trading fraud case is, and also postulate that fraud’s scienter requirement corrects any potential overbreadth.<sup>64</sup>

To illustrate Easterbrook and Fischel’s point about the potential disconnect between investor losses and social inefficiency, consider a simple model. Imagine a world in which the issuer will commit “fraud” (which here means simply that it produces imprecise reports) unless the issuer undertakes certain precautions (such as corporate governance reforms).<sup>65</sup> The cost of these precautions is \$X. In other words, unless cost of \$X is undertaken by the issuer, the issuer’s reports will be of low precision and its value will be subject to uncertainty. Suppose that, given that uncertainty, investors will incur aggregate search costs of \$Y to avoid buying at too high, or selling at too low, a price. An optimal legal rule, in such a simple model, is to place costs of the investor search, \$Y, on the firm in the event of an imprecise report: in such a case, the firm chooses to undertake the reporting precaution if  $X < Y$ . If  $Y < X$ , then the firm does not undertake the reporting precautions. In either case, the outcome is efficient, as the firm chooses to minimize total costs, after internalizing investors’ search costs.

Notably, in the above model there is no relationship between stock price declines and precaution costs. This is because the model contains very little structure, and nothing to connect expected losses to precautionary cost expenditures. As discussed below in Part IV, which provides a model of investor precaution costs, there are substantial reasons to believe that there is a relationship between potential trading losses and precaution costs that makes a loss-based remedy appropriate in this context.

However, while Easterbrook and Fischel are skeptical of loss-based damages in secondary trading cases, this is a far cry from the modern diversification critique, which essentially calls for no damages on the grounds that fraud is completely diversifiable and imposes no harm. Interestingly, Easterbrook and Fischel appear to have considered, but rejected, the diversification critique, noting that “[e]ven a diversified investor would like to be on the winning side of every transaction,” and hence would incur precaution costs.<sup>66</sup> While much of the language of the diversification critique is taken from here, the diversification critique is nowhere to be found in Easterbrook and Fischel; rather, it is an invention of subsequent literature.

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transfer, and is economically neutral. Rather, it is the misallocation of resources into activities such as precaution costs that causes inefficiency.

<sup>64</sup> See *id.* at 640.

<sup>65</sup> This example—of fraud as accident—is not the only possible model. Alternatives are discussed in Part IV, *infra*.

<sup>66</sup> *Id.* at 641.

## 2. Mahoney's helpless investors

One of the earliest critiques of the fraud on the market rule may be found in Mahoney's 1992 article on precaution costs.<sup>67</sup> This article has been cited in much of the subsequent diversification criticism that follows, and is apparently the original point of departure in the diversification argument from Easterbrook and Fischel's treatment. Hence, it, too, is worth examining in some detail.

Mahoney is an early critic of fraud on the market, at a time when the sentiment about the rule was significantly positive, at least in academic circles.<sup>68</sup> Mahoney models behavior of "informed" and "uninformed" investors; the difference between the two is that, by construction, informed investors may choose to make investments in search while uninformed investors may not.<sup>69</sup> Uninformed investors are simply helpless. Informed traders, in contrast, can either (a) take the issuer's disclosures at face value, incur no search cost, and assume that the stock price is correct, or else (b) invest in further information, at some cost, so as to calculate a new estimate of the firm's value.<sup>70</sup>

Mahoney assumes that choice (a) above "coincides with the traditional understanding of reliance," while choice (b) does not.<sup>71</sup> Hence, a traditional reliance rule favors those who do not engage in search (it allows them to recover) and punishes those who engage in search (searching investors are not allowed to recover). In contrast, under the fraud on the market rule, Mahoney finds that both searchers and non-searchers are compensated equally. Therefore, the fraud on the market rule provides an inefficient subsidy to those who undertake search costs.

While this reliance/non-reliance distinction among informed investors drives Mahoney's negative normative view of fraud on the market,<sup>72</sup> it does

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<sup>67</sup> See generally Paul G. Mahoney, *Precaution Costs and Fraud in Impersonal Markets*, 78 VA. L. REV. 623 (1992).

<sup>68</sup> See *id.* at 624.

<sup>69</sup> *Id.* at 636.

<sup>70</sup> See *id.* at 637-38.

<sup>71</sup> *Id.* at 638.

<sup>72</sup> Mahoney's assumption regarding what constitutes reliance is controversial. The paradigm of precautionary search cost is the securities analyst who pores over the issuer's public reports (such as forms 10-Q, 10-K and 8-K), questions management on quarterly earnings conference calls, and constructs a model of future cash flows in order to arrive at a fundamental valuation. This analyst is certainly relying, in the traditional sense, on the information that he reviews and incorporates into his model; yet in Mahoney's model, such an analyst is cabined into the "non-reliance" category. Also, Mahoney's assumption of what constitutes traditional reliance is equally problematic: the investor who passively engages in no research and trades at the resulting market price is engaging in traditional reliance under Mahoney's assumption.

To the contrary, subsequent work usually views informed trading strategies that involve undertaking search costs as constituting actual reliance, in the traditional sense, on the issuer's disclosures. For example, Fisch proposes cutting back the reliance presumption to the effect that informed traders should be compensated for their "reliance based investment strateg[ies]," while "investors who relied solely on market price" should not be compensated.

not actually get to the diversification critique. Rather, the diversification critique grows out of Mahoney's consideration of uninformed investors. Uninformed investors, in contrast to informed investors, cannot by construction undertake investments in information.<sup>73</sup> Because this is the only precautionary cost for which Mahoney's model allows, uninformed investors cannot, ipso facto, incur precaution costs. This by itself is enough to determine that an antifraud rule protecting uninformed investors is not required from an efficiency standpoint: if there are no precaution costs, then fraud is only a transfer from the sheep to the sharks, without any deadweight loss (putting aside external issues such as capital allocation, liquidity, and price efficiency).

At this point, Mahoney's argument against fraud on the market is complete: on his model's terms, fraud on the market is inefficient. None of this involved actual diversification, however. It is only afterward, as a sort of dicta, that Mahoney ventures that these uninformed investors are not actually harmed by fraud based on diversification: uninformed investors need not suffer fraud related losses because the risk of fraud-related trading losses can be "diversified away."<sup>74</sup> This statement is unaccompanied by further analysis,<sup>75</sup> likely because, in the context of Mahoney's model and norm of economic efficiency, it is entirely irrelevant. Given that these uninformed investors cannot avoid fraud losses, it does not matter whether they face losses or not: in either case, helplessness or diversifiability, the fraud on the market rule does not improve efficiency.<sup>76</sup>

For Mahoney, the diversification argument itself is something of a throwaway, unnecessary and perhaps orthogonal to the chief claim that fraud on the market subsidizes inefficient investment in information. Yet, it appears to be primarily this diversification argument that has been picked up by subsequent commentators, rather than Mahoney's model and its particular assumptions.<sup>77</sup> Mahoney's 1992 article has been clearly influential, garnering

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Jill Fisch, *Confronting the Circularity Problem in Private Securities Litigation*, 2009 WIS. L. REV. 333, 348–49 (2009). Similarly, Pritchard views informed investors as engaging in "verification" of issuer representations, and meeting traditional reliance requirements. Pritchard, *supra* note 38, at 12–13.

<sup>73</sup> More specifically, Mahoney allows that they could, but by construction any such investment will be of net negative value, of which the uninformed investors are aware. Mahoney, *supra* note 33, at 639.

<sup>74</sup> *See id.*

<sup>75</sup> *See id.*

<sup>76</sup> It is worth, for a moment, questioning the assumption of helplessness of uninformed investors. One might suppose that, at the very least, uninformed investors can abstain from entering the market altogether, which they will tend to do if they find themselves systemically expropriated by better-informed traders. Indeed, modern theories of adverse selection, financial intermediation, asymmetric information, and illiquidity view the precautionary actions of uninformed investors as a significant problem affecting everything from IPO valuations to bid-ask spreads. *See supra* note 19 and accompanying text.

<sup>77</sup> *See, e.g.,* Amanda M. Rose, *Better Bounty Hunting: How the SEC's New Whistleblower Program Changes the Securities Fraud Class Action Debate*, 108 NW. U. L. REV. 1235, 1244 n.38 (2014) (recapitulating Mahoney's diversification argument as "arguing that uninformed investors will not invest in precautions . . . because they can cheaply diversify and thus avoid

a significant field of citations in the intervening years, but the adopters appear to primarily utilize the normative bottom-line (fraud on the market may be inefficient) and the diversification critique instead of the model. In fact, one can follow the flow of Mahoney's diversification argument to works by authors such as Langevoort<sup>78</sup> and Alexander,<sup>79</sup> which are themselves highly cited and influential articles, and from there into the current academic consensus.<sup>80</sup>

### 3. *To the modern diversification critique*

Thus, we arrive at the modern diversification critique. Consider the position of Joseph Grundfest—former SEC Commissioner, now Professor at Stanford—who is arguably the most persistent and influential critic of fraud on the market class actions. Grundfest cites to an “extensive economic literature” that finds that Section 10(b) damages are “overbroad” and should be “cut back.”<sup>81</sup> One such finding is that fraud does not harm investors directly, because fraud risk can simply be diversified away:

*[B]ecause aftermarket transactors are both purchasers and sellers over time, and because the probability of profiting by selling into an aftermarket fraud is the same as the probability of suffering a loss as a consequence of buying into an aftermarket fraud, the aggregate risk created by aftermarket fraud can be viewed as diversifiable. Indeed, on average and over time, the risk of being harmed by aftermarket securities fraud (at least as measured exclusively by stock prices) averages to zero for investors who purchase and sell with equal frequency. Further, to the extent that these damages are covered by directors and officers insurance, they are mutualized across all publicly traded firms that purchase this form of coverage and are thus borne by all investors in those firms.<sup>82</sup>*

In this version of the critique, any investor facing the possibility of fraud need not be worried at all: if she buys a security, it is true that she may lose from fraudulent price inflation, but to the extent the risk of fraudulent price inflation exists, down the line she is likely to profit from it when it

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losses from secondary market fraud.”). This is not actually Mahoney's model. Rather, Mahoney's model does not allow (effectively, by assuming prohibitive costs) for undiversified investors to undertake precaution costs at all. *See generally* Mahoney, *supra* note 33.

<sup>78</sup> See Donald C. Langevoort, *Capping Damages for Open-Market Securities Fraud*, 38 ARIZ. L. REV. 639, 646–47 nn.33 & 36 (1996).

<sup>79</sup> See Janet Cooper Alexander, *Rethinking Damages in Securities Class Actions*, 48 STAN. L. REV. 1487, 1502–03 n.58 (1996).

<sup>80</sup> *See generally* Rose, *supra* note 77.

<sup>81</sup> Grundfest, *supra* note 7, at 374. The literature cited is actually law and economics literature, going back to Easterbrook & Fischel, *supra* note 55, and tracing over many of the same sources cited in the instant paper.

<sup>82</sup> Grundfest, *supra* note 7, at 313–14.



comes time to sell. The argument is at its strongest when the investor engages in many such buying and selling transactions: by the law of large numbers, as the number of transactions increases, the investor's actual returns become more and more likely to be close to the expected, average returns, and hence even risk-averse investors are unharmed. All they need do is diversify.

Note that the scope of the diversification argument has expanded from Mahoney's 1992 model, which was only concerned with the social inefficiencies (or, more precisely, the lack thereof) relating to uninformed and helpless investors. The logical leap has been made to conclude that no investors, not even "informed" ones who can engage in search costs, will undertake any costly search in the face of the fraud.

Importantly as well, the diversification critique extends not just to fraud on the market class actions, but to *any* remedial action for securities fraud.<sup>83</sup> If fraud imposes no harm on putatively defrauded investors, then there is little reason to do anything about it on their behalf. Neither public nor private enforcement will help. Rather, such measures would be, at best, a waste of money and, more seriously, a drag on capital formation and economic productivity. This is Calvino's story of universal theft, where everyone is, counterintuitively, just fine with the status quo.

While few diversificationists go on to embrace this final solution for fraud remedies as such—though some have recognized it, if not endorsed it<sup>84</sup>—there is little offered in the way of a functional limitation on the reach of the diversification critique. Often there is a focus on agency costs: Since most people can agree that bad managers should be punished, some writers focus, therefore, on concepts such as unjust enrichment of managers as the guiding principle of remedies, as in Langevoort,<sup>85</sup> and Henderson and Pritchard.<sup>86</sup> (A question, however, that is not addressed is why losing to managers triggers social inefficiencies, while losing to other investors does not. Eco-

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<sup>83</sup> Most proponents of the diversification critique do not appear willing to go this far. For instance, Grundfest allows that there may be capital allocation issues from fraud. *See id.* at 373, n.351.

<sup>84</sup> Langevoort, *supra* note 78, makes exactly this point. After using the diversification argument to conclude that investors are generally unharmed by fraud, and hence need not be compensated, he observes that "[t]here is some controversy, of course, over the importance of deterrence in the absence of a compelling argument for a compensatory regime." *Id.* at 652. Some commentators have suggested relatively extreme policy proposals. *See, e.g.,* Urska Velikonja, *The Cost of Securities Fraud*, 54 WM. & MARY L. REV. 1887, 1956 (2013) (arguing that investors themselves do not need protection, but rather that some protection is necessary to protect non-shareholder stakeholders and other market participants).

<sup>85</sup> *See* Langevoort, *supra* note 78, at 652.

<sup>86</sup> While Henderson and Pritchard argue that "diversification protects investors more completely (and cheaply) than lawsuits ever could," they would not eliminate anti-fraud enforcement aimed at managers who commit fraud—based on a rationale of "deterrence." *See* Henderson & Pritchard, *supra* note 17, at 25.

nomically, there should be little difference.<sup>87</sup>) Additionally, the diversification critics accept that externalities may arise from fraud, though they are hard to measure: Significant literature explores, for instance, the societal importance of relative price efficiency.<sup>88</sup> However, while fraud doubtless causes externalities, such as capital misallocation, there is no particularly good reason why plaintiff shareholder losses would accurately approximate that externality. In such a vein, there has arisen a literature of apology for 10b-5: While investor losses from fraud might not be a problem per se, perhaps price efficiency is,<sup>89</sup> or stakeholder welfare,<sup>90</sup> or corporate governance,<sup>91</sup> or effective shareholder management,<sup>92</sup> or managerial agency costs,<sup>93</sup> and so on. And depending upon the contours of the proffered apology, the recommendation is to cut back 10b-5 either less or more.

There is an additional, sometimes-voiced angle to the diversification arguments: the concept that losing to an issuer trading in its own shares (primary sales) is harmful, while losing to another investor (secondary sales) is not. From Pritchard, consider the following:

*[In contrast to primary issuer fraud] secondary market fraud does not create a net wealth transfer away from investors, at least in the aggregate. . . . Assuming all traders are ignorant of the fraud, they can expect to win as often as they lose from fraudulently distorted prices. With no expected loss from fraud on the market, shareholders have little incentive to take precautions against the fraud. . . .*

*Verification [search] is not an option for the passive investor . . . ; checking the accuracy of a corporation's statements is a task that can be only undertaken by an investment professional, and even these sophisticated investors actors will uncover fraud only rarely (and profit handsomely when they do, suggesting that it may not be essential to compensate them when they do not). Passive investors can protect themselves against fraud much more cheaply*

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<sup>87</sup> One could assert that managers incur fraud costs to manipulate the value of securities, but in the economics of crime, fraud costs are largely equivalent to precaution costs, as illustrated in Part IV, *infra*.

<sup>88</sup> See, e.g., Marcel Kahan, *Securities Laws and the Social Costs of "Inaccurate" Stock Prices*, 41 DUKE L.J. 977, 1019 (1992); see also James C. Spindler, *Integrity and Innovation in the Public Capital Markets: A Survey of the Securities Law Literature*, in RESEARCH HANDBOOK OF LAW, INNOVATION AND GROWTH 45, 45–66 (Robert Litan ed., 2011) (providing a survey of liquidity literature in law and economics).

<sup>89</sup> See Fisch, *supra* note 72, at 349.

<sup>90</sup> See Velikonja, *supra* note 84, at 1887.

<sup>91</sup> See Lawrence E. Mitchell, *The "Innocent Shareholder": An Essay on Compensation and Deterrence in Securities Class-Action Lawsuits*, 2009 WISC. L. REV. 243, 246–47 (2009).

<sup>92</sup> See Merritt B. Fox, *Why Civil Liability for Disclosure Violations When Issuers Do Not Trade?*, 2009 WISC. L. REV. 297, 301 (2009).

<sup>93</sup> See Paul G. Mahoney, *Mandatory Disclosure as a Solution to Agency Problems*, 62 U. CHI. L. REV. 1047, 1048 (1995).

*through diversification. Fraud, like other business reversals, is a firm specific risk, so assembling a broad portfolio of companies essentially eliminates its effect on an investor's portfolio. The losses from the few bad apples will be offset by the (discounted) gains from the honest companies.*<sup>94</sup>

Pritchard contends that, where the issuer is not on the other side of the transaction, investors will be unconcerned about expropriation in the case of fraud because there is no net loss among investors as a group. But something is clearly amiss: note, as a preliminary matter, that Pritchard has concluded that fraud losses are generally diversifiable even while also concluding that informed investors may stand to “profit handsomely” from information-arbitrage related to the fraud. This is internally inconsistent: the informed traders’ handsome profits must come from somewhere, and if there are only informed and uninformed traders, those handsome profits must come from uninformed traders. Pritchard’s conclusion is puzzling, but the issue is, unfortunately, not further discussed therein.<sup>95</sup>

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<sup>94</sup> Adam C. Pritchard, *Halliburton II: A Loser's History*, 10 DUKE J. CONST. L. & PUB. POL'Y 27, 36 (2015).

<sup>95</sup> Looking at Pritchard’s earlier writing sheds some light on the evolution of the inconsistency. One of Pritchard’s earliest articles contained a short but succinct statement on diversification: “Diversification converts the firm-specific risk of corporate fraud to a fixed rather than variable cost, but it cannot eliminate the problem.” Adam Pritchard, *O'Melveny & Meyers v. FDIC: Imputation of Fraud and Optimal Monitoring*, 4 SUP. CT. ECON. REV. 179, 182 (1994). This is correct.

From there, the waters are muddied. In 1999, Pritchard recognizes that gains to informed traders generally imply uninformed trader losses, making use of Glosten and Milgrom’s bid-ask liquidity model. See Adam C. Pritchard, *Markets as Monitors*, 85 VA. L. REV. 925, 941–44 (1999). Pritchard notes that such losses are indeed systemic. See *id.*; see also Marilyn F. Johnson, Karen K. Nelson, & Adam C. Pritchard, *In re Silicon Graphics Inc.: Shareholder Wealth Effect Resulting from the Interpretation of the Private Securities Litigation Reform Act's Pleading Standard*, 73 S. CAL. L. REV. 773, 779–81 (2000) (reciting liquidity effects of misreporting and concluding “[i]n sum, investors should value devices that reduce the incidence of fraud.”). But there is confusion about what that means. Pritchard considers illiquidity to be a social cost, and allows that illiquidity may arise from informational asymmetry between informed and uninformed traders, leading to higher transaction costs, share discounts (that is, lower stock prices generally), and lower returns to trading. See Pritchard, *Markets as Monitors*, at 943–46. That is all correct. Nevertheless, the same article concludes, without further discussion of the issue, that while illiquidity from fraud on the market is a social cost, “fraud on the market can, for the most part, be diversified away.” *Id.* at 945. The paper’s ultimate conclusion is the same: “[t]he risks created by fraud on the market are largely diversifiable, so compensation serves no insurance function.” *Id.* at 1019. This is internally inconsistent.

Subsequent work largely elides such detail, and takes only the diversification conclusion. For example, Pritchard’s testimony to Congress states, without qualification, that there is “no expected loss from fraud on the market, [and] shareholders do not need to take precautions against the fraud; they can protect themselves much more cheaply through diversification.” *Evaluating S. 1551*, *supra* note 9, at 218; see also Henderson & Pritchard, *supra*, note 17, at 26 (similarly stating that “diversification protects investors more completely (and cheaply) than lawsuits ever could”).

In a recent discussion, Pritchard suggested, alternatively, that the difficulty in uncovering misreporting renders informed trading opportunities small, and therefore expected fraud losses are also small. This is, again, problematic. What credible reports do is to lower the degree of price uncertainty, and hence the degree to which information search is profitable. Where mis-

Upon reflection, one sees that a sharp distinction between primary trades and secondary trades is incorrect. In a zero-sum game among secondary market traders, the players still try to win it, expending resources to do so. As shown by an extensive financial literature on liquidity, such games in secondary markets carry with them significant costs.<sup>96</sup> Diversification changes nothing, as Easterbrook and Fischel pointed out three decades ago, since all investors (even diversified) would like to win more often than not. If uninformed traders stand to fund others' "handsome profits" by trading against a better informed party, they do not care whether that other is an issuer or someone else. Such dynamics are explored in more depth in Part IV, *infra*.

This distinction between primary and secondary frauds does raise another issue, one which was contemplated by Easterbrook and Fischel: could it be that, in secondary markets, there is less incentive to take precautions because the issuer's incentives to commit fraud are low? There are at least two intuitive responses to this question. The first is that the issuer's incentives to commit fraud may not be low, since price-inflating fraud benefits the firm's current shareholders, at the expense of future shareholders; and it is the current shareholders who may set the issuer's disclosure policies and management.<sup>97</sup> The second response is that, if the rate of fraud is indeed low, then the rate of fraud remedies being awarded should also be low; the problem is therefore self-correcting. Such considerations are explored in more detail in Part IV, *infra*.

## B. The Circularity Critique

### 1. Marginal circularity: Cox

The first use of the term "circularity" as a critique of fraud on the market comes from Cox in 1997.<sup>98</sup> According to Cox, circularity leads to impairment of the compensation and deterrence functions.<sup>99</sup> Importantly, however, Cox notes that the extent of this problem varies with the circum-

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reporting occurs in equilibrium, a firm's reports have less informational value, which means that price uncertainty is high; in the extreme, investors disregard the firm's reporting altogether, and it is as though the firm made no report at all (in other words, the set of available information search strategies cannot be smaller than it was prior to the report). Where reports are non-credible, an informed trader need not uncover a fraud in order to profit from information-search; rather, she need only obtain some information that allows her to value the firm more accurately than other traders. This is discussed in more detail in Part IV, *infra*, particularly at notes 169–78 and accompanying text.

<sup>96</sup> See Spindler, *supra* note 88, at 62–63; for the seminal economic literature on informational liquidity costs, see *supra* note 19 and accompanying text.

<sup>97</sup> For such a model, see Spindler, *supra* note 10 (developing a formal economic model of misreporting where the firm perfectly represents current shareholder interests).

<sup>98</sup> See James D. Cox, *Making Securities Fraud Class Actions Virtuous*, 39 ARIZ. L. REV. 497, 509 (1997). This is the earliest instance I have found. See also Fisch, *supra* note 72, at 334, n.4 (also crediting Cox with the generation of the circularity argument).

<sup>99</sup> See Cox, *supra* note 98, at 509.

stances: the “degree of circularity” depends on the “relative turnover of the company’s shares.”<sup>100</sup> The degree of circularity in turn determines the degree of the impairment: a plaintiff class that “represents 5%” of a company’s shares would be funding “effectively 5% of the settlement . . . . [a]nd . . . then 95% of the settlement’s effects are borne by [the company’s] non-class member shareholders.”<sup>101</sup> Thus, in this initial instantiation of the circularity critique, circularity is viewed as a problem at the margin, which, to the extent it exists, reduces compensation and deterrence. Cox’s discussion subsequently turns to the questionable efficacy of punishing shareholders for managers’ malfeasance, and the circularity issue is not revisited.

Cox’s circularity point is true under at least some forms of remedy. For instance, if there were a statutory penalty of \$100 to be paid to defrauded shareholders, and if those shareholders own 10% of the firm, they would also be funding 10% of the remedy. The net transfer, taking into account the diminution of their share value, would be only \$90. Thus, the circularity argument potentially applies to any form of vicarious liability designed to compensate defrauded investors, not just fraud on the market. (As described below in Part III, the circularity critique is not true where the remedy itself takes into account the plaintiff’s share-based losses, as fraud on the market in fact does.)

From these cautious beginnings, circularity gained significant traction in critiques of private securities litigation. Statements regarding circularity have become more aggressive and less accurate than Cox’s discussion of marginal circularity effects.

## 2. *Coffee’s “compensation as unobtainable”*

To take a particularly influential example, consider Coffee’s *Reforming the Securities Class Action*, one of the most-cited fraud on the market articles in academia and, it seems, in recent Supreme Court briefs.<sup>102</sup> Coffee finds that, while securities class actions “impose enormous penalties,” they “neither compensate nor deter” due to the circularity problem.<sup>103</sup> This is a much higher octane version of the circularity critique than Cox’s marginal circularity problem.

The additional oomph of Coffee’s formulation derives from combining circularity with diversification:

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<sup>100</sup> *Id.*

<sup>101</sup> *Id.* at 509–10.

<sup>102</sup> John C. Coffee, *Reforming the Securities Class Action*, 106 COLUM. L. REV. 1534, 1534–36 (2006). Coffee was cited by both the petitioner and respondent in *Halliburton*. See Brief of Petitioner at 25–27, *Halliburton Co. v. Erica P. John Fund, Inc.*, 563 U.S. 804 (2011) (No. 09–1403); Brief of Respondent at 18, 24, *Halliburton Co. v. Erica P. John Fund, Inc.*, 563 U.S. 804 (2011) (No. 09–1403). Only the petitioner, seeking to overturn *Basic*, cited the circularity argument, of course.

<sup>103</sup> See Coffee, *supra* note 102, at 1534, 1536.

*[Shareholders who] purchased stock at times that are both inside and outside the class period . . . [will be] on both sides of the litigation. Thus they are effectively making wealth transfers to themselves, in effect shifting money from one pocket to another . . . .*

*But from a broader perspective, this is also the position of the diversified shareholder who holds stock in many corporations. . . . [O]n an aggregate basis, diversified investors will be shareholders on both sides of the class period divide, sometimes being a shareholder within the class period and sometimes a shareholder outside the class period. As a result, at least in the aggregate, diversified investors are largely making wealth transfers among themselves as the result of contemporary securities litigation.<sup>104</sup>*

Note that Coffee's first point, in which some shareholders are on "both sides" of the litigation, does not actually preclude compensation. It merely increases the marginal effect of the circularity problem noted by Cox: If a plaintiff purchased 5% of a company during the effective period of a fraud, of whose shares he already owned 10% prior to the effective period of the fraud, Cox's math would indicate that the plaintiff funds 15% of his own settlement, the remaining 85% coming from others. (Again deferring the analysis to later, one should, in the meantime, note that whether this is supra-optimal, sub-optimal, or neither is yet to be determined.) This point is thus something of a red herring: compensation is certainly not impossible.

Coffee's second point, about the "aggregate" payoffs of diversified investors, does more of the heavy lifting: it allows the shift from Cox's concern—that circularity might reduce compensation—to Coffee's maxim of "compensation as unobtainable."<sup>105</sup> (Perhaps for this reason, it is also this point that seems to have really caught on.<sup>106</sup>) What Coffee says is, in effect, that it is not correct to look at any particular securities lawsuit; rather, one must consider that the plaintiff in one suit is almost certainly a defendant in

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<sup>104</sup> *Id.* at 1558.

<sup>105</sup> *Id.* at 1536.

<sup>106</sup> Coffee, *supra* note 102, is widely cited in academia, court briefs, and policy circles. See, e.g., Miriam H. Baer, *Some Thoughts on the Porous Boundary Between Ordinary and Extraordinary Corporate Fraud: Ensuring Corporate Conduct* by Tom Baker and Sean J. Griffith, 2010, 14 U. PA. J. BUS. L. 927, 932 n.25 (2012) and accompanying text (citing Coffee, *supra* note 102, for the "famous pocket-shifting or 'circularity' argument" which holds that, "assuming investors are diversified, they are simply paying themselves, less transaction costs, for the very wrongs they suffered"); Urska Velikonja, *Public Compensation for Private Harm: Evidence from the Sec's Fair Fund Distributions*, 67 STAN. L. REV. 331, 395 n.16 (2015) (stating that Coffee, *supra* note 102, is a "much-cited statement of the circularity problem"). Unsurprisingly, Coffee, *supra* note 102, was cited extensively in the Petitioners Brief attempting to overturn *Basic*. See generally Brief of Petitioner at 40–45, *Halliburton Co. v. Erica P. John Fund, Inc.*, 563 U.S. 804 (2011) (No. 09–1403);

another. If that is the case, then it stands to reason that securities litigation, as a system, results in a zero net transfer (minus attorneys' fees).

While semantically similar, Coffee's thesis of circularity-among-diversified investors is different than the diversification critique (of which Coffee, to my knowledge, is not actually an adopter). The diversification critique states that the net harm to investors from fraud is zero. In contrast, Coffee's circularity-among-diversified investors critique allows that fraud may be harmful—indeed, Coffee has always cited the need for effective deterrence, and his 2006 article is no exception. Rather, Coffee's diversified-circularity critique asserts the impossibility of private securities litigation being able to achieve compensation—and if that is the case, then it is difficult to contemplate private securities litigation doing anything useful at all, as Langevoort observed.<sup>107</sup>

While this point is examined in more detail below in Part III, what this circularity critique-on-steroids misses is that, even if in equilibrium expected net compensation is zero, a system that compensates investors for losses in any particular transaction eliminates the need for precaution costs in *that* transaction—and therefore eliminates the need for precaution costs in *all* transactions.<sup>108</sup> This is socially efficient. Again, putting it in terms of Calvino's parable, even though no one in Calvino's world loses from theft when everyone is a thief, being a thief presumably requires some effort. If, instead, there were a system of restitution in place, Calvino's thieves would not have to go out at night to steal in order to make sure they are not net losers. Such efforts could instead be redirected toward more socially productive activities.

Interestingly, Coffee has a ready-made rejoinder for Calvino:

*[I]n the case of . . . the "secondary market" securities class action, the victims and the shareholders are largely the same (at least if we assume the shareholders to be diversified). Thus, enterprise liability in this context is a strategy akin to that of punishing the victims of burglary for their failure to take greater precautions.*<sup>109</sup>

This is true, in a way. Given that each of Calvino's subjects is both burglar and victim, subjecting the burglars to penalties for theft would, as Coffee suggests, be subjecting the victims to penalties for theft. However, that said, it would make them better off by bringing the burglary rat-race to an end.

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<sup>107</sup> See Langevoort, *supra* note 78, at 652 and accompanying text.

<sup>108</sup> It also eliminates the gains from stealing, but that is a point regarding deterrence.

<sup>109</sup> Coffee, *supra* note 102, at 1562.

### 3. *To the modern circularity critique*

In any event, the circularity critique now rules the day. Some, such as Grundfest, allow that circularity may still permit transfers among different classes of investors, shuffling money around:

*[A]ll stockholders of the defendant corporation wind up bearing the cost of the settlement. It is only in the unusual instance when an executive or director reaches into his or her own pocket to fund a recovery out of personal assets that the section 10(b) private litigation process does not simply result in a wealth transfer among different categories of investors, net, of course, of the transaction costs generated by plaintiff and defense counsel and associated litigation frictions.<sup>110</sup>*

But others have adopted Coffee's "compensation as unobtainable" maxim. Consider Professor Adam Pritchard of Michigan:

*Shareholders effectively take a dollar from one pocket, pay about half of that dollar to lawyers on both sides, and then put the left-over change in their other pocket.<sup>111</sup>*

Professor Hal Scott of Harvard:

*Class actions generally result in institutional shareholders suing themselves while giving lawyers over 25 percent of the settlement amount. All shareholders pay for something they did not do and could not control.<sup>112</sup>*

And, as a final example (but one could go on), the *eminences grises* of the Paulson Committee to Reform Capital Markets:

*[Securities class action] recovery is largely paid by diversified shareholders to diversified shareholders and thus represents a pocket-shifting wealth transfer that compensates no one in any meaningful sense and that incurs substantial wasteful transaction costs in the process.<sup>113</sup>*

Thus has the circularity result mutated from its humble beginnings, as a marginal impediment to compensation, into an impossibility theorem that

<sup>110</sup> Grundfest, *supra* note 7.

<sup>111</sup> Adam C. Pritchard, "Basic" Error is Focus on Loss, NAT'L L.J., Sept. 22, 2008 at 26.

<sup>112</sup> Scott, *supra* note 6, at 144-45.

<sup>113</sup> INTERM REPORT OF THE COMMITTEE ON CAPITAL MARKETS REGULATION 79 (Nov. 30, 2006). The Paulson Committee was assembled by Treasury Secretary Henry Paulson in 2006 to recommend capital markets reforms. It consists of prominent law, business, and finance experts in both industry and academia. See NEW INDEPENDENT NON-PARTISAN COMMITTEE TO STUDY CAPITAL MARKETS REGULATION AND MAKE RECOMMENDATIONS TO KEY POLICY MAKERS 1 (Sept. 12, 2006), [www.chicagobooth.edu/news/committee\\_on\\_capitalmarketsregulation.pdf](http://www.chicagobooth.edu/news/committee_on_capitalmarketsregulation.pdf).



denies any prospect of meaningful recovery. And, as with the diversification critique, it is held to be true by some very good company indeed.

### C. Influence

The circularity and diversification critiques have been remarkably successful. Academic adherents are legion and comprise a veritable who's who of securities law. A cursory list includes Alexander;<sup>114</sup> Fox;<sup>115</sup> Coffee;<sup>116</sup> Booth;<sup>117</sup> Langevoort, Cox, Fisch, Perino, Pritchard and Sale;<sup>118</sup> Pritchard;<sup>119</sup> Bratton and Wachter;<sup>120</sup> Scott;<sup>121</sup> Rose and Squire;<sup>122</sup> Rose;<sup>123</sup>; Velikonja;<sup>124</sup> Scott and Silverman;<sup>125</sup> Grundfest;<sup>126</sup> Henderson and Pritchard;<sup>127</sup> Gorga;<sup>128</sup> and Sale and Thompson.<sup>129</sup> Some scholars have even coined variants such as “semi-circularity”<sup>130</sup> and “double-circularity.”<sup>131</sup> It appears most legal academics who propose significant securities class action reform have adopted some form of these arguments.

These two critiques have become the go-to tools for those advocating private securities litigation reform. Proposals based at least in part on these critiques include elimination of private right of action;<sup>132</sup> capping damages;<sup>133</sup> fines and jail for managers;<sup>134</sup> stakeholder, rather than shareholder,

<sup>114</sup> See Janet Cooper Alexander, *The Value of Bad News in Securities Class Actions*, 41 UCLA L. REV. 1421, 1443–44 (1994); see also Alexander, *supra* note 79.

<sup>115</sup> See Merritt B. Fox, *Demystifying Causation in Fraud-on-the-Market Actions*, 60 BUS. LAW. 506, 529 (2005); *Civil Liability and Mandatory Disclosure*, 109 COLUM. L. REV. 237, 253 (2009); see also Fox, *supra* note 92.

<sup>116</sup> See Coffee, *supra* note 102.

<sup>117</sup> See generally Richard A. Booth, *The End of Securities Fraud Class Action?*, 29 REGULATION 46 (2006).

<sup>118</sup> See generally Letter from Six Law Professors to Christopher Cox, Chairman, SEC (Aug. 2, 2007) (on file with author).

<sup>119</sup> See Pritchard, *supra* note 9; see also Pritchard, *supra* note 38.

<sup>120</sup> See Bratton & Wachter, *supra* note 10, at 72–73, 76, 94–95.

<sup>121</sup> See Scott, *supra* note 6.

<sup>122</sup> See Amanda M. Rose & Richard Squire, *Intraportfolio Litigation*, 105 NW. U. L. REV. 1679, 1689 (2011) (noting that diversification and circularity imply that “all of the classic justifications for corporate liability are called into question in fraud-on-the-market cases” (emphasis added)).

<sup>123</sup> See generally Amanda M. Rose, *Fraud on the Market: An Action Without a Cause*, 160 U. PA. L. REV. 87 (2011); see also Rose, *supra* note 77.

<sup>124</sup> See Velikonja, *supra* note 84.

<sup>125</sup> See Hal S. Scott & Leslie N. Silverman, *Stockholder Adoption of Mandatory Individual Arbitration for Stockholder Disputes*, 36 HARV. J. L. & PUB. POL'Y 1187, 1205 (2013).

<sup>126</sup> See Grundfest, *supra* note 7.

<sup>127</sup> See Henderson & Pritchard, *supra* note 17.

<sup>128</sup> See generally Erica Gorga, *The Impact of the Financial Crisis on Nonfinancial Firms: The Case of Brazilian Corporations and the “Double Circularity” Problem in Transnational Securities Litigation*, 16 THEORETICAL INQUIRIES IN LAW 131 (2015).

<sup>129</sup> See generally Hillary A. Sale & Robert B. Thompson, *Market Intermediation, Publicness, and Securities Class Actions*, 93 WASH. U. L. REV. 487 (2015).

<sup>130</sup> See Webber, *supra* note 43 at 168.

<sup>131</sup> See Gorga, *supra* note 128, at 138.

<sup>132</sup> See, e.g., Grundfest, *supra* note 7.

<sup>133</sup> See, e.g., Langevoort, *supra* note 78.

based compensation mechanisms;<sup>135</sup> enhanced whistleblower protections and rewards;<sup>136</sup> devolution of enforcement to the stock exchanges;<sup>137</sup> and enhanced public enforcement.<sup>138</sup> Based on their ubiquity and the sheer mileage that the legal academy has gotten out of them, the diversification and circularity critiques are arguably the most influential development in securities law theory since Easterbrook and Fischel explored the theory of mandatory disclosure in the mid-1980s.

Not to be left out, think tanks, lobbyists, and, to some degree, regulators have gotten in on the game as well. The U.S. Chamber of Commerce has adopted the critiques as part of its pro-business, anti-lawsuit lobbyist platform.<sup>139</sup> The Committee to Reform the Capital Markets (also known as the Paulson Committee) has adopted the critiques, to some extent, in both its interim report and its amicus brief in *Halliburton*.<sup>140</sup> The Kauffman Foundation, a pro-entrepreneurship think-tank and policy incubator, has utilized the critiques in its recommendations to move away from private securities litigation.<sup>141</sup> And, finally in this non-exhaustive list, Congress has invited testimony that urges reform based on the critiques.<sup>142</sup>

Unfortunately for such would-be reforms, as demonstrated in the next two sections, the circularity and diversification critiques are not correct.

### III. CIRCULARITY WITH FULL COMPENSATION

Proponents of the circularity argument proceed from the observation that shareholders stand on both sides of a securities class action: some shareholders (those in the affected class) recover as plaintiffs, while all shareholders at the time of the recovery see their ownership in the corporation diminished. At least some shareholders fill the role of both payor and payee. Additionally, there are costs of litigation that must be borne, typically by the firm, since plaintiffs' attorneys typically collect a contingency fee in the event of judgment or settlement. This is all true.

As noted above, where the modern circularity proponents go further is to contend that this eviscerates the compensatory and deterrent objectives of securities class actions. The claim is that, at the end of the day, all securities

<sup>134</sup> See, e.g., Langevoort, *supra* note 22.

<sup>135</sup> See, e.g., Velikonja, *supra* note 84.

<sup>136</sup> See, e.g., Rose, *supra* note 77.

<sup>137</sup> See Adam C. Pritchard, *Markets as Monitors: A Proposal to Replace Class Actions with Exchanges as Securities Fraud Enforcers*, 85 VA. L. REV. 925, 930 (1999).

<sup>138</sup> See, e.g., Jackson & Roe, *supra* note 23.

<sup>139</sup> See generally ANDREW J. PINCUS, U.S. CHAMBER INST. FOR LEGAL REFORM, WHAT'S WRONG WITH SECURITIES CLASS ACTION LAWSUITS (2014).

<sup>140</sup> See generally INTERIM REPORT OF THE COMMITTEE ON CAPITAL MARKETS REGULATION, *supra* note 113; Brief for the Committee on Capital Markets Regulation as Amicus Curiae Supporting Petitioners at 11–12, *Halliburton Co. v. Erica P. John Fund, Inc.*, 134 S. Ct. 1156 (2015) (No. 13-317).

<sup>141</sup> See Scott, *supra* note 6, at 150–52.

<sup>142</sup> See *Evaluating S. 1551*, *supra* note 9 and accompanying text.

class actions do is so-called “pocket shifting”: money moves from one pocket to another (ostensibly, of the same shareholder). Obviously, the transfer of money from one hypothetical pocket to another does not result in net gains or losses. Without creating net gains or losses, a mechanism such as securities class actions can provide neither deterrence nor compensation.

This argument is wrong, however, because it fails to take into account three important aspects of securities class actions. First, while it is the case that some shareholders stand on both sides of the securities class action, this overlap is not complete. This means that net transfers are possible for any particular trade, just as a non-pro-rata dividend can effect net transfers among shareholders.<sup>143</sup> Second, the damages remedy in a securities class action takes into account the firm’s prospective liability in the securities class action (this has, in the past, been criticized as an excessive “feedback effect” of securities class action damages<sup>144</sup>). The larger the number shares represented by the plaintiff class (or, equivalently, the greater the degree of overlap between payors and payees), the more the share price will drop. Putting the two aspects of this problem together, the greater the degree of “circularity,” the larger will be the damages award, and the net transfer to the plaintiff class will be correspondingly greater as well. As shown below, mathematically, circularity and feedback operate together to preserve the net transfer to the plaintiff class at the level of actual damages. Under certain conditions, this preservation is complete, and damages are exactly correct. Finally, turning to the interaction between compensation and precaution costs, it is not net compensation across *all* trades that discourages precaution costs in any particular trade, but rather whether compensation exists for *that* particular trade. I discuss this in detail below.

#### A. *A mathematical proof of full compensation, despite circularity*

Fraud on the market class actions allow the plaintiff shareholders to recover from the firm economic damages attributable to the fraud. These damages are typically (though, in theory, not necessarily always) measured as the decline in share value at the time of the revelation of the fraud. An event study analysis compares the stock’s price prior to the revelation to the price after the revelation, attempting to control for market movements and other factors affecting the firm.<sup>145</sup> The amount of the decline in value is the per-share remedy awarded to the plaintiff class. For ease of reference, the

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<sup>143</sup> See Park, *supra* note 13, at 324–26 (also making exactly this point).

<sup>144</sup> See Richard A. Booth, *The End of the Securities Fraud Class Action as We Know It*, 4 BERKELEY BUS. L.J. 1, 4, 8 (2007) (viewing feedback effects as a negative, claiming that they result in overcompensation); *but see* Spindler, *supra* note 10, at 372–73 (demonstrating mathematically that feedback effects optimally compensate for the degree of circularity).

<sup>145</sup> See, e.g., KRISTIN M. FEITZINGER, CORNERSTONE RESEARCH, ESTIMATING RECOVERABLE DAMAGES IN RULE 10B-5 SECURITIES CLASS ACTIONS, 8–10 (2014), <https://www.cornerstone.com/GetAttachment/df483ce3-5fe3-41b8-ad83-f704dc8426f7/Estimating-Recoverable-Damages-in-Rule-10b-5-Securities-Class-Actions.pdf>.

fraud occurs at time  $t = 0$ , the revelation of the fraud occurs at time  $t = 1$ , and the fraud on the market remedy is awarded at time  $t = 2$ .

We can denote the elements of the fraud-on-the-market damages award with the following variables:

- $p$ , which is the price at which the plaintiffs purchased the firm's shares while the fraud is effective,
- $v$ , the true value of the firm without fraud,
- $p'$ , which is the price of the shares after the revelation of the fraud,
- $t$ , which is the transfer made by the firm to each plaintiff share<sup>146</sup> in the securities class action,
- $l$ , which is the total liability assessed against the firm, and
- $\pi$ , the measure (roughly, a proportion) of plaintiff shares to total shares of the firm.<sup>147</sup>

We can now lay out some accounting identities. Referring to the structure of rule 10b-5 and fraud on the market class actions, it is the case that the damages remedy per share equals the decline in share price.

$$(1) \quad t = p - p'$$

It must also be the case that the total remedy awarded to all plaintiff shareholders is equal to the total liability assessed against the firm.

$$(2) \quad l = \pi t$$

Finally, a rational marketplace takes into account the expected liability for the fraud when valuing the shares.

$$(3) \quad p' = v - l$$

Combining these three identities yields the following formula for the per-share remedy:

$$(4) \quad t = (p - v)/(l - \pi)$$

From equation (4), it is apparent that the greater the proportion of shares in the plaintiff class ( $\pi$ ), the greater will be the transfer made to each plaintiff share. In other words, the greater the degree of circularity, the greater the remedy, as a result. It remains to be shown that this transfer is compensatory, which, fortunately, is easily done. Consider the net payoff

<sup>146</sup> That is, the remedy is per share, rather than per plaintiff.

<sup>147</sup> The measure notation assumes that there is 1 share outstanding, and that shareholders hold some fraction of that share. This is convenient because it avoids having to distinguish between per share and total firm figures, as they are the same; it does not affect the results. Reconciliation to a multiple share firm is provided below when required.

(denoted as  $U_p$ ) to a plaintiff purchaser share, which consists of the post-fraud, post-remedy share plus the fraud on the market transfer:

$$(5) \quad U_p = p' + t$$

Substituting in first equation (3) and then equations (2) and (4) yields:

$$(6) \quad U_p = v - l + t = v - \pi t + t = v + (1 - \pi)((p - v)/(1 - \pi)) = p$$

In other words, equation (6) shows that the fraud on the market remedy is perfectly compensatory: The plaintiff shareholder has paid price  $p$  for each share, and ends up with a share plus transfer that equals that purchase price,  $p$ . While circularity exists in the form of measure  $\pi$  of shareholders who stand on both sides of the lawsuit, the damages remedy, of which the current share price is a component, effectively takes this into account.

What to make, then, of the claim that circularity prevents securities class actions from providing compensation, and instead merely shifts dollars from one pocket of the shareholder to another? As demonstrated above, that claim is clearly wrong: circularity does not prevent the full compensation of plaintiff shareholders. To the contrary, the interaction of stock price, circularity, and the loss-based remedy works to make the plaintiffs whole.

### B. *Circularity among diversified investors*

Looking further afield, what do we make of Coffee's argument, widely adopted by others, that circularity combined with diversification means that no meaningful compensation can actually take place? While the diversification critique and precaution costs are examined in more detail in Part IV, *infra*, and are closely related to the circularity-*cum*-diversification argument, it bears discussing here as well.

As a starting point, it is important to note that investors want to win in any particular transaction. As stated more than 30 years ago by Easterbrook and Fischel, this includes even a diversified investor: notwithstanding her diversified portfolio and mix of sales and purchases, focusing on any particular transaction, the diversified investor would rather win at that transaction than lose at it.<sup>148</sup> To the extent that precaution costs enable winning, she will engage in them. Because this applies to any particular transaction, it must apply to all transactions: She will exert precaution costs in each and every transaction to the extent it is individually optimal to do so—that is, across every trade in her diversified portfolio of trades.

As demonstrated above, fraud on the market compensates in any particular transaction. This means that it moots the need for precaution costs in any particular transaction. Because it does so in any particular transaction, it

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<sup>148</sup> See Easterbrook & Fischel, *supra* note 55 and accompanying text.

therefore moots the need for precaution costs in all transactions, even for a diversified investor.

For example, suppose that an investor at the same time plans to buy a share of Firm 1, plans to sell a share of Firm 2, and plans to hold a share of Firm 3.<sup>149</sup> Firms 1, 2, and 3 are identical in all respects except that there is a probability  $q_i$  that Firm  $i$ 's nominal value  $v'$  (meaning the value that would be assigned to the firm taking all of its disclosures at face value) is overstated by  $f_i$  for Firm  $i$ , for  $i = 1, 2, 3$ . According to Coffee's version of the circularity critique, assuming that the expected value of inflation is the same (that is,  $q_1f_1 = q_2f_2 = q_3f_3$ ), there is no meaningful compensation that can take place, and there is no way in which a compensation scheme can make her better off. Further, we might suppose that she has diversified away the risk of fraud, a la Grundfest's 2014 argument, and thus is fine as is.

However, as Easterbrook and Fischel pointed out, diversification does not eliminate the incentive to undertake precaution costs.<sup>150</sup> In this case, the investor has incentives to undertake such costs for each of the three firms because there exists uncertainty about the true value of each. Absent a compensatory remedy, each firm's shares will be discounted by amount  $qf_i$  (the expected amount of fraud per firm) from the nominal value  $v'$ . In other words, the price  $p$  is determined as:

$$p_i = v'_i - qf_i$$

But this price is not precise, as the true value  $v$  must be either higher or lower than the trading price,  $p$ . Specifically,

$$v_i \in \{ v'_i, v'_i - f_i \}$$

Hence, the investor would like to know what the true value of the firm is, and would spend resources to figure it out. Suppose, then, that if the investor spends  $C_i$  on precaution costs, she can learn the true value of Firm  $i$ ,  $v_i$ . Depending on what she learns, the investor can alter her strategy to take advantage of her private information for any of the three firms. Undertaking precaution costs is optimal if, roughly speaking, the costs of the search are less than the expected gains enabled, or losses avoided, by the search. What the fraud on the market remedy does in such a situation is to lessen the need for precaution costs for at least some of those trades. It does so directly for the trades where she is the purchaser. That is, where a remedy exists such that purchasers are fully recompensed, the buyer will not spend any resources on precaution costs.

This has corollary benefits for the sellers and holders. Because of compensation, the buyer will be willing to accept the firm at face value—that is,

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<sup>149</sup> We could motivate such plans to buy, sell, and hold as being part of a portfolio balancing strategy for a diversified investor.

<sup>150</sup> See Easterbrook & Fischel, *supra* note 55 and accompanying text.

the buyer will pay  $v_i$ '. Because the stock is now priced at the top of its possible range, sellers and holders will choose to sell to the extent they can. They do not have any incentive, in such a situation, to incur precaution costs: Selling is a dominant strategy no matter how the uncertainty resolves.<sup>151</sup> Thus, our diversified investor may simultaneously buy, sell, and hold different stocks, and the compensatory regime of fraud on the market discourages precaution costs across all of those transactions.<sup>152</sup> Her *net* compensation from fraud on the market protection may be nil at the end of the day, and yet the remedy benefits her by saving the resources that would otherwise be spent on precaution costs.

Another way of stating the problem is that the focus of Coffee and others on aggregate or net payoffs among all investors is incorrect. The focus should be on individual trades: what are the incentives to undertake precaution costs in any decision to buy, hold, or sell, and how does the fraud on the market mechanism affect that? In other words, precaution costs do not net out.

### C. *Special problems*

#### 1. Litigation costs

One might suppose that litigation costs make fraud on the market class actions fail from a compensatory perspective. As proponents of the critique state, circularity results in pocket shifting minus litigation costs: according to Pritchard for instance, "shareholders effectively take a dollar from one pocket, pay about half of that dollar to lawyers on both sides, and then put the leftover change in their other pocket."<sup>153</sup> As it turns out, this claim is not true for costs borne by the firm. The fraud on the market remedy adjusts to take into account the expected outflows of money from the firm, which include liability but also litigation costs.

Suppose, for example, that the firm incurred litigation costs of  $c$  in defending the fraud on the market suit. In such a case, the post-revelation price

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<sup>151</sup> This is a potential weakness, in fact, of the fraud-on-the-market remedy. Why does anyone hold in such a situation? We can motivate it in two ways. First, for some investors, there are benefits to holding that are foregone by selling, such as market returns or avoiding capital gains. Second, the market may be limited, such that willing sellers cannot find willing buyers. This is especially likely to be true since the judgment-proofness problem, described in Part III.C.3, *infra*, is worsened as the level of share turnover increases. See Spindler, *supra* note 10 (addressing this issue in more formal detail).

A related point is that a holder could, in principle, increase the likelihood of participating in a fraud-on-the-market recovery by creating a continuum of subsidiary entities, and then transacting the share rapidly along those subsidiaries in a chain. While the parent/holder retains economic ownership of the share, one of the subsidiaries would likely qualify to participate in the recovery, provided the transactions occur sufficiently rapidly.

<sup>152</sup> For more detail regarding the economic equilibrium model, see *infra* Part IV.

<sup>153</sup> Pritchard, *supra* note 111, at 26.

of the firm declines by the amount of foreseeable litigation cost that the firm will bear. Equation (3) becomes:

$$(3') p' = v - l - c$$

Equations (1) and (2) are unchanged. Combining equations (1), (2) and (3') yields a formula for the transfer:

$$(4') t = (p - v + c)/(1 - \pi)$$

As before, the purchasing shareholder's payoff is equal to the transfer plus the post-transfer share price:

$$(5) U_p = p' + t$$

Substituting in the same steps as in equation (6) yields the following:

$$(6') U_p = v - l - c + t = v - \pi t - c + t = v - c + (1 - \pi)((p - v + c)/(1 - \pi)) = p$$

That is, the purchaser gets back her purchase price. Even with litigation costs borne by the firm, the purchaser is perfectly compensated under the fraud on the market remedy.

What happens if the firm does not bear litigation costs, and those costs are instead borne by the plaintiff purchaser, as is common in securities class actions?<sup>154</sup> In that case, compensation will be less than complete by the amount of the plaintiffs' litigation costs. This is clear from inspection of equation (3): The firm's price will not decline by the amount of the plaintiff-borne litigation costs. This problem could be simply fixed by allowing plaintiffs to recover for their attorneys' fees. The downside to such a solution is that, if attorneys' fees are arbitrarily high, the class action remedy could become significantly overdeterrent.<sup>155</sup>

## 2. *Uncertain adjudication*

Suppose that adjudication is uncertain. Specifically, suppose that, at the revelation of the fraud, there is only a probability  $J$  that the fraud suit will result in a judgment for the plaintiff class. In such a case, one can show that the fraud on the market remedy is under-compensatory. The reason is that, at the time the damages are measured, which occurs at the revelation of the

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<sup>154</sup> Plaintiffs' attorneys' compensation typically takes the form of a percentage contingency fee of the recovery amount.

<sup>155</sup> To take an extreme example, if actual fraud damages were \$1, but attorneys' fees were \$10 million, the sanction placed on the firm would cause excessive deterrence and would exceed any plausible externalities arising from the fraud. A better solution may be to limit attorneys' fees to a fraction of the recovery.



fraud, the stock price declines only by the expected value of the sanction. This limits the transfer made to the plaintiff purchaser to only the expected decline, not the actual decline given a guilty judgment.

With probability  $J$  of a sanction being incurred, the firm's post revelation share price should decline only by the expected value of the sanction:

$$(3'') p' = v - JI$$

This lowers the amount of the transfer accordingly:

$$(4'') t = (p - v)/(1 - \pi J)$$

Considering again the plaintiff purchaser's payoff, which consists of the post-revelation, post transfer share price (denoted as  $p''$ ) plus the transfer,  $t$ :

$$(5'') U_p = p'' + t = v - I + t = v - \pi I + t = v + (1 - \pi)t = v + (p - v)(1 - \pi)/(1 - \pi J)$$

Because  $J < 1$ , it must be the case that  $(1 - \pi)/(1 - \pi J) < 1$ , and therefore the shareholder's final payoff is less than the purchase price,  $p$ —that is, compensation is less than full.

A fix to this problem may be obtained, however, by allowing the fraud on the market remedy to incorporate the price declines occurring in response to the judgment against the firm — that is, up to and including the time of the final verdict. If that were the case, then the amount of the transfer would be determined at the time of judgment, and hence we could use the original equation (3) in determining the liability and transfer amounts. This suggests that the fraud on the market remedy is too limited where adjudication is uncertain (as it surely is). The downside to such a fix is that the problem of distinguishing the effects of fraud from non-fraud effects on stock price is compounded: Instead of a (theoretically) clean event study of the revelation of fraud, damages event studies would have to incorporate not just the decline upon revelation, but also declines related to events in the progression of the lawsuit, such as judicial orders and the final judgment.

### 3. *Judgment proofness*

Finally, a problem with the fraud on the market remedy is that it tends to exacerbate the problem of judgment proofness. As shown in equation (4), the remedy that the firm must pay per share actually exceeds the overstatement of value by a factor of  $1/(1 - \pi)$ . This has to be so because, in order to make purchasers whole, the transfer awarded to purchasers must make up for the fact that the purchasers are also partially funding the transfer. But this also means that, for any given level of price inflation ( $p - v$ ), the amount of money flowing out of the firm increases as the level of turnover increases ( $\pi$  is larger). Indeed, as turnover nears 100%, and  $\pi$  approaches 1, the transfer

grows arbitrarily large, so that any firm, for any strictly positive level of price inflation, would face insolvency.

For instance, suppose that the price of a stock whose true value was \$100 was inflated by \$1, a mere 1%. If there were 10 million shares outstanding, and all but one of them was sold during the effective period of the fraud, the transfer required per purchased share would be \$10 million, for total firm liability of approximately \$100 trillion.<sup>156</sup> This clearly would wipe out the firm under any reasonable circumstances, whose total market capitalization is only \$1 billion.

Of course, this will never happen. Given the nature of vicarious liability and limited liability of shareholders, as the level of turnover, and hence the requisite liability, becomes extreme, the firm simply becomes judgment proof. The post-revelation share price,  $p'$ , cannot decline below \$0, and therefore the remedy is bounded by the firm's level of assets. In such a case, the firm simply transfers all of its assets to the plaintiff purchasers (after paying off superior creditors, of course), and the firm itself ends up worth nothing. The holder shareholders lose all their investment.

While judgment proofness moots compensation and deterrence of the fraud on the market rule, this is in a sense no different than judgment proofness in other contexts: If the firm cannot pay, compensation will be unavailable and, further, shareholders enjoying limited liability will not bear the full costs of their actions, and will therefore be suboptimally deterred. Where it differs, however, is that the remedy of vicarious liability may fail to work as turnover is especially high. In equilibrium, where the market observes a large degree of turnover in a firm's stock, the inference would be that the compensation guarantee and deterrence effect of fraud on the market is curtailed.

Such a problem is lessened in some ways by uncertain adjudication or liability insurance. Uncertain adjudication, as discussed above, dampens the feedback effect between stock price declines and prospective damages; this reduces the likelihood of firm insolvency, with the tradeoff being that the compensatory and deterrent effect is also lessened. Similarly, the effect of liability insurance, which many companies do carry,<sup>157</sup> is to dampen the feedback effect: to the extent the liability award will not come out of the firm, the post-revelation share price will not fall below the firm's intrinsic value (as per equation (3)).<sup>158</sup> In contrast to uncertain adjudication, this is not a problem, because insurance provides a truly outside source of funds (as-

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<sup>156</sup> Writing liability in non-measure terms (that is, there is number  $N > 1$  of shares outstanding), liability per share outstanding is  $l/N = (p - v)\pi/(1 - \pi)$ , and total firm liability is given as  $l = N(p - v)\pi/(1 - \pi)$ .

<sup>157</sup> So called "c side" directors and officers liability policies cover the firm from securities liability exposure, although often coverage does not extend to fraudulent misreporting.

<sup>158</sup> See Judson Caskey, *The Pricing Effects of Securities Class Action Lawsuits and Litigation Insurance*, 30 J. L. ECON. & ORG. 493, 505–15 (2014) (discussing extensively the price effect of liability insurance).

suming, however, that liability awards are not simply recaptured in the form of a higher premium, post-judgment; to the extent that they are, this should be reflected in stock price declines).

While judgment proofness does limit the effectiveness of the fraud on the market rule, it is no worse than any other sort of vicarious liability, such as regulatory fines. Further, non-vicarious liability sanctions, namely, personal liability of the firm's managers, has the drawback that the managers' funds are typically more limited than those of the firm itself; many managers are themselves largely judgment proof, and are consequently undeterred in undertaking high-risk gambles, which may include misreporting.<sup>159</sup> Non-monetary sanctions on managers, such as jail sentences, can theoretically result in optimal deterrence, yet they do not compensate purchasers at all, are difficult if not impossible to calibrate, can readily result in over-deterrence, and are subject to Constitutional and procedural safeguards (such as the requirement to prove scienter) that are hard to meet in many securities fraud cases.

#### *D. Summing up on circularity*

In summary, what can we say about the circularity critique of fraud on the market? While fraud on the market is not a panacea remedy, the critics' principal complaint—that fraud on the market fails to compensate—is untrue. As demonstrated mathematically, the fraud on the market remedy of loss-based damages can perfectly compensate defrauded purchasers: The feedback effect between damages and share price declines arrives at just the right level of transfer to compensate purchasers both for the initial price inflation as well as the decline in share price due to the firm's liability.

Various complications, such as litigation costs, uncertain adjudication, and judgment proofness provide varying levels of impediment to full compensation under fraud on the market. Litigation costs borne by the firm do not affect compensation at all: They are incorporated into stock price and hence increase damages accordingly. Litigation costs borne by purchasers are not recompensed; this could be readily fixed, however, by a rule allowing purchasers to recover attorneys' fees from the firm. Uncertain adjudication does reduce the amount of compensation purchasers receive, since the stock price, for purposes of the damages calculation, does not fully incorporate liability. This problem could be fixed by expanding the event window for calculating damages to include price declines that occur as litigation progresses, up to final judgment. Finally, the judgment proofness problem does reduce compensation for firms that are thinly capitalized. This problem is

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<sup>159</sup> See Easterbrook & Fischel, *supra* note 55, at 641 (making the additional point that sanctions on managers will generally be indemnified or recompensed in some way by the firm, and hence borne by the firm, since the manager is, outside of cases of gross misconduct, doing what the firm has incentivized him to do).

not unique to fraud on the market, as judgment proofness generally attends other forms of vicarious liability (such as regulatory fines) as well as personal liability for managers.

#### IV. YOU CANNOT DIVERSIFY AWAY FRAUD

The diversification critique is actually much more general than a criticism of fraud on the market. Rather, it states that diversified investors suffer no net harm from fraud: The fraud losses in a diversified portfolio even out against the fraud gains.<sup>160</sup> Rules against fraud are therefore unnecessary to protect investors. If the diversified shareholder does nothing in particular about fraud, he will not overall be worse off than a world in which fraud does not exist.

Even accepting the proposition that one can diversify away fraud, one should at least note that society is worse off due to indirect costs and externalities of fraud. Indeed, this is the basis on which many adopters of the diversification critique favor retention of some form of fraud sanction. Internal costs include misallocation of capital within the firm due to an inability to discern good from bad projects, an inability to separate truly talented managers from mimicking fraudsters, and an inability to determine whether the firm is actually performing well. External costs of fraud include the impact on price discovery generally, what we might term overall confidence in the capital markets, and perhaps heightened risk-taking that results in real economic disruptions. While law and finance types are fairly sure that these costs are real, one could question their degree, as well as the extent to which investor-shareholders of any particular firm bear them, particularly in the short term.

However, there is a much more pointed objection to the diversification critique: You cannot diversify away fraud. So long as there is pricing uncertainty, investors face the prospect of expropriation by better-informed traders. This is true even of a diversified investor: An investor who trades in ignorance of true value faces the prospect of losing, in expectation, on every single trade. Such expected losses are systemic, and cannot be diversified away. Investors facing such a situation therefore have incentives to engage in precaution costs—that is, researching the actual value of the firm, for each and every trade. Thus, where there is greater price uncertainty (as is the case where the issuer's reports cannot be believed), every investor has greater incentives to undertake precaution costs. This is true whether the investor is trading against other investors or against the issuer. This is a form of Prisoners' Dilemma or collective action problem, in which everyone is made worse off.

I illustrate these points formally below in several variants of a game theoretic model of trading between a buyer and seller. I begin with a buyer-

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<sup>160</sup> See *supra* Part II.A.

seller game in which the seller can undertake costly efforts to inflate the value of the firm (such may be the case if one were trading, for example, against the issuer or an insider). I then move on to a game in which the risk of fraud is exogenous (that is, neither the buyer nor the seller has any control over the issuer's reporting, as would be the case when trading against other investors who are not affiliates of the issuer), and consider variants in which some combination of the players is informed or uninformed. I show that failure to engage in precaution or search costs leads to expected losses, as better-informed trades will expropriate the uninformed investor. I further show that neither these expected losses, nor the search costs undertaken to protect against them, can be diversified away.

#### A. *A buyer/seller game with seller-induced price inflation*

To begin, consider the case of an undiversified buyer and seller. The buyer is concerned about the possibility of overpaying for stock in the event that the company has misreported its value. The seller, on the other hand, is concerned about getting as high a price as possible for her shares.

In a world in which the investors cannot affect the outcomes, they will simply transact and either lose or win. Economically, this presents no problems: transfers, even those arising from fraud, raise no general economic efficiency concerns.<sup>161</sup> When one investor loses, the other wins, and in an equal amount; absent interpersonal utility comparisons, this is a wash. There is no social cost to fraud *qua* fraud, just as there is no social cost from theft *qua* theft.<sup>162</sup> As with Calvino's country of thieves, disturbing this equilibrium with anti-fraud regulation would lead only to increased transactions costs for the investors.

However, the economic cost of fraud, as with theft, depends largely on the ability of the parties to invest in fraud-enhancing or reducing measures. Where the buyer attempts to protect herself against fraud, or the seller attempts to inflate the price, the cost of those efforts are deadweight losses. In order to abstract away collective action problems and keep things simple, suppose that there is just one firm, with one indivisible share. Suppose further that the seller can expend resources  $F$  to increase the trading price  $p$  by amount  $f$  (that is, commit fraud), where  $f > F$ ; if the buyer does nothing, she will overpay by  $f$ . The buyer can counter this by expending resources  $S$  on search (that is, information gathering), which removes the effect of price inflation, where  $f > S$ . The buyer's search does nothing where the seller has not inflated.

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<sup>161</sup> See Tullock, *supra* note 18; Becker, *supra* note 18.

<sup>162</sup> This is, of course, putting aside the indirect costs of fraud noted above, which include capital allocation and corporate governance problems.

In pure strategies, the buyer and seller payoffs may be depicted by the following matrix (buyer payoffs are in the lower left, seller payoffs are in the upper right):

Game 1: Buyer vs. Seller With Seller-induced Fraud		Seller	
		Inflate	Don't inflate
Buyer	Search	$-S$ $-F$	$-S$ $0$
	Don't search	$-f$ $f-F$	$0$ $0$

In this game, there is no pure strategy equilibrium. There is, however, a mixed strategy. Since the buyer only mixes when indifferent to the choice of strategy, it must be the case that  $x(-S) + (1 - x)(-f) = x(0) + (1 - x)0$ , where  $x$  is the probability that the seller expends resources to inflate the share price. Solving for  $x$  yields  $x = Sf/f$ . Similarly, the seller only mixes when indifferent to the choice of inflating or not, and hence it must be the case that  $y(-F) + (1 - y)(f - F) = y(-S) + (1 - y)0$ , where  $y$  is the buyer's probability that the buyer searches. Solving for  $y$ , we find that  $y = 1 - F/f$ . Hence, in this game, each of the buyer and seller expend fraud costs with positive probability, for a total expected social cost of  $(1 - F/f) * S + (S/f) * F$ . This is deadweight loss.

This model illustrates exactly the sort of precaution and fraud costs that Easterbrook and Fischel were worried about. Both buyer and seller expend resources attempting to protect their own interests—but in the end this is a zero (at best) sum game. These expenditures make everyone worse off in expectation.

Would diversification protect an investor from fraud losses, obviating the incentive to undertake search and/or fraud costs? No, it would not. Suppose that an investor plays Game 1 twice, once as a buyer, once as a seller. The diversification critique would posit that because her fraud gains should equal her fraud losses, there is no cost to her of fraud. Suppose that this diversified investor, having heard of the diversification critique, decides that, since she is diversified, she need not undertake precaution costs in either iteration of the game. In such a case, she would find herself to be a net loser, in expectation, across the two iterations of the game. When she is a buyer and plays Don't Search, the seller's dominant strategy becomes Inflate; our diversified investor has a negative payoff of  $-f$ . When she is a seller and plays Don't Inflate, the buyer has a dominant strategy of Don't Search, leaving her with a payoff of 0. Thus, in the two iterations of the game, the diver-

sified investor has a negative aggregate payoff of  $-f$ . Diversification did not, contrary to the diversification critique, make her expected fraud losses disappear.

Instead, in the rational expectations equilibrium, even a diversified investor will engage in search/fraud costs with some positive probability in each iteration of the game. Inflation (at least some of the time, given the mixed strategy equilibrium) is the optimal seller strategy when she sells, and Search (at least some of the time) is the optimal buyer strategy when she buys. Both strategies involve precaution costs, which are deadweight losses in this less-than-zero-sum game. These precaution costs do not diversify away.

### B. *Games of secondary market fraud*

One objection of the diversificationists may be that the game depicted so far involves a seller that affirmatively causes fraud to occur, against whom the buyer must protect herself. Suppose that, in contrast, there is simply an exogenous possibility that fraud *might* occur, and that prices *might* be inaccurate, and that the investor *might* simply end up on the wrong side of the transaction, to his counterparty's benefit. Is it then the case that there is no incentive to undertake precaution costs? Looking to the modern trading liquidity models of Akerloff, Copeland and Galai, Glosten and Milgrom, and Rock provides the answer: There will be positive trading losses absent precaution costs, precaution costs will therefore be undertaken, and the diversification argument still fails.<sup>163</sup>

In a simplified game of secondary market price inaccuracy based on those liquidity models, there are two investors, a buyer and a seller. Neither has any control over the likelihood of fraud occurring. Rather, there is some exogenous probability  $q$  that the issuer misreports its financial condition,<sup>164</sup> leading to an apparent inflation of the firm's value of  $f$ . The variable  $v'$  is the apparent value of the firm treating the falsehood as credible,  $f$  is the amount of inflation, and  $v$  is the actual correct value of the firm. Assume that investors know what the degree of inflation given misreporting is ( $f$ ) as well as the probability of misreporting ( $q$ ), and that they observe the putative value of the firm given the disclosures ( $v'$ ), but that they do not know what the true value is ( $v$ ) or whether misreporting has actually occurred without undertaking search costs. The variants of the game that follow consider different combinations of informedness among the two players.

<sup>163</sup> See *supra* note 19 and accompanying text.

<sup>164</sup> One could suppose this is due to managers' incentives, managerial biases, or even just reporting sloppiness—the reason does not matter to the model.

1. All investors are “uninformed”

Suppose that all investors are “uninformed” in the sense used in Mahoney’s 1992 model, meaning that they cannot, by assumption, undertake any precaution costs. In a rational expectations equilibrium, which requires that the players break even in expectation, the firm’s shares trade at a discount that incorporates the probability of falsehood. In particular, the trading price,  $p$ , is given by  $p = v' - qf$ . In other words, the market participants all discount the firm’s apparent value by the expected value of the fraudulent overstatement. The market clears at this price, and no investor would be willing to pay more. The buyer receives a share of stock for its unconditional expected value (that is, she pays  $p$  and receives a share with an expected value of  $p$  in return), and the seller gives up a share worth  $p$  in return for the purchase price of  $p$ . Both break even in expectation ( $p - p = 0$ ). The payoff matrix is thus:

Game 2: Uninformed vs. Uninformed		Seller
		Don't Search
Buyer	Don't Search	0
		0

It appears that in this case, the diversification critique is correct: investors lose in some circumstances, but they will gain in others, and over time and a large number of such trades, the gains and losses ought to net out. Even without diversification, expected fraud losses are zero. The risk in such a case is diversifiable, as in Mahoney, Grundfest, and the rest of the diversification critique literature in between. Further, imposition of an anti-fraud remedy would do little good: fraud results only in a transfer, which is not itself inefficient, and the net expected transfer is, in this case, zero.<sup>165</sup> Absent other concerns, such as capital allocation, there are no inefficiencies on the investors’ end of things.

This result is, however, entirely driven by the assumption that all investors are “uninformed” and unable to engage in search costs. As shown directly below, once some investors have an informational advantage—or have the ability to obtain an informational advantage by undertaking search costs—the uninformed investor faces expected losses from fraud.

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<sup>165</sup> As before, this analysis puts aside externalities commonly thought to arise from fraud.



2. Some investors are “informed,” some are not

In Game 2, the investors did not, by assumption, have any ability to engage in precaution costs. But what if they did? The two investors in this model know that there is  $q$  probability that the firm’s shares are overpriced, and a  $1 - q$  probability that the firm’s shares are underpriced. Investors have an interest in determining what the actual price is, as they could then buy into only the underpriced shares. If, say, the selling investor had the opportunity to expend search cost  $S$  to obtain an accurate signal of the firm’s value (that is, to learn what  $v$  is), what would the outcome be?

By construction, the buyer is “uninformed,” meaning that he does not have the opportunity to search. Uninformed actors are assumed to submit a bid or ask at the unconditional expected value, the market price of  $p = v' - qf$ . In the event that the seller does not search, each investor will have a break even expected payoff as in Game 2: the market price of  $p = v' - qf$  is what the seller receives, and what the buyer pays. The unconditional expected amount of price inflation is zero.

If the seller does search, however, the seller will sell if, and only if, she learns that the firm’s share price is inflated. In the event of inflation, which happens with probability  $q$ , the seller sells (receiving  $p$ ) and the uninformed buyer buys (paying  $p$  and receiving a share worth only  $v' - f$ ). If the seller discovers that the stock is underpriced, which occurs with probability  $(1 - q)$ , she keeps the stock and enjoys returns of  $v'$ , while the buyer gets nothing. Taking expected values of the buyer and seller payoffs yields the following net payoff matrix:

Game 3: Uninformed vs. Informed		Seller (informed)	
		Search	Don’t Search
Buyer (uninformed)	Don’t Search	$qf(1 - q) - S$	$0$
		$-qf(1 - q)$	$0$

The primary result is that the uninformed Buyer is now a net loser from fraud. Provided that  $qf(1 - q) > S$ , the Seller plays a pure strategy of Search, which means that the Buyer ends up buying the share only when it is overpriced. This is a form of Rock’s “winner’s curse.”<sup>166</sup> The outcome for the uninformed player is not fundamentally any different from the game in which the seller instigates the fraud; the degree of price uncertainty is what matters, not who causes it.

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<sup>166</sup> See Rock, *supra* note 19.

A few additional observations are in order. First, this outcome is inefficient even though the trading gains and losses have canceled out. The seller's expected trading gains (without taking into account search costs  $S$ ) are  $qf(1 - q)$ , which are the same as the buyer's trading losses. Yet, the seller's strategy of searching is dominant so long as  $qf(1 - q) > S$ , which means that, under such conditions, the seller incurs deadweight losses. The netting of trading gains and losses does not preclude social inefficiency.

Second, this game is equally as applicable to sellers as it is to buyers. One could reverse the information asymmetry in the game, such that the seller is uninformed and the buyer can undertake search costs. The allocation of gains and losses would be similarly reversed: the buyer will have a dominant strategy to undertake search costs, and the seller, therefore, will expect to be expropriated by the buyer. Gains and losses net but, as before, the outcome is still socially inefficient: The buyer engages in socially wasteful search costs.

Third, these results extend to a diversified form of this game, and, again, diversification does not affect expected fraud losses. Suppose that the uninformed investor plays several times as buyer and seller, and that his opponent is always informed. Our diversified but uninformed investor will expect to lose in every iteration of the game. That is, diversification has not protected him from fraud losses. Thus, if he could undertake cost-effective precaution costs, he would do so.

### 3. All investors are "informed"

Consider a new variant of the game, in which both the buyer and seller are informed—that is, both have the ability to search at cost  $S$ . This is likely the most realistic version of the game as all investors, in reality, have some ability to protect themselves from expropriation, such as researching fundamental value, paying a professional investment manager, or even abstaining from the marketplace.

We have already, above, derived the payoffs from one player playing a pure strategy of search against a pure strategy of non-search: The searching player opportunistically abstains, while the non-searching player always submits a bid/ask at the market price (that is, the unconditional expected value). We have also derived what happens when neither search. This leaves payoffs when both search. In such a case, each discovers the true value of the firm  $v$ . In such a case, no trade can occur at the unconditional market price  $p$ , and the market fails to clear.<sup>167</sup> The buyer gets zero, less his search costs, and the seller gets (in expectation) the unconditional expected value of the firm, which is  $p$ , less her search costs  $S$ . The payoffs may be represented in matrix form as:

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<sup>167</sup> One could also suppose that the price is adjusted to the actual value  $v$  of the firm, and the market does clear. The result to the investors here is unchanged.

Game 4: Informed vs. Informed		Seller	
		Search	Don't Search
Buyer	Search	$-S$	$-qf(1 - q)$
	Don't Search	$qf(1 - q) - S$	$0$
		$-S$	$qf(1 - q) - S$
		$-qf(1 - q)$	$0$

What does this show us? Assuming that  $qf(1-q) > S$ , both buyer and seller will play pure strategies of search. That is, we have a socially inefficient outcome in which all informed investors are incurring deadweight losses in the form of precaution costs. This is essentially a form of Prisoner's Dilemma or collective action problem. The fact that the misreporting is exogenous does not affect the analysis. Note that this remains true even if an investor plays many times as both buyer and seller; in other words, diversification will not affect the socially inefficient outcome. Were a diversified investor to abstain from search costs, she would expect to lose  $-qf(1 - q)$  in each transaction, provided that  $qf(1 - q) > S$ .

4. *How does compensation affect this game?*

What happens, in contrast, if we add the fraud on the market remedy to this Game 4? Under the fraud on the market rule, the buyer would be recompensed in full for his fraud losses. Therefore, he should always be willing to purchase the security, without undertaking search costs: he will always at least break even. Will the seller still have incentives to undertake search since the fraud on the market rule will not reimburse her for her losses? The answer is no: because the buyer will be recompensed for any purchase price up to  $v'$ , the nominal value of the firm taking all its disclosures as credible, he is willing to pay  $p = v'$ . The seller knows that, at the price of  $p = v'$ , the firm cannot be underpriced, and hence she is willing to sell at that price. The new payoff matrix is as follows:

Game 5: Informed vs. Informed With Fraud on the Market		Seller	
		Search	Don't Search
Buyer	Search	-S	0
	Don't Search	0	0

It is now dominant for both players not to search. The fraud on the market rule has achieved the socially efficient result.

*C. Does diversification affect the results?*

The discussion above considers an investor who plays the game several times as buyer and seller, and shows that this does not affect the results. In other words, neither expected fraud losses nor precaution costs can be diversified away except in the narrow case where all traders are “uninformed” and unable to invest in search. This is sufficient to rebut the diversification critique. However, for completeness, it is worthwhile to consider, informally, two additional variants of diversification that fraud on the market’s critics occasionally assert.

Consider first the case of diversified portfolio investment. Suppose that there are two firms in our economy, each with one share outstanding. Assume that each firm is given a random shock to its value of  $e$ , which represents idiosyncratic risk; the shock occurs with some non-zero probability. In order to approximate diversification, suppose that the shocks are perfectly negatively correlated: If firm A is hit negatively by random shock  $e$ , firm B will rise in value by  $e$ . This means that an investor can perfectly diversify away idiosyncratic risk by buying, or selling, firms A and B in tandem. Let  $r > 0$  be the value attained by diversification. Everything else about the firms is unchanged: there is still the same risk of fraud as before.

How does diversification affect the search/fraud cost analysis explored above? The answer is, not at all. As we play any of Games 1 through 4 described above, nothing changes. Assuming that the same search and/or fraud technologies still apply, both investors undertake the same calculus regarding whether to expend resources on precaution and/or fraud costs. Nothing at all has changed, except that the investors play the game with two firms, instead of one.

The fact the investors have diversified portfolios in our new model does nothing, by itself, to affect the costs that fraud imposes on investors. To be sure, if diversification changes the scale of the investment, this may change, in degree but not in quality, the results. For instance, if there are substantial fixed costs to research by firm, diversified buyers may be less inclined to undertake search since, given the same endowments, their per firm holdings will be smaller.<sup>168</sup> Similar reasoning applies to collective action problems and free-riding. But the point remains that there are always positive incentives to undertake precaution costs. Diversification is simply orthogonal to that.

Second, consider temporal diversification. Here, an investor is diversified because he buys and sells over time, and expects to be a seller and buyer with equal frequency. This mirrors the diversification argument described by some, including Grundfest, in which “diversifiability” arises because “over time, the risk of being harmed by aftermarket securities fraud (at least as measured exclusively by stock prices) averages to zero for investors who purchase and sell with equal frequency.”

Suppose that the investor lives for two periods and transacts a share of stock (or, alternatively, a share of the diversified portfolio) in each period on the open market. In order to capture the effect of expected diversification, if the investor buys in period 1, we assume that she sells in period 2, and vice versa.

In this case, the investor is playing the game twice, but once as the buyer and once as the seller. The two iterations of the game are independent of each other: the investor’s action in the first iteration does not affect her payoffs in the second iteration. (This is exactly what we would expect to happen in anonymous, secondary market transactions, in which there is not meaningful repeat play between buyers and sellers.) Thus, her optimal strategies are exactly the same as in the one-shot version of Games 1 through 4, as solved above. What this shows is that despite temporal diversification, the investor still expends positive precaution costs. These are deadweight losses.

#### *D. Summing up on diversification, and some related points*

As demonstrated in this section, the diversification critique is a fallacy. The critique claims that investors can, at low cost, protect themselves from fraud simply by diversifying. Applying a well-accepted model of informational liquidity, we see that this is simply untrue unless all investors are universally “uninformed” and helpless to protect themselves. Where investors do have some ability to protect themselves (and expropriate others)—by incurring search costs, abstaining from trading, paying professional money

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<sup>168</sup> This militates toward market solutions, such as delegated portfolio management. The portfolio managers, who aggregate investor holdings, will have economies of scale in undertaking costly and socially inefficient search.

managers, or other measures—then the deadweight costs of fraud are borne by investors. In any particular transaction, each investor has incentives to exert precaution costs where the trading price may be incorrect: by researching the security's fundamental value, the investor can protect herself from fraud (or even non-fraudulent pricing errors, as where the firm inadvertently makes inaccurate disclosure). If the investor instead attempted to rely on diversification to protect her, she would suffer expected fraud losses in each trade. What is true in any particular transaction is true across multiple transactions or any combination of transactions, such as when the investor is diversified, either temporally or on a portfolio basis. Finally, as shown in Game 5 above, the addition of a compensatory remedy (such as fraud on the market) can eliminate the incentive to undertake precaution costs, resulting in a superior societal outcome.

A few other observations are in order. First, the model is fairly general in that it encompasses a range of potential precaution costs. The precaution costs,  $S$ , could include not just search by the investor, but other forms of precaution, such as paying a fee to an active manager to manage money on the investor's behalf.<sup>169</sup> Precaution costs could also include abstaining from the market altogether, in the face of expropriation by informed traders; the investor gives up the benefits of investing in return for not being expropriated by those better informed. Thus, even uninformed investors can undertake precaution costs of certain sorts.

Second, information search is itself a broad and multifaceted undertaking. Contrary to some claims,<sup>170</sup> search is not limited to "verifying" issuer's reports—that is, rooting out fraud or determining its absence. What credible reporting does is to reduce the degree of uncertainty surrounding an issuer, and/or to reduce the costs of search. In contrast, where misreporting is rife, corporate reports are not credible, and the degree of uncertainty surrounding an issuer remains much the same as it was before.

Conversely, the task of recognizing that fraud has occurred may be trivially easy and of little use in valuing a firm. If a firm reports that, "We possess a mountain of gold that reaches to the moon," everyone knows that they are lying, yet this tells us nothing about the actual value of the firm. Investors who wish to sharpen their estimate of the firm's value will have to search elsewhere. In an equilibrium where misreporting is endemic and extreme, an investor's search options may be very much the same as if there

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<sup>169</sup> See Lee & So, *supra* note 20.

<sup>170</sup> See *supra* Part II.A.3, particularly note 95 and accompanying text (discussing Pritchard). The relevance of this claim is that it has been used to bolster the diversification critique in the following way: if verification is the only search option, and verification is impossible, then all investors are effectively uninformed. There is therefore no risk of systematic expropriation by better-informed traders.

was no reporting at all.<sup>171</sup> In such a case, rooting out fraud has little, if anything, to do with ascertaining a firm's value.

Third, nothing discussed in this section necessarily endorses fraud on the market—or even mandatory reporting—as the ideal solution. In a more complex model, the social effects of reporting are, predictably, more complex. Even in a cheap talk model, where disclosure is not at all credible, it is entirely possible that reporting could, in fact, dramatically reduce the costs of search by providing a map of sorts for assaying value. For example, an issuer could report, “Interested investors may inspect our factory located at 1111 Industrial Blvd.,” which eases the process of determining whether a factory actually exists, as opposed to having to search the world over for it.<sup>172</sup> But even that is not necessarily good: It is plausible that such a report could increase the effectiveness of search such that the aggregate search costs undertaken actually increase, leading to decreased social welfare.<sup>173</sup> Proper legal penalties, rendering the disclosure credible on its face, could avoid such an outcome. At the same time, there could well be market solutions to misreporting and price uncertainty that are socially superior to legal attempts to render disclosure credible. There is a right kind and level of reporting and attendant penalty, depending on the context, and more is not necessarily better. The securities law academy needs more work along such lines, once we abandon the canard that diversification can protect uninformed investors from expropriation and thereby moot the issue of misreporting altogether.

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<sup>171</sup> In the context of the model above, we can describe such an extreme case as follows. Suppose that there is a maximum possible value of the firm,  $V$ . If misreporting occurs all the time and is very large, then let  $q = 1$  and  $f = V$ . In such a case, all firms report a value greater than or equal to  $V$ . Reports carry no informational value. Investors' search options are exactly what they would have been without reporting. Verification is irrelevant.

<sup>172</sup> It is not clear to me that the inverse of this is ever true – that is, that it is possible for a firm's report to actually increase the cost of ascertaining a firm's value, relative to the no report case, in equilibrium. Such a result would be interesting, however.

<sup>173</sup> See generally Oliver Kim & Robert E. Verrecchia, *Market Liquidity and Volume Around Earnings Announcements*, 17 J. ACCT. & ECON. 41 (1994) (providing such a model). The general economic consensus, supported by empirical findings, is that more or better reporting reduces information asymmetry and increases liquidity, at least in the long run. See, e.g., Christian Leuz & Robert E. Verrecchia, *The Economic Consequences of Increased Disclosure*, 38 J. ACCT. RES. 91 (2000); Paul M. Healy & Krishna G. Palepu, *Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Literature*, 31 J. ACCT. & ECON. 405, 429–30 (2001) (reviewing prior studies); Brian J. Bushee & Christian Leuz, *Economic Consequences of SEC Disclosure Regulation: Evidence from the OTC Bulletin Board*, 39 J. ACCT. & ECON. 233 (2005); Robert E. Verrecchia, *Essays on Disclosure*, 32 J. ACCT. & ECON. 97, 172 (2001) (“While models that posit a positive relation between disclosure and information asymmetry are no more or less valid than those that posit a negative relation, the former typically speak to a type of transitory behavior that may arise around the brief window of an anticipated disclosure (e.g., an earnings announcement), and not to commitments to greater disclosure over longer windows.”).

## CONCLUSION

This paper has demonstrated that the circularity and diversification critiques of fraud on the market hold little water. Circularity does not negate the compensatory function of fraud on the market remedies. To the contrary, fraud on the market provides a conceptually valid means of compensating defrauded purchasers. The diversification critique fundamentally misunderstands what diversification does and does not do; fraud costs and precaution costs are not independently random events and are not subject to diversification in the way that idiosyncratic risk is. Rather, investors have incentives in every individual transaction to exert precaution costs, whether or not they are diversified.

This paper has also shown that these critiques have come to dominate modern scholarship on private securities litigation and fraud on the market. The fact that everyone—academics, lobbyists, reformers, and apparently regulators—has come to accept such fallacies as truth is worrisome. At the end of the day, the securities law academy knows much less about private securities class actions than it thought it did; much scholarship and many reform proposals are built upon shaky, if not illusory, foundations. The fact that private securities class actions have been significantly cut back in recent times—and are perhaps headed for extinction—suggests that the academy may be doing some serious harm. Even if there are problems with securities litigation as it currently exists, it is important to understand correctly what those problems are—which, as scholarship currently stands, we do not.