

7-1-2000

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Recommended Citation

John C. Coates IV, *Empirical Evidence on Structural Takeover Defenses: Where Do We Stand?*, 54 U. Miami L. Rev. 783 (2000)

Available at: <https://repository.law.miami.edu/umlr/vol54/iss4/5>

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Empirical Evidence on Structural Takeover Defenses: Where Do We Stand?

JOHN C. COATES IV*

Structural takeover defenses¹ (such as poison pills² and staggered boards³) have long been controversial. One reason for the controversy is a striking split between legal academics and legal practitioners in how defenses are viewed. Legal academics generally have taken a dim view of takeover defenses, while legal practitioners have generally supported defenses in the advice they give to clients and in public policy debates.

Academic hostility to defenses has been built in large part on the common belief that defenses reduce firm value, a view that is thought to be supported by both economic theory and empirical evidence. The theory of how defenses reduce firm value represents a simple application of agency cost analysis: agency costs make defense adoption possible and likely, and defenses increase agency costs by making it harder for principals (shareholders) to replace, or otherwise discipline, agents (directors) through a takeover. I will have little to say about this theory, other than to note here that it remains to be seen whether it is possible to develop a

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1. A note on terminology: Two types of defenses may be distinguished: (1) *transactional defenses*, which are financial or operational transactions anticipating or reacting to a bid and designed to make a takeover more difficult, by raising a firm's share price, paying off the bidder, or reducing a bidder's profit; and (2) *structural defenses*, which are legal terms or mechanisms, often adopted in advance of a bid, designed to deter or impede bids without having a financial or operational effect on the target. This paper focuses on structural defenses, but for brevity it refers to "defenses" as short-hand for structural defenses. A class of structural defenses not addressed is that of multiple classes of voting equity. Such structures are qualitatively different, in that they generally are adopted not to deter or impede bids, but to prevent them altogether, and so allow the sale of equity without loss of a control "lock."

2. See Wachtell, Lipton, Rosen & Katz, *The Share Purchase Rights Plans*, in RONALD J. GILSON & BERNARD S. BLACK, *THE LAW AND FINANCE OF CORPORATE ACQUISITIONS* 4-12 (2d ed. 1998 Supp.) (setting forth terms of standard rights plan).

3. Firm with staggered boards elect a portion (usually one third) of their directors each year, with directors serving multi-year (usually three) terms. See DEL. CODE ANN. 8 § 141(d) (1974) (Supp. 1998) (authorizing staggered boards with two or three classes having two- or three-year terms).

general and consistent theory of the firm to explain observed ownership and control structures in the United States.

The focus of my comments, however, is the way in which empirical studies have reinforced the academic conviction that agency cost theory is *the* lens through which to view takeover defenses. It has been widely believed by academics and others that those studies show stock prices for firms fall on average when firms adopt defenses such as poison pills. Without that empirical evidence, the theoretical case against defenses remains important and useful, but much less compelling, particularly when policy must be made.⁴

Practitioner support for defenses undoubtedly stems in part from the fact that defense adoption (and litigation over defenses) provides practitioners with profits. Yet, practitioners have also looked to economic theory and empirical evidence for support when convincing boards of directors that adopting defenses is justified and in persuading courts not to intervene against defenses. The evidence in favor of defenses has been produced for the most part not by academics, but by investment banks and proxy solicitors. It generally shows that defenses such as poison pills increase premiums that target firm shareholders receive in takeovers. This evidence is consistent with the theory that well-motivated or adequately constrained boards will use defenses not to entrench themselves or defeat advantageous takeover bids, but to bargain for target shareholders and extract a greater share of deal synergies than they might otherwise be able to do.

Recently, both academics and practitioners have been confronted with a new source of evidence on takeover defenses, and the results are decidedly mixed, supporting neither groups' view with certainty. Three recent and ongoing studies show that prior to initial public offerings (IPOs) a significant number of firms adopted terms making takeovers more difficult than does default law. This seems to fly in the face of the

4. This is a summary version of a more comprehensive critical review of the empirical literature on takeover defenses that is available at <<http://www.ssm.com>> [hereinafter Coates, Critique], and is part of a series of related papers on takeover defenses after 1990. Other papers in the series include John C. Coates IV, *Measuring the Domain of Mediating Hierarchy: How Contestable Are U.S. Public Corporations?*, 24 J. CORP. L. 837 (1999); John C. Coates IV, *An Index of the Contestability of Corporate Control: Studying Variation in Takeover Vulnerability* (June 30, 1999) (unpublished manuscript on file with author) (describing new methodology for studying takeover defenses and other governance terms that attempts to address shortcomings of prior empirical studies of defenses) [hereinafter Coates, Studying Variation]; John C. Coates IV, *Failure in the Market for Corporate Legal Advice: Explaining Variation in Takeover Defenses in IPOs 1990-1992*, (unpublished manuscript on file with author) (applying new methodology to defenses adopted in initial public offerings in the period 1990-1992) [hereinafter, Coates, Explaining Variation]. In the interest of full disclosure, it should be noted that I was formerly a partner at the law firm of Wachtell, Lipton, Rosen & Katz, which is generally credited with inventing the best-known takeover defense, the poison pill.

academic belief that defenses reduce firm value.⁵ Yet, the same research shows that defenses vary significantly, contrary to the typical practitioner's belief that a full set of defenses is privately optimal for all firms.⁶ These surprising and mixed results make a reassessment of prior empirical evidence on takeover defenses worthwhile, both to examine the methodologies used, and to assess the strength of support such evidence provides for the opposing academic and practitioner positions on takeover defenses.

I will summarize the two most prominent types of empirical studies of structural defenses (poison pill "event studies" and poison pill premium studies) in order to assess whether there is an empirical basis either for the academic view that defenses reduce firm value or for the practitioner view that pills increase firm value.⁷ This critique shows that, contrary to the views of either camp, such studies do not provide strong support either for opposing or supporting takeover defenses. Event studies of defenses, even taken at face value, produce weak and inconsistent results. More importantly, they are premised on the incorrect assumption that pill adoption changes the takeover defense posture of the adopting firm and fail to take into account ways that pills and other structural defenses interact. This failure on the part of event stud-

5. See Robert Daines & Michael Klausner, *Value-Maximizing Charters: An Empirical Analysis of Antitakeover Provisions in Corporate Charters at the IPO Stage*, (Jan. 13, 1997) (unpublished manuscript on file with author); L. Field, *Control Considerations of Newly Public Firms: The Implementation of Antitakeover Provisions and Dual Class Shares Before the IPO* (Feb. 19, 1999) (unpublished manuscript on file with author) (finding that 50% of industrial firms going public 1988-1992 either use dual class structures or more than one takeover defense at time of IPO). In related work, I study governance terms adopted by firms going public in the period 1990-1992. John C. Coates IV, *Explaining Variation*, *supra* note 4.

6. See Michael Tognetti, *Anti-Takeover Defenses and Share Value: An Interview of the Industry*, (Apr. 14, 1999) (unpublished manuscript on file with author) (documenting consistent and general belief among practitioners that takeover defenses are advisable generally and prior to an IPO). Defenses that are privately optimal may not be socially optimal, if *inter alia* they involve externalities. See LUCIAN A. BEBCHUK & LUIGI ZINGALES, *CORPORATE OWNERSHIP STRUCTURES: PRIVATE VERSUS SOCIAL OPTIMALITY* (John M. Olin Center for Law, Economics, and Business, Harvard Law School Discussion Paper No. 181, 1996).

7. See generally FRANK EASTERBROOK & DANIEL FISCHER, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 204 (1991); Ronald J. Gilson, *The Case Against Shark Repellent Amendments: Structural Limitations on the Enabling Concept*, 34 *STAN. L. REV.* 775, 804 n.110 (1982); DALE ARTHUR OESTERLE, *THE LAW OF MERGERS, ACQUISITIONS, AND REORGANIZATIONS* 468 (1991) ("available data . . . suggest [that] when a firm employs . . . defenses before a . . . bid is on the table, the announcement . . . reduces the value of the firm's stock"); ROBERTA ROMANO, *THE GENIUS OF AMERICAN CORPORATE LAW* 70-71 (1993); Jeffrey G. MacIntosh, *The Poison Pill: A Noxious Nostrum for Canadian Shareholders*, 15 *CAN. BUS. L.J.* 276, 282 (1988) (surveying empirical evidence on use of poison pills in the U.S.). *But see* JESSE H. CHOPER, JOHN C. COFFEE, JR., & RONALD J. GILSON, *CASES AND MATERIALS ON CORPORATIONS* 907-09 (4th ed. 1995) ("evidence seems reasonably clear that successful resistance for the target is bad news for shareholders, but the evidence is much more ambiguous regarding the impact of specific defensive tactics," including adoption of poison pills and other structural defenses).

ies greatly reduces their ability to reveal wealth effects of defenses. While pill premium studies have produced results that are stronger and more consistent than those produced by pill event studies, the same flaws afflict premium studies. Thus, although the results of premium studies are interesting and worthy of further analysis, they do not, on their own, provide good evidence that defenses improve firm value, as practitioners sometimes claim. In sum, prior empirical studies of takeover defenses do not support the belief that defenses either increase or decrease firm value on average.

Finally, I conclude with a brief discussion of the implications of this critical review of empirical studies of defenses, for academics, practitioners, and courts.

I. EVENT STUDIES BY THEIR OWN TERMS TELL US LITTLE ABOUT DEFENSES

Until recently, empirical research on takeover defenses has centered on event studies of poison pills.⁸ It is fair to say that event studies have provided the principal evidence supporting legal academic views of the effects of defenses on shareholder wealth and social welfare.⁹ Easterbrook & Fischel rely on such studies as the primary evidence for asserting that “[e]very device giving managers the power to delay or prevent an acquisition makes shareholders worse off.”¹⁰ Romano states

8. Event study methodology is now well-known and generally accepted as providing potentially useful information about the wealth effects of legal and other “events” affecting stock prices. See John J. Binder, *Measuring the Effects of Regulation with Stock Price Data*, 16 RAND J. ECON. 167 (1985); Stephen J. Brown & Jerold B. Warner, *Using Daily Stock Returns: The Case of Event Studies*, 14 J. FIN. ECON. 3 (1985); Eugene F. Fama, L. Fisher, Michael C. Jensen & Richard Roll, *The Adjustment of Stock Prices to New Information*, 10 INT’L ECON. REV. 1 (1969); G. William Schwert, *Using Financial Data to Measure Effects of Regulation*, 24 J.L. & ECON. 121 (1981). A succinct and basic description of techniques for measuring abnormal returns more generally is contained in J. FRED WESTON, KWANG S. CHUNG, & JUAN A. SIU, TAKEOVERS, RESTRUCTURING AND CORPORATE GOVERNANCE 93-106 (2d ed. 1998).

9. Parallel to event studies of pills are event studies of midstream antitakeover charter amendments (ATAs), often called “shark repellents,” but the results of ATA studies are even less conclusive than pill studies. See, e.g., Weston et al., *supra* note 8, at 423-24 (reviewing event studies and concurring in characterization of ATAs as “nonevents”). Another set of event studies that bears on takeover defenses are studies of state anti-takeover statutes. For a survey of such studies and a general discussion of such statutes, see ROBERTA ROMANO, THE GENIUS OF AMERICAN CORPORATE LAW 60-75 (1993). See also John C. Coates IV, *State Takeover Statutes and Corporate Theory: The Revival of an Old Debate*, 64 N.Y.U. L. REV. 806 (1989) (describing and evaluating such statutes in light of theories of the corporation).

10. EASTERBROOK & FISCHEL, *supra* note 7, at 204 (emphasis in original); see also *id.*, at 196-98 (summarizing event studies listed in *id.*, at 209-11), and at 205 (citing “the absence of any existing [takeover defense] that increases targets’ market value” after reviewing event studies) (emphasis in original). Many economists also were convinced by event studies, see, e.g., ROBERT BRUNER, THE POISON PILL ANTI-TAKEOVER DEFENSE: THE PRICE OF STRATEGIC DETERRENCE 21 (1991) (touting event studies as evidence of wealth effects of pills); PAUL MILGROM & JOHN

that “event studies of defensive tactics find significant negative returns on their adoption”¹¹ and cites those studies to support the statement that poison pills “are most likely to defeat [takeover] bids and, therefore, to diminish shareholder wealth.”¹²

Even taken at face value,¹³ however, pill event studies produced little reliable evidence on the wealth effects of takeover defenses. Within a given study, results are mixed and weak; between studies, results are inconsistent; over time, results have become less significant (both statistically and economically); and when firms are partitioned on various traits, results differ among subsamples. Even with no further analysis, event studies do not provide much, if any, support for theoretical (positive) arguments that such defenses harm shareholders for normative arguments that such defenses should be prohibited. Furthermore, they do not provide any assistance in understanding how defenses might improve firm value, or improve firm value at some firms and not at others. Thus, they cast little light on why some, but not all, firms adopt defenses prior to IPOs.

The most well-known and frequently cited event studies of takeover defenses use public announcement of the adoption of a poison pill as the “event” to study. Jarrell & Ryngaert led the way with a 1986 study of 245 pills, published with the imprimatur of the SEC’s Office of the Chief Economist. Yet, their general results were that in the two days following announcement of pill adoption, stock prices of adopting companies fell on average, net of market movements, only by an absolutely small amount (0.22%) not statistically different from zero.¹⁴ Even after

ROBERTS, *ECONOMICS, ORGANIZATION AND MANAGEMENT* 182-83 (1992) (citing review of event studies as “empirical evidence” that “adopting a poison pill typically reduces the firm’s share value,” representing “simply an expropriation of the shareholders’ property”); J. FRED WESTON, KWANG S. CHUNG & JUAN A. SIU, *MERGERS, RESTRUCTURING, AND CORPORATE CONTROL* ch.20 (1990) (concluding that poison pills harm shareholder wealth based on event studies). Some have been more careful of late, *see, e.g.*, Weston, et al, *supra* note 8, at 423-24 (favorably summarizing Robert Comment & G. William Schwert, *Poison or Placebo? Evidence on the Deterrence and Wealth Effects of Modern Antitakeover Measures*, 39 J. FIN. ECON. 3 (1995), as finding pills achieve some takeover deterrence but “target shareholders gain[] even after taking into account deals . . . not completed because of poison pills”); but not all, *see, e.g.*, Chamu Sundaramurthy, *Corporate Governance Within the Context of Antitakeover Provisions*, 17 STRATEGIC MGT. J. 377, 380 (1996) (stating that “preponderance of empirical research supports the managerial entrenchment viewpoint derived from agency theory”) (after reviewing event studies).

11. ROMANO, *supra* note 7, at 70-71 (comparing event studies of takeover defenses with event studies of state anti-takeover statutes).

12. *Id.* at 80 & n.58 (contrasting purportedly less detrimental effects of golden parachutes and greenmail) (emphasis added).

13. Event studies are subject to a number of potential methodological flaws many of which have not been adequately addressed in event studies of takeover defenses. *See generally* GILSON & BLACK, *supra* note 2, at 215-28.

14. Gregg Jarrell and Michael Ryngaert, *Office of Chief Economist of the Securities and*

the authors focused on a relatively tiny ($n=15$) subsample, they were only able to find a relatively modest impact (-2.21%).¹⁵ By comparison, merger premiums averaged 42% over pre-bid market prices in the 1980s,¹⁶ and premiums in hostile takeovers typically were larger than premiums in negotiated deals.¹⁷ Not every firm adopting a pill would receive such a premium price, but the odds should have been high for firms in their sub sample, which was limited to only firms subject to takeover speculation. If pills substantially impaired the likelihood that target shareholders would receive 50% premiums (as claimed by the authors), a price decline at a carefully selected group of likely targets should have been greater than 2.21%.

In sum, the results of the first serious event study of poison pills were statistically mixed and economically weak.¹⁸ Even if the samples used were representative, the wealth effects of pills were found to be neither large, nor certain, nor general. Nevertheless, the authors felt able to conclude that "poison pills are harmful to shareholders, on net,"¹⁹ a mischaracterization (or at least an exaggeration²⁰) common to the early pill studies that has been parroted ever since.²¹

Exchange Commission, The Effects of Poison Pills on the Wealth of Target Shareholders (Oct. 23, 1986).

15. The authors appear to have chosen pill adoptions in ways that appear ad hoc and may well have biased their results.

16. Defined as the percent premium offered for a controlling equity interest (acquisitions of 51% or more of a company's outstanding shares), measured against market price 30 days prior to announcement. See MERGERSTAT REVIEW 1990.

17. See Jarrell, Brickley & Netter, *The Market for Corporate Control: The Empirical Evidence Since 1980*, 2 J. ECON. PERSP. 49, 49 (1988).

18. Cf. MacIntosh, *supra* note 7, at 284 (noting that results of early event studies of pills are "quite small" but arguing that "any negative price effect" shows that pills should not be adopted) (emphasis in original).

19. Jarrell & Ryngaert, *supra* note 14, at 43. Their conclusion was also based on a study of thirty takeover battles involving pills, in which 45% of the companies remained independent, resulting in short-term price declines. Another 45% of the companies were acquired at higher prices resulting from auctions. Net, targets experienced a weighted average net-of-market return over six months of -2.0% . See *id.* at 25-28. These results, again, do not support any strong or general view for or against pills.

20. Jarrell overstated the findings of his own study, claiming (in a 1987 study of ATAs) that his poison pill study found that "on average, 245 poison pills issued from 1981 through 1986 [had] a negative effect on stock prices of -1.7% at their announcement." Jarrell & Poulsen, *Shark Repellents and Poison Pills: Stockholder Protection - From the Good Guys or the Bad Guys?*, 4 MIDLAND CORP. FIN. J. 39, 128 (1986). In fact, his pill study found no statistically significant average effect, and found the 1.7% effect only with respect to 37 pills (both flip-over and flip-in) at companies that were subject to takeover speculation but were involved in no "confounding event" in announcing their pills. Jarrell & Ryngaert, *supra* note 14, tbl. 9.

21. See, e.g., EASTERBROOK & FISCHEL, *supra* note 10, at 204; Melvin Aron Eisenberg, *Contractual Freedom in Corporate Law: Articles & Comments; The Structure Of Corporation Law*, 89 COLUM. L. REV. 1461, 1503 n.197 (1989) (citing Jarrell & Ryngaert study); Matthew Garms, *Shareholder By-law Amendments and the Poison Pill: The Market for Corporate Control and Economic Efficiency*, 24 J. CORP. L. 433, 449 n.172 (1999) (citing Jarrell & Ryngaert, and

Since 1986, the majority of poison pill event studies have followed Jarrell & Ryngaert in attempting to resolve the debate over pills' wealth effects.²² Subsequent studies make the case against pills look even weaker. Results have been sensitive to event intervals, and the majority of studies show no significant price effect unless some attempt is made to isolate a subsample of pills, either by focusing on firms subject to takeover bids, as done by Jarrell & Ryngaert, or by focusing on some other firm characteristic, such as the number of independent directors or pills adopted in a particular year. Pooling results from full samples in all studies using two or three-day event intervals, the weighted average price reaction is +0.02%.²³ The net price impact of pill adoptions has been positive, albeit close to zero.

The net results of pill studies has also been two orders of magnitude smaller than two or three-day price effects of secondary stock offerings (-3.0%),²⁴ announcements of acquisitions (abnormal returns ranging from -1.2% to -3.3%),²⁵ spin-offs (+3.4%),²⁶ deaths of inside 5+%

Malatesta & Walking studies; citing Malatesta & Walking as supportive of a conclusion that the "adoption of poison pills has a negative effect on shareholder wealth"; Ronald J. Gilson & Reinier Kraakman, *Delaware's Intermediate Standard for Defensive Tactics: Is There Substance to Proportionality Review?*, 44 BUS. LAW. 247, 264 n.59 (1989), (citing Jarrell & Ryngaert study); SAMUEL C. THOMPSON, JR., BUSINESS PLANNING FOR MERGERS AND ACQUISITIONS 1081 (1997), (reprinting excerpt from Jarrell & Ryngaert study).

22. See James A. Brickley, Jeffrey L. Coles & Rory L. Terry, *Outside Directors and the Adoption of Poison Pills*, 35 J. FIN. ECON. 371 (1994); Dosoung Choi, Sreenivas Kamma & Joseph Weintrop, *The Delaware Courts, Poison Pills, and Shareholders Wealth*, 5 J.L. ECON. & ORG. 375 (1989); Robert Comment & G. William Schwert, *Poison or Placebo? Evidence on the Deterrence and Wealth Effects of Modern Antitakeover Measures*, 39 J. FIN. ECON. 3 (1995); Sudip Datta & Mai Iskandar-Datta, *Takeover Defenses and Wealth Effects on Securityholders: Poison Pills of Poison Pill Adoptions*, 20 J. BANKING & FIN. 1231 (1996); Paul H. Malatesta & Ralph A. Walking, *Poison Pill Securities: Stockholder Wealth, Profitability, and Ownership Structure*, 20 J. FIN. ECON. 347 (1988); Michael Ryngaert, *The Effect of Poison Pill Securities on Shareholders Wealth*, 20 J. FIN. ECON. 377 (1988).

23. In doing this, I follow Michael C. Jensen & Richard S. Ruback, *The Market for Corporate Control: The Scientific Evidence*, 11 J. FIN. ECON. 5, 12-13 tbl. 3 n.h (1980) (pooling results from several studies of abnormal returns associated with mergers and tender offers). As with their pooling of results, abnormal returns are weighted by samples in calculating the weighted average, and no effort has been made to adjust for overlap in the samples. If one sets statistically insignificant results to zero, the pooled result is -0.04%. For just studies that excluded "confounding events," the weighted average is -0.62%.

24. See R. BREALEY & S. MYERS, PRINCIPLES OF CORPORATE FINANCE 421 (6th ed. 2000) (summarizing general findings of studies); R. BREALEY & S. MYERS, PRINCIPLES OF CORPORATE FINANCE 349 n.21 (4th ed. 1991) (summarizing three studies).

25. See MARK L. SIROWER, THE SYNERGY TRAP: HOW COMPANIES LOSE THE ACQUISITION GAME 147 tbl.A.1 (1997) (surveying results from ten studies, including six using two or three-day event intervals around merger announcements). The public policy reaction to these findings, among legal academics and more generally, has been much more muted compared to the much weaker findings on takeover defenses.

26. See LANE DALEY, VIKAS MEHROTRA, & RANJINI SIVAKKUMAR, *Corporate Focus and Value Creation: Evidence from Spinoffs*, 45 J. FIN. ECON. 257 tbl.2 (1997).

blockholders (+3.01%),²⁷ and sales of 5+% blocks of stock (+5.1%),²⁸ and much smaller even than effects of non-binding agreements to make relatively minor governance reforms, such as the adoption of confidential voting (+0.90%).²⁹

Needless to say, legal academics have not taken nearly as strong a position, if any, on these other types of corporate events as they have on takeover defenses, despite stronger empirical evidence suggesting that these events have a bigger impact on shareholder wealth. Legal academics have not, for example, suggested a block dispersion rule for large blockholders, despite evidence showing that such a rule would on average have more than double the effect of a rule against pills.

II. DESIGN FLAWS OF EVENT STUDIES

Given the dominant academic theory that poison pills represent and are enabled by, a form of agency cost, the non-findings of the poison pill event studies are puzzling. Why do poison pill adoptions fail to reduce share prices? One answer is that agency cost theory is not the whole story. Upon critical reflection, it seems more likely that pill event studies suffer from serious design flaws that explain why they produced such unexciting results. By the same token, these methodological flaws also make pill event studies problematic for positive research and nearly useless for normative or policy analysis.

Two previously unnoticed design flaws are as follows.³⁰ First, pill adoption rarely has any real effect on the takeover defense posture of the firm adopting a pill. Pill adoption, per se, is simply unimportant from a takeover defense perspective. Second, structural defenses interact. As a result, they cannot be assessed by studying them in isolation. In fact, their interaction is more important than any given defense on its own.

A. *Pill Adoptions Rarely Have Any Effect; Pill Potential Is All That Matters*

The principal design flaw of pill event studies is that they treat the decision to adopt - or to not adopt - a pill as an important event, when it is, in fact, not an important event.

27. See MYRON B. SLOVIN & MARIE E. SUSHKA, *Ownership Concentration, Corporate Control Activity, and Firm Value: Evidence from the Death of Inside Blockholders*, 48 J. FIN. 1293 tbl. II (1993).

28. See MICHAEL J. BARCLAY & CLIFFORD G. HOLDERNESS, *Negotiated Block Trades and Corporate Control*, 46 J. FIN. 861 tbl. II (1991).

29. See DEON STRICKLAND, KENNETH W. WILES & MARC ZENNER, *A Requiem for the USA: Is Small Shareholder Monitoring Effective?*, 40 J. FIN. ECON. 319 tbl. 5 (1996).

30. For a longer discussion of these flaws and a discussion of other design flaws or other shortcomings of the defense studies see Coates, Critique, *supra* note 4.

To see this, note that a company that declines to adopt a pill at time t can always adopt one at time $t+1$ or $t+2$. Likewise, a firm adopting a pill at time t can eliminate (redeem) it at time $t+1$ or $t+2$. Pill adoption at time t is completely and almost instantaneously reversible at times $t+1$ and $t+2$. For large sophisticated firms the reversal (adoption or redemption) can occur in a single business day.³¹ For less sophisticated firms, takeover bids are subject to sufficient delay under both the Williams Act and the Hart-Scott-Rodino Antitrust Improvements Act, that a target firm will rarely if ever be prejudiced by failing to adopt a pill in advance.³²

No additional deterrence is achieved by virtue of the pill being adopted at time t or $t+1$, except to the extent that adoption sends signals about management's readiness and intention to resist a takeover. No additional bargaining power is achieved by adopting a pill a time t or $t+1$, except for such signal effects. Thus, the adoption of a pill at t does not generally change the legal takeover vulnerability of the adopting firm.

To be clear, the point is not that pills have no effect on bids. Rather, it is that pill *adoptions* by particular firms rarely have (non-signal) effects on bids because of the possibility of later adoption. Thus, it is the *potential* for the pill that achieves the great bulk of the pill's deterrent effect, to the extent it has one. Once the Delaware Supreme Court made it clear in *Moran v. Household International*³³ that pills were legitimate to adopt, all Delaware firms (except those few with other governance terms that would impede pill adoption) have had a "shadow pill" in place. Takeovers of such firms have thus been restrained by a set of "shadow restrictions" (the expectation of a pill's adoption and subsequent effects) on transfer of control to a hostile bidder.³⁴ Whether or not the potential for pills has had an impact on bids remains open, precisely because the studies of defenses have not taken the "shadow pill" into account.³⁵

31. The only legal action necessary for either step is a board meeting and approval. Lawyers can keep necessary documents ready and directors can meet by conference call on several hours notice.

32. See 15 U.S.C. § 18a (1999) (Hart-Scott-Rodino Antitrust Improvements Act of 1976); 15 U.S.C. §§ 78m(d)-(e), 78n(d)-(f) (1999) (Williams Act). Comment & Schwert make this point, *supra* note 22, but they do not fully realize its import for interpreting event studies.

33. 490 A.2d 1059 (Del. Ch. 1985), *aff'd*, 500 A.2d 1346 (Del. 1985).

34. *Moran*, 490 A.2d at 1082.

35. See Ryngaert, *supra* note 22, and Malatesta & Walkling, *supra* note 22. Both works attempted to measure price reactions to Delaware court decisions upholding the *Household* decision. Malatesta & Walkling find no significant reaction for *Household* itself after either the Chancery Court or Delaware Supreme Court decisions in *Household*, nor did they find a significant reaction for firms with pills involved in other takeover fights at the time the decisions were announced. *Id.* at 364 tbl. 4. One explanation is simply that even the potential for pills is

Another way to see the point is to ask whether a rational, well-advised bidder would view a takeover target as any more vulnerable to takeover as a result of having not yet adopted a pill. Given how easily and often pills are adopted by targets once bids have been made, the answer is clearly "no." As a result, a firm that has adopted a pill is in nearly the same takeover posture as a firm that has not yet adopted a pill.³⁶ If that is true, the adoption of a pill cannot be expected to generate any significant price reactions related to the pill itself. Any price reaction to pill adoptions reflects one thing only — inferences about private information in the hands of managers of adopting companies.

B. *Defenses Interact and Should Not Be Studied Separately*

Studies of structural takeover defenses suffer from a second, potentially more significant, flaw.³⁷ The simple point is that defenses interact. One term can dramatically impact the effect of another term. A short example, focusing on what are probably the two most important struc-

not important. Another explanation is that, although it is true that the court in *Moran v. Household* upheld the adoption of a (flip-over) pill, it did so by deferring any decision about how pills could be "used" by targets (i.e., whether fiduciary duties might ever require target directors to redeem a pill in the face of a bid), and only upheld the adoption *per se*. See also *Stahl v. Apple Bancorp, Inc.*, Fed. Sec. L. Rep. (CCH) ¶95,412 (Del. Ch. Aug. 9, 1990) (holding that use, not adoption, is critical factor in deciding pill's legality; use of pill to block revocable proxies would be illegal, but use of pill to block irrevocable proxies or voting agreements was legal). In fact, no Delaware court has ever squarely addressed either the question of whether a discriminatory flip-in pill, now standard, is legal to adopt (although the reasoning in *Household* does not distinguish between types of pills) or the question of whether a target board can "just say no" and use a pill to block a hostile tender offer without doing more (although it is widely considered to be highly likely that Delaware courts would, on a good record, uphold such a defense). See, e.g., Jeffrey Gordon, *Corporations, Markets and the Courts*, 91 COLUM. L. REV. 1931, 1944-45 (1991); Lyman Johnson & David Millon, *The Case Beyond Time*, 45 BUS. LAW. 2105 (1990); see also *Moore v. Wallace Computer Services, Inc.*, 898 F. Supp 1089 (D. Del. 1995). In other words, there has never been a precise moment in the development of Delaware law that could be isolated as the "event" that resolved the legality of the standard pill in its full operation.

36. Targets in several of the hostile bids during the 1990s did not have poison pills until after a hostile bidder emerged, and yet each was able to adopt a pill and prevent the bidders from acquiring the target without going through a proxy contest. See, e.g., Bill Atkinson, *Glen Burnie Bancorp Tries to Resist Hostile Takeover*, BALTIMORE SUN, Feb. 8, 1998, at 3C (Glen Burnie adopts pill in response to hostile bid); *Urocor Rejects Dianon's Acquisition Advances*, MED. INDUSTRY TODAY, Aug. 21, 1998, available in LEXIS/New S Library (UroCor adopted pill after it received hostile bid); Geraldine Fabrikant, *The Media Business: A Defense by Time Warner*, N.Y. TIMES, Jan. 21, 1994, at D1 (after Seagram Co.'s announcement that it intended to buy up to 15% of Time-Warner, Inc.'s stock spurred speculation that Seagram might make a hostile bid for Time-Warner, Time-Warner adopted a rights plan, which it previously had not done as part of a shareholder relations campaign).

37. A few pill event studies attempt to examine interactions between takeover defenses, but none arrived at useful results, in large part, because the studies reflect no theory about ways in which defenses could interact, and why. For example, Jarrell & Ryngaert, *supra* note 22, at 30, Ryngaert, *supra* note 22, at 22, and Choi et al., *supra* note 22 (finding no correlation between price reactions of pill adoptions by companies with and without various charter provisions).

tural defenses, pills and staggered boards, should illustrate the point.³⁸

Suppose Firm A has adopted a pill and Firm B has not. Firm A has a staggered board and Firm B does not. Initially, note the way in which the pill and the staggered board interact. Without the pill, the presence or absence of a staggered board is largely irrelevant because a tender offer or open-market accumulations of stock will allow a bidder to acquire control of the target in approximately one month, the minimum time necessary to clear antitrust review and for tender offers to comply with the Williams Act. The target board can (in theory) refuse to resign after the control acquisition has occurred, but it almost never will do so, for reasons discussed by Ron Gilson over 15 years ago.³⁹ Indeed, this was largely the reason that the pill was invented.

With the pill, the staggered board becomes a far more effective defense than the pill alone because a pill can always be removed by the target board. Thus, a bidder always has the option of removing the target board in a proxy fight. If a target's directors are all up for election each year, the pill can be removed in no more, and often much less, than a year from the bid's initiation. In contrast, if the target has a staggered board, the pill is protected for at least, and often much more, than one year. For firms with pills, effective staggered boards change a maximum time required to take over the target to the minimum time required.

Nearly all studies of defenses have assumed that Firm A, with a pill and a staggered board, is less vulnerable to takeover than Firm B. Suppose, however, that Firm A permits shareholders to remove directors without cause and Firm B does not, and neither has a provision that prohibits the adoption of pills or allows shareholders to act by written consent or call a special meeting. Now the legal takeover vulnerability of both firms is *identical*.

Because Firm B can adopt a pill at any time, the presence of a pill at Firm A and the absence of a pill at Firm B are irrelevant to bid outcomes (and, thus, signal effects aside, bid incidence). Likewise, given the ability of shareholders to remove directors without cause at Firm A, its staggered board is ineffective. Shareholders at both firms are in a position to mobilize, or to be mobilized by a bidder, and to replace the entire board at the next annual meeting. At Firm B, directors are normally up for election at the next annual meeting. At Firm A, shareholders (or a bidder) can remove all directors, and fill the resulting vacancies. Thus, traditional studies would misgauge the relative take-

38. I take up the question of term interactions at length and in detail in a separate paper. See Coates, *Studying Variation*, *supra* note 4. A full discussion of the ways in which governance terms interact is beyond the scope of this paper.

39. See Gilson, *supra* note 7 (discussing ineffectiveness of staggered board absent a pill).

over vulnerability of firms A and B because traditional studies assume that pills and staggered boards affect takeover vulnerability, when often they do not. These interactions are common and have significant effects on nearly a third of public firms sampled.⁴⁰

III. PREMIUM STUDIES

A second set of empirical studies on defenses - "premium studies" - have produced results that are stronger and more consistent than those produce by pill event studies. However, the flaws that afflict poison pill event studies afflict premium studies as well. Although the results of premium studies are interesting and worthy of further analysis, they do not provide good evidence that defenses improve firm value, as practitioners have sometimes claimed.

Georgeson & Co. has over the years conducted a number of studies of the relationship between pills and takeover premiums. Its first study,⁴¹ published at the height of public policy debate over takeovers and defenses, was controversial.⁴² The principal substantive finding that firms with pills receive larger than average takeover premiums, has however, held up over time. Georgeson emphasized that, unlike event studies, its study measured actual economic effects, rather than "only investor perceptions of pills." As Georgeson noted, pills were relatively new during the period reflected in early event studies.⁴³

In 1995, J.P. Morgan & Co. updated and confirmed the basic findings of these earlier studies.⁴⁴ They examined all acquisitions over \$500 million of a majority interest of U.S. companies from 1988 to 1995 (n=245) and found that premiums paid to firms with pills were 51.4% over market price five days prior to the initial offer. Firms without pills received an average premium of only 35.5%. Similar results were found when J.P. Morgan examined various partitions, including hostile and friendly offers, deals under and over \$1 billion, deals involving cash,

40. See Coates, *Studying Variation*, *supra* note 4.

41. See Georgeson & Company Inc., *Poison Pill Impact Study* (Mar. 31, 1988) [hereinafter *Study I*]; see also Georgeson & Company Inc., *Poison Pill Impact Study II* (Oct. 31, 1988) [hereinafter *Study II*].

42. In part, controversy arose because Georgeson & Co. was assisted in the study by Martin Lipton, who is generally credited with having invented the poison pill. See Jarrell & Ryngaert, *supra* note 22, at 1 n.1.; J.E. Heard, *Poison Pill Study Lambasted, 16 Pensions and Investment Age* 34, 34, (Apr. 18, 1988), cited in Robert F. Bruner, *supra* note 10, at 21. In addition, some participants doubted the Georgeson results because Georgeson "usually serv[es] defenders in takeover battles." Bruner, *supra* note 10, at 19.

43. See *Study II*, *supra* note 41, at 1 (preface).

44. See J.P. Morgan & Co., *Poison Pills and Acquisition Premiums* (Dec. 18, 1995) (unpublished study on file with author); see also Donald G. Margotta, *Takeover Premiums: With and Without Shareholder Rights Plans* (Feb. 2, 1989) (unpublished manuscript on file with author) (confirming Georgeson findings).

stock or mixed consideration, and deals in 1988, 1989, 1994 and 1995. In all cases, firms with pills received significantly higher premiums than firms without pills. A 1997 update of this study reached identical conclusions for all transactions (n=300) in which a majority interest of a U.S. public firm was purchased from 1993 through June 1997.⁴⁵

Notwithstanding the consistency and impressiveness of these results, studies showing that pills and deal premiums correlate are a classic example of correlation not proving causation. None of the studies offers any explanation of how pills cause higher premiums. In fact, pills cannot have such an effect except in rare instances. Nearly all bidders will assume a target of a hostile bid will adopt a pill once the bid is launched, assuming that resistance may attract alternative bidders or impose delay in developing a transactional defense for the target. If bidders presume that all targets will adopt pills, then the prior adoption of a pill has no causal connection to premiums offered in the hostile bid. As with the event studies, none of the pill premium studies attempt to separate pills that are adopted specifically to enhance the target's bargaining power from those that were previously adopted but had no direct role in the takeover fight.

Correlation without causation is most clearly seen in the studies of negotiated (i.e., non-hostile) deals, which also show a correlation between pills and higher premiums. Even if some purportedly friendly deals are in fact quasi-hostile, the vast majority of friendly deals are not. Without any description of a causal mechanism, the fact that pills correlate with higher premiums is not persuasive evidence that pills cause higher premiums. The fact that such a correlation exists for friendly deals (albeit slightly less strong) suggests that the pill/premium correlation arises from some source other than the real effects of a pill.

The correlation between bid premiums and pills is largely, if not entirely, caused by something not included in the regressions used to produce these results. Any number of possibilities exist: firms may adopt pills because of concerns that stock prices do not match firm

45. See KENNETH A. BERTSCH, POISON PILLS, INVESTOR RESPONSIBILITY RESEARCH CENTER, CORPORATE GOVERNANCE SERIES 1998 BACKGROUND REPORT E at 21, (Jun. 25, 1998), (summarizing update). Similar results were found in a 1997 Georgeson-sponsored study by Jamil Aboumeri. The study can be found on Georgeson & Co. Inc.'s web page (<http://georgeson.com>), and it is summarized in *Poison Pills and Shareholder Value* 1992-96, 68 Aspen Law and Business Corporation No. 24 (Dec. 15, 1997) (also on file with author). Aboumeri noted several ways in which acquired firms with pills differed from those without: they were larger (based on market capitalization), had lower price-to-book ratios and were more frequently acquired in hostile rather than friendly deals. Aboumeri noted that premiums also varied with size and hostility: higher premiums are paid for smaller firms and in hostile deals. Still, after controlling for all three factors, Aboumeri finds that firms with pills received statistically significant higher premiums on average than firms without pills.

value, or because stock prices of such firms are more volatile than stock prices generally. Such firms may be harder to value without private information and may attract higher premiums (which are measured against pre-bid market prices). Perhaps managers of firms that adopt pills are in industry sectors that have more competitors, or in consolidating sectors where deal activity is already quite high for other reasons. In either instance, bid premiums might be higher than average for the same reasons (competition or consolidation creating more auctions). Or perhaps such firms are more apt to adopt "best practices" and adopt pills because 50+% of the Fortune 500 has done so. Such firms may be more apt to adapt best practices elsewhere in their management and operations, including negotiation strategies, resulting in higher premiums. Alternatively, perhaps firms that adopt pills do so for reasons such as entrenchment and agency cost, traditionally attributed to managers, causing a stock price decline that is reversed by hostile bids, resulting in high premiums. Whereas, firms that do not adopt pills are already so well managed that any premiums paid in hostile or friendly bids are only based on operational synergies and not on the elimination of such agency costs. Whatever the effective cause of higher premiums, the presence or absence of pills is not likely to be the answer, any more than the wealth effects of pills is the explanation for price reactions to their adoptions.

CONCLUSION

Despite the fact that no studies have shown any strong or consistent price reactions to pill adoptions, and no result remotely close to that predicted by an agency cost theory of managerial entrenchment, pill event studies published in the mid-1980s have set the tone for all subsequent academic discourse on the topic. Event studies of defenses were seriously flawed in ways that have gone unnoticed: pill adoptions are wrongly assumed to have a direct impact on legal takeover vulnerability, and no study has adequately taken account of the ways that defenses interact. The general failure of researchers to find strong or consistent relationships between defense adoptions and price reactions is, in hindsight, not surprising. These flaws also have afflicted non-event studies. Although pills appear to consistently have a strong correlation with higher premiums for target firms, the correlation probably masks some other currently unproven cause rather than the effect of pills.

This largely critical review of the scientific evidence on takeover defenses leaves academics with the task of correcting or at least taking into account research flaws identified in this paper. Researchers need to recognize that, based on the scientific evidence produced to date, pill

adoption cannot proxy for "management entrenchment." For the same reason, pill adoption cannot proxy for "majority rule for takeover bids" or "higher extraction of surplus," as the pill premium studies might suggest. That leaves less direct, but potentially more productive, research methods. The search for scientific evidence of the wealth effects of defenses should shift from pills to "hard-wired" defenses, such as charter provisions, that cannot easily be changed after ownership is dispersed. Models, built on case studies and field research, of the way in which defenses affect takeovers need to be created and used.⁴⁶ Relationships between firm traits and defenses adopted prior to IPOs should be explored. The results should be compared to mature firms distribution of defenses, to explore the possibility that defenses are generally efficient, or efficient for some subset of firms.

It is important for practitioners, and other informational intermediaries' advising boards or investors, that both constituencies understand the limitations of the empirical research done to date on defenses. Institutional shareholders should be alerted to the fact that at least half of the traditional academic case against defenses stands on shaky ground. Accordingly, shareholders should be more careful about adopting uniform voting policies hostile to defenses. Boards, however, should not be permitted to rely, without caveat, on pill premium studies to support a decision to adopt or not adopt a pill at a given point in time.

Finally, Delaware courts should take some comfort from the fact that they resisted strong academic arguments and political efforts that attempted to push them to dramatically repudiate pills and other structural defenses. The empirical case against defenses remains unproven, and, without empirical support, the theoretical case against defenses is not as compelling as it might have seemed to hostile commentators following cases such as *Paramount Communications, Inc. v. Time Inc.*⁴⁷ Delaware's chancellors and justices have moved carefully and incrementally in responding to both takeovers and takeover defenses, this conservative approach is in keeping with the traditions of the common law and has proven sound. The failure of empirical studies to adequately document the predictions of agency cost theory may turn out to be a failure of empirical methodologies, and the case against defenses may be resuscitated, or it may turn out to reflect an imaginative failure on the part of legal and economic theoreticians to see beyond the simple and intuitively compelling aspects of agency cost theory.

46. Such a model is presented in Coates, *Studying Variation*, *supra* note 4.

47. 571 A.2d 1140 (Del. 1989).